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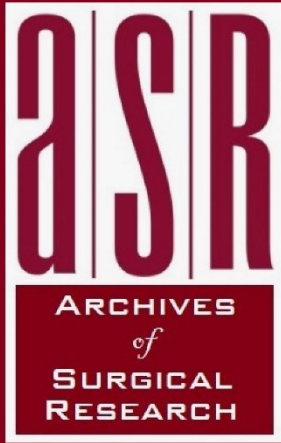
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About Archives of Surgical Research

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The journal aims to uphold the highest standards at the cutting-edge of research, provide a focus for evidence-based medicine through the publication of review articles and special issues, and give the findings context through the publication of editorials, commentaries and letters from the surgical community. We ensure enforcement of reporting guidelines and mandate the registration of all research involving human participants in a publicly accessible research registry.

As a journal covering all surgical specialties, ASR aims to facilitate the transfer of important ideas and thought systems between and across specialties. Hence, ASR will help prevent the trend of increasing sub-specialization which leads to 'tunnel-vision' and the unfortunate concealment of important surgical advances within specific specialties.

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KMA

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PREFACE

Shalamar Medical & Dental College has exceptionally excelled in the field of science, education and research over the last decade and has produced quality graduates who are currently serving around the world. Quality of education and research in surgery has been instrumental in this regard under the leadership of Prof Khawaja Muhammad Azim to achieve our core objective of producing quality education. Inception of Pakistan Endocrine & Thyroid Surgeons Association (PETA) has aligned well to my vision, institutional requirements and overall rapport of the institution.

I witnessed and supported the birth of Pakistan Endocrine & Thyroid Surgeons Association here at Shalamar Medical College three years back and during this period it has evolved into a mature tree and is bearing fruits to surgical education and training here at our institution. Legacy of its founding visionary, Late Prof Syed Zafar Haider has continued. PETA has been conducting Annual Thyroid & Parathyroid Master Class since its inception with great reception. Currently, we are the largest endocrine surgery center in Pakistan with highest volume turnover.

Now the introduction of "Archives of Surgical Research" is another feather into our institutions' cap. This journal would not only satisfy the needs of the society but would also serve to promote culture of science, education and research within our institution. This culture advocacy remains instrumental in promoting the quality of learning process of the medical graduates within our institute and is aligned with my vision about this medical college.

In the end, I am happy to write about "Archives of Surgical Research" and its inaugural issue and wish the editorial team best of luck for their endeavors for years to come.



Prof Zahid Bashir

Principal

Shalamar Medical & Dental College, Lahore

MESSAGE FROM THE PRESIDENT

Pakistan Endocrine & Thyroid Surgeons Association (PETSA)

Prof Zafar Haider was the teachers of the teachers and a great surgeon. He was the one who made thyroid and endocrine surgery safe in Pakistan and we carry the light now with aim to improve the endocrine surgery in light of modernization in the field of the surgery.

Archives of Surgical Research aims at improving the standard of surgical research and education. It would function as official Journal of Pakistan Endocrine & Thyroid Surgeons Association (PETSA).

The journal would cover endocrine, breast and surgical oncology primarily. It would also focus on the surgical education for medical students and residents to enhance the learning process through addition of technology, blended learning and modern concepts in medical education.

Prof. Khwaja M Azim FRCS
President PETSA



Surgical Residency in Pakistan: How to Move Forward?

Khawaja M Azim

IMPORTANCE Surgical training still remains a challenging aspect owing to multifactorial reasons. Rapidly evolving surgical techniques, rapid shift to technology and local circumstances make it difficult to standardize surgical training around the world. The rising number of residents, lesser number of training opportunities to operate and ethical issues influence on quality of surgical training. These factors to varying extents are affecting quality of surgical training around the world. There are however some additional factors which are drastically affecting the quality of surgical training in Pakistani perspective. Uniform application of standardized structured training, need to continuously evolve on composition of structured training process, quality assurance of training and assessment and transparent, just and optimal trainee selection process are various areas where we need to focus on.

KEY WORDS Surgical Training, Future Directions, Pakistan

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Editorial

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Surgical training still remains a challenging aspect owing to multifactorial reasons^{1,2}. Rapidly evolving surgical techniques, rapid shift to technology and local circumstances make it difficult to standardize surgical training around the world. The rising number of residents, lesser number of training opportunities to operate and ethical issues influence on quality of surgical training. These factors to varying extents are affecting quality of surgical training around the world. There are however some additional factors which are drastically affecting the quality of surgical training in Pakistani perspective³. Uniform application of standardized structured training, need to continuously evolve on composition of structured training process, quality assurance of training and assessment and transparent, just and optimal trainee selection process are various areas where we need to focus on⁴.

More and more residents are abstaining from joining into the general surgery training as the residents want to pursue a more confined field. On one hand, duration of general surgery training has expanded from 4 years to up to 10 years in different parts of the world with aim to expose the residents and fellows more to expanding realm of surgical techniques and volume of the patients⁵. On the other hand, general surgery is rapidly evolving into sub and super specialties. This change although partly has reflected into our training programs however we still lag in this process and the training programs need to continuously evolve into

more confined areas for better training and better healthcare delivery at the same time¹. Specialized training spots remain pre-requisite for this evolution. In future it is very likely that general surgery would shrink to a program which would function as a jump-pad to excel into a more specialized field. The care of patient would become more sort of inter-subspecialty.

Application of structured training program and its quality assurance remains an important aspect for managing the training programs optimally. The training process should be handled more scientifically and the quality assurance should be more scientific rather anecdotal. Faculty training remains the pivotal in this regard. A mandatory qualification in the field of surgical education may be a good way to move on. The supervisors need to be trained adequately to run with computer-savvy platforms and the supervisors should be graded according to quality of training spot, volume of the patients relevant to specialty and the resident feedback. Better administration, quality assurance remains key to make it success.

Novelty of research work should be the primary benchmark that a training program needs to focus on. Moreover, quality control in the research during training can dramatically improve the quality of the training programs. The residents need to learn the research methods and statistics more in depth and apply in their dissertations to come up with more

meaningful research outcomes. The research area and topic selection should be practical but novel at the same time.

Quality assurance of the assessment is single most important aspect of generating quality product from our training programs⁶. The induction and the exit exams need to be more robustly quality assured and should meet the international standards. This is extremely important step—the regular improvement and quality assurance in the MCQ banks to application level are of utmost importance. The assessments should be carefully selected to be either norm-referenced or criterion-referenced especially in an environment where the number of medical graduates are growing day by day.

As the public sector shrinks relative to the rising population of Pakistan and the private healthcare sector expands, we need to quality control the process of institutional recognition for training in a more robust manner. Rising

number of residents and fewer well equipped places for structured surgical training is an important issue and should be addressed on priority. Simulation centers across country and modular based training many issues related to exposure^{7,8}. Central Induction Policy for resident selection currently focuses on the cognitive assessment but not on aptitude and surgical acumen of the resident, which needs rationalization. American NRMP can be a good guide to further work on⁹. Inclusion of the primary and secondary healthcare into the training programs by principle should not rust good graduates during the process.

In conclusion, stringent application of standardized structured training, need to continuously evolve on composition of structured training process, quality assurance of training and assessment and transparent, just and optimal trainee selection process are various areas where we need to focus on before it is too late.

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Revalidating “Mini Surgical Theater Educational Environment Measure (mini-STEEM)”: Is it a Content Valid Instrument?

Jahangeer Ahmad, Hadia Baig, Zaitoon Zafar, Talat Waseem

IMPORTANCE Operating Room (OR) based learning experience has traditionally remained challenging owing to complex medical, psychosocial, educational, and administrative factors, and so has its measurement. Recently, mini-STEEM, an abbreviated form of Surgical Theater Educational Experience Measure (STEEM), has been employed to evaluate medical students’ OR-based learning experience. This study aims to assess its content and construct validity in light of an updated extensive literature review

METHODS Extensive literature review was done to identify and evaluate various factors affecting students’ OR-based learning within the OR-setting. Expert validation of the items was done in light of constructs identified through literature review by 8 experts who had experience both in surgical teaching and medical education. The item content validity index (I-CVI) was assessed. Thematic analysis of the qualitative responses was done to understand the dynamics of validity scores. Factor analysis was performed to see the factor loadings for the items and their model fitness.

RESULTS Against previously identified 26 constructs, mini-STEEM items were expert-validated for clarity, relevance, and comprehension. The item content validity index was suboptimal and did not cover all of the dimensions and constructs identified through a previous literature review. Reliability was checked through Cronbach’s alpha (0.779) after piloting through a cohort of students (n=156). Qualitative analysis revealed that mini-STEEM does not cover all of the domains essential for student learning within the OR setting, and does not have adequate representative items to address all elements. Exploratory factor analysis (EFA) showed reasonable loadings; however, the model fitness through confirmatory factor analysis (CFA) was not possible considering low or no representation of most of the themes.

CONCLUSIONS In light of evolving literature evidence, the content validity of mini-STEEM to assess the quality of medical students’ OR-based learning experience remains low, despite having good reliability and construct loadings.

KEYWORDS Operating Room; Operation Theater; Learning; Student; Resident; Quality of Learning Experience; Structured Learning; STEEM; mini-STEEM; Content validity

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Original Investigation

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The dynamic environment within the Operating Room (OR) provides a real-life venue for medical students’ learning^{1,2}. However, there are many medical, social, ethical, and administrative factors involved, which make learning within the OR setting exigent for teachers and learners both¹⁻³. Recently, many experts in this area have generated a new conceptual framework highlighting various important factors that influence the quality of OR-based student learning¹². Lyon’s model focuses on student-driven learning within the OR, while Roberts et al. stress a more deliberate learning process for the medical students^{3,4}. There is a consensus that the learning process within at large remains opportunistic, unstructured, un-driven, and hence substandard¹². Consequently, the OR setting’s standardized learning process and quality assurance remain the key for enhanced OR learning.

Nagraj et al. previously proposed the instrument ‘mini-STEEM’ to assess the quality of student learning within the OR environment, which is an abbreviated form of Kevin Cassar’s Surgical Theater Educational Environment Measure^{5,6}. This instrument by Kevin Cassar was primarily designed for the residents and is a reliable and content valid⁶. Recently in multiple systematic literature reviews, many important OR-based learning determinants have been identified, and a more comprehensive conceptual framework has been developed^{1,2,12}. Mini-STEEM, although reliable with reasonable Cronbach’s alpha value, does not assess all domains which pertain to medical students’ learning experience within the OR setting.¹²

In light of an improved understanding of OR-based learning and multiple recent literature reviews that identify many essential domains of student learning within the OR setting, there is a clear need for re-validation of the mini-STEEM. This

study aims to assess the content validity, reliability, and construct validity of mini-STEEM.

literature evidence^{1,2,12}. The literature search was conducted on PubMed, ERIC, and Google Scholar. Thematic analysis and review were performed to identify the factors influencing OR-based student learning. Additionally, the study consisted of the analysis of various models and scales currently being used to assess the OR-based student learning^{1,2,4,7-10}. The conceptual framework and previously identified themes were used as reference (Table 1 and Figure 2).¹²

METHODS

Following ethical approval from the local institutional review, a board study was conducted, as shown in Figure 1. In the first phase, we relied on the previously published

Table 1: Expert Validation of mini-STEEM based on Conceptual Framework

Themes (5)	Subthemes (26)	Mini-STEEM Items	Representative Qualitative Statements	I-CVI
STRUCTURE D LEARNING PROCESS (Structured Course /Lesson Planning, Content Selection, Delivery, Assessment & Administration)	1. Structured or Opportunistic OR learning	No representative Item	<i>"The students prefer a structured and well-planned learning process within operating theatre realm instead of opportunistic learning process—this inventory does not adequately assess whether learning is structured or opportunistic"</i>	0
	2. Design and Communication of Learning Objectives for OR learning	No representative Item	<i>"Like any learning process learning objectives should be formulated prior to lesson and following the convention of medical education should be specific, measurable, attainable, relevant, targeted & time-bound (SMART)...these learning objectives should conform to the rest of teaching..... students should have room for their own personal learning objectives to promote diversity in learning process—Mini-STEEM does not address these important themes"</i>	0
	3. Clarity of Learning Objectives	No representative Item	<i>"The items pertaining to content selection are quite relevant, however they do not represent all of factors influencing this process. For example, it does not assess the process of curricular design and the involvement of students in this whole process. It does assess the 'briefing' component of Robert's "Briefing-Intraoperative Teaching-Debriefing" model however does not appraise the mechanism of intraoperative teaching and debriefing session."</i>	0
	4. Feasibility of learning objectives to be realistically achievable	No representative Item	<i>"The items pertaining to content selection are quite relevant, however they do not represent all of factors influencing this process. For example, it does not assess the process of curricular design and the involvement of students in this whole process. It does assess the 'briefing' component of Robert's "Briefing-Intraoperative Teaching-Debriefing" model however does not appraise the mechanism of intraoperative teaching and debriefing session."</i>	0
	5. Synchronization of the learning objectives with rest of the teaching.	No representative Item	<i>"Mini-STEEM overlooks and does not evaluate the process of assessment or delivery of constructive feedback to the student about their performance in OR learning"</i>	0
	6. Importance of Personal Learning Objectives in OR Learning	No representative Item	<i>"The instrument does not gauge the process of assessment of skills and affective domains of learning."</i>	0
	7. Content Selection, delivery, assessment and their alignment to essential aspects of graduate learning	<ul style="list-style-type: none"> • Before the operation my trainer discusses the surgical technique planned • The elective operating list has the right case mix to suit my training • The variety of emergency cases gives me the appropriate exposure • On this unit the types of operations performed are too complex for my level* 	<p><i>"In mini-STEEM, theatre sessions reflect a segment of opportunity for learning. The items however have been primarily designed for the residents and it reflects in structure of these items. For example, it may be quite hard to provide opportunity to scrub along with the surgeon and make this a standard considering the increasing number of students and residents. The last three items clearly pertain to residents not medical students."</i></p>	0.92
				0.73
				0.75
				0.81

	8.	Optimal student-teacher interaction & opportunities for equal participation	<ul style="list-style-type: none"> I get enough opportunity to assist There are enough theatre sessions per week for me to gain the appropriate experience The anaesthetists put pressure on my trainer to operate himself to reduce anaesthetic time* I am too busy doing other work to go to theatre* When I am in theatre, there is nobody to cover the ward* 	0.65		0.76		0.63		0.51		0.42
QUALITY OF FACULTY & TRAINING (Educator Related Factors)	1.	Interest of educator	<ul style="list-style-type: none"> My trainer is enthusiastic about teaching 		<p><i>"The first item in this section is quite representative, relevant, and clear in terms of assessing the interest of the teacher, which to many students, remains a central component."</i></p> <p><i>"This section, in terms of the number of items remains under-represented."</i></p> <p><i>"mini-STEEM does not effectively evaluate the importance of teacher's competence, teaching style, and educator's preparedness."</i></p>	0.95						
	2.	Importance of the educator's behavior and attitude	No representative Item	0								
	3.	Competency of educator	No representative Item	0								
	4.	Importance of teaching style	No representative Item	0								
	5.	Importance of teacher's preparedness	No representative Item	0								
ORGANIZATIONAL SUPPORT	1.	Significance of OR orientation session.	No representative Item		<p><i>"The only item of this section is quite representative, but at best would only evaluate environmental readiness to a subjective extent. We need items to assess the provision and use of technology for better visualization of the procedures and synchronization with the simulation lab or simulated-OR based learning."</i></p> <p><i>"Orientation session about the working within the theatre, sterilization protocols, patient safety measures, etc. all can be quite helpful."</i></p>	0						
	2.	Importance of environmental readiness	<ul style="list-style-type: none"> The atmosphere in theatre is pleasant 	0.87								
	3.	Synchronization simulation / Lab activities with OR lessons	No representative Item	0								
	4.	Importance of adequate visualization in student learning	No representative Item	0								
PSYCHOSOCIAL MANAGEMENT & TRAINING	1.	Impact of anxiety in the OR environment	No representative Item		<p><i>"mini-STEEM quite rightly assesses the discrimination based on race—quite valuable items"</i></p> <p><i>"It also effectively judges the role of a friendly environment and its impact on student learning."</i></p> <p><i>"It does not, however, assess any mechanism to address the issue of intimidation and victimization within the OR environment, the mechanism for redressal and role of faculty training in this regard."</i></p>	0						
	2.	Effect of fear, intimidation, discrimination or victimization in OR learning environment	<ul style="list-style-type: none"> I feel discriminated against in theatre because of my sex* I feel discriminated against in theatre because of my race* 	0.83		0.81						

	3.	Impact of feeling welcome in OR	<ul style="list-style-type: none"> The theatre staff are friendly 		0.88
STUDENT'S SELF-REGULATION, MOTIVATION & PARTICIPATION	1.	Ability to self-regulate learning in OR	No representative Item	<i>"According to Lyon's model of OR-based learning, student's capacity to self-regulate is of pivotal importance and is an independent predictor of student's quality of OR experience."</i> <i>"The inventory does not assess student's talent to self-regulate, readiness to participate, and motivation to make this learning process more productive."</i> <i>"Likewise, mini-STEEM does not explore the role of student's self-confidence, focus on practicing the motor and affective skills, and pre-operative self-review of the learning material to prime for a more enriched learning experience."</i>	0
	2.	Impact of student's motivation	No representative Item		0
	3.	Impact of self confidence	No representative Item		0
	4.	Student's Prior Knowledge & Pre-lesson self-review of reading material	No representative Item		0
	5.	Student's readiness to participate	No representative Item		0
	6.	Student's Focus on Practice of skills	No representative Item		0

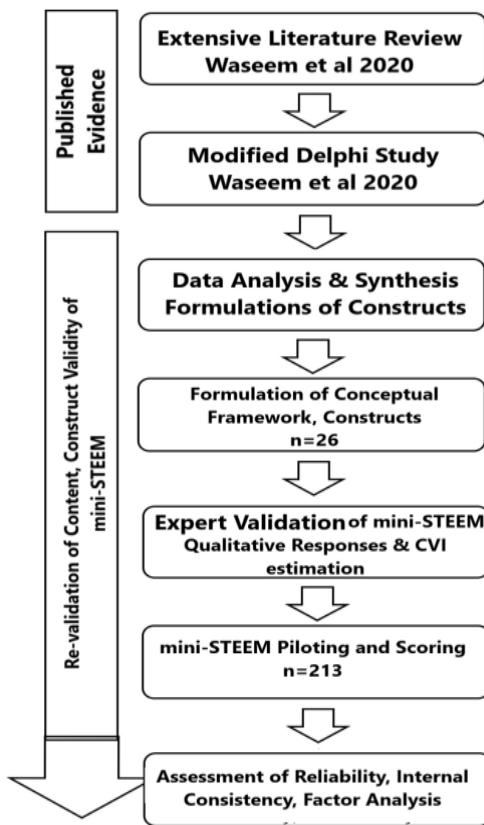


Figure 1: Flow Chart describing the components of study and instrument evaluation

In phase 2, the scale was content validated by 8 experts, and the I-CVI estimation was done as described previously. The qualitative data regarding the mini-STEEM items was subjected to thematic analysis. The mini-STEEM scale was piloted among 202 students. The mean item scores and their respective SD has been



Figure 2: Factors affecting student learning in Operating Room: A conceptual Framework

described in Table 2. Confirmatory factor analysis failed due to poor structure of the mini-STEEM. Exploratory factor analysis (Principal Component Analysis) was done to check for the construct validity, and Cronbach alpha estimation was done to evaluate the reliability of the constructs (Table 3).

Sr. No	Mini-STEEM Items	N	Min	Max	Mean	Std. Deviation
1	My trainer is enthusiastic about teaching.	202	1.0	5.0	2.327	1.1251
2	The theatre staff are friendly.	202	1.0	5.0	2.535	1.2303
3	There are enough theatre sessions per week for me to gain the appropriate experience.	202	1.0	5.0	2.866	1.3147
4	Before the operation my trainer discusses the surgical Technique planned.	202	1.0	5.0	2.782	1.1642
5	The elective operating list has the right case mix to suit my training.	200	1.0	5.0	2.770	1.0830
6	The variety of emergency cases gives me the appropriate exposure.	202	1.0	5.0	2.896	1.2634
7	I get enough opportunity to assist.	202	3.0	5.0	4.213	.7722
8	On this unit the types of operations performed are too complex for my level.*	202	3.0	5.0	3.851	.7037
9	The anaesthetists put pressure on my trainer to operate himself to reduce anaesthetic time*	202	3.0	5.0	3.955	.8364
10	I feel discriminated against in theatre because of my sex*	202	1.0	5.0	3.663	1.3985
11	I feel discriminated against in theatre because of my race*	202	1.0	5.0	4.069	1.3696
12	I am too busy doing other work to go to theatre*	202	3.0	5.0	4.158	.7562
13	The atmosphere in theatre is pleasant.	202	3.0	5.0	3.995	.7498
Total					44.082	

Table 2: mini-STEEM Item Scores, Means and SD

	Rotated Component Matrix ^a				Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
	Component 1	Component 2	Component 3	Component 4			
6. The variety of emergency cases gives me the appropriate exposure.	.740	.224	-.073	.116	.737	.739	5
3. There are enough theatre sessions per week for me to gain the appropriate experience.	.713	-.044	.056	-.002			
5. The elective operating list has the right case mix to suit my training.	.671	-.117	-.018	-.132			
4. Before the operation my trainer discusses the surgical Technique planned.	.650	-.047	-.091	.048			
1. My trainer is enthusiastic about teaching.	.593	-.562	-.099	-.094			
11. I feel discriminated against in theatre because of my race.	.126	.844	-.055	.060	0.696	0.697	2
10. I feel discriminated against in theatre because of my sex.	-.005	.813	.218	-.121			
2. The theatre staff are friendly.	.463	-.548	.061	.043	-		
8. On this unit the types of operations performed are too complex for my level.	.091	.010	.780	.002	.537	.539	3
9. The anesthetists put pressure on my trainer to operate himself to reduce anesthetic time.	.039	.137	.683	.239			
13. The atmosphere in theatre is pleasant.	-.341	-.020	.643	.010			
7. I get enough opportunity to assist.	.183	-.105	.000	.777	.255	.255	2
12. I am too busy doing other work to go to theatre.	-.211	.063	.224	.683			
KMO and Bartlett's Test							
Extraction Method: Principal Component Analysis.				Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.753	
Rotation Method: Varimax with Kaiser Normalization.				Bartlett's Test of Sphericity		Approx. Chi-Square 513.116	
a. Rotation converged in 5 iterations.						df 78	
						Sig. .000	

Table 3: Reliability Factor Loadings related to Principal Component Analysis of mini-STEEM

The statistical analysis was done in SPSS, and SPSS Amos, and Cronbach alpha estimation, and the content validity index were measured as described previously¹¹.

RESULTS

In the first phase, the literature evidence was explored, and five basic domains of factors affecting the students' learning experience within the OR were identified as tabulated in Table 1. The corresponding conceptual framework has been described in Figure 2. These domains include structured learning process, quality of faculty and training, psychosocial management, organizational support, and students' ability to self-regulate. Based on these 5 themes, 26 different sub-themes were identified, tabulated in Table 1.

In Phase 2 of this study, mini-STEEM items were content validated by 8 experts. The I-CVI and the corresponding expert analysis of these items have been summarized in Table 1, along with their representative expert quotes.

Based on literature evidence, the experts consider the structured learning process to be one of the most critical factors influencing the quality of overall learning experience within the OR setting. Mini-STEEM has 9 items to assess the structured learning process, concentrating mostly on the process of content selection and quality of student-teacher interaction. However, these items do not determine structured vs. opportunistic learning, the learning objectives' design and their adequate communication to the students.

a. Structured Learning Process:

The structured learning approach provides a framework for students to follow and includes specified preassigned readings, immediate feedback from their tutors following a clinical experience and the use of systematically organized instructional methodologies. This approach is also effective in enforcing the deliberate practice of clinical skills acquisition.

According to one expert, "The students prefer a structured and well-planned learning process within the operating theatre realm instead of an opportunistic learning process—this inventory does not adequately assess whether learning is structured or opportunistic."

For the OR experience to be beneficial, it is of paramount importance that practical learning objectives are formulated and are communicated with the students. The involvement of learners in the formation of learning objectives allows them to recognize the areas where skills need to be acquired. With regard to learning objectives, an expert pointed out that "like any learning process, learning objectives should be formulated prior to the lesson and following the convention of medical education, should be specific, measurable, attainable, relevant, targeted & time-bound (SMART)...these learning objectives should conform to the rest of teaching..... students should have room for their learning objectives to promote diversity in the learning

process—Mini-STEEM does not address these important themes."

Moreover, another expert stated that "the items on the content selection are quite relevant; however, they do not represent all of the factors influencing this process. For example, it does not assess the process of curricular design and students' involvement in this whole process. It does assess the 'briefing' component of Robert's "Briefing-Intraoperative Teaching-Debriefing" model; however, it does not appraise the mechanism of intraoperative teaching and debriefing session." An intraoperative discussion can be developed from the set learning objectives in the briefing session. This model ensures that no operating room encounter goes purposeless for the learner and allows the preceptor and the learner to reflect on and reinforce the lessons learnt. Not addressing these factors renders the evaluation made by mini-STEEM inadequate.

Furthermore, an expert commented that "mini-STEEM overlooks and does not evaluate the process of assessment or delivery of constructive feedback to the student about their performance in OR learning."

And another stating that "the instrument does not gauge the process of assessment of skills and affective domains of learning."

Surgical residents and medical students differ not only in their degree of knowledge and experience but also in their responsibilities and expectations from the OR encounter. It is therefore, impracticable to assess their needs and influencing factors on the same scale. As stated by an expert "in mini-STEEM, theatre sessions reflect a segment of opportunity for learning. The items, however, have been primarily designed for the residents, and it reflects in the structure of these items. For example, it may be quite hard to provide the opportunity to scrub along with the surgeon and make this a standard, considering the increasing number of students and residents. The last three items clearly pertain to residents, not medical students."

b. Quality Of Faculty & Training:

Regarding the statement, "My trainer is enthusiastic about teaching" from mini-STEEM, one expert agreed that "the first item in this section is quite representative, relevant, and clear in terms of assessing the interest of the teacher, which for many students, remains a central component."

However, when the subtheme 'competency of educator' was questioned, an expert responded that "this section, in terms of the number of items remains under-represented."

Another expert observed that "mini-STEEM does not effectively evaluate the importance of teacher's competence, teaching style, and educator's preparedness."

c. Organizational Support:

The availability of basic and fundamental technology can have a remarkable impact on the theater-based learning.

It was highlighted by an expert that the statement 'the atmosphere in the theatre is pleasant' is "the only item of

this section that is quite representative, but at best would only evaluate environmental readiness to a subjective extent. We need items to assess the provision and use of technology for better visualization of the procedures and synchronization with the simulation lab or simulated-OR based learning."

It was further added that an "orientation session about working within the theatre, sterilization protocols, patient safety measures, etc. all can be quite helpful."

d. Psychosocial Management & Training:

Medical students are subjected to a wide array of stimuli within the OR setting which can trigger a range of mixed emotions. Students must face new challenges whilst overcoming their emotions.

According to an expert "mini-STEEM quite rightly assesses the discrimination based on race—quite valuable items."

And in addition to that "it also effectively judges the role of a friendly environment and its impact on student learning."

Another expert further stated that "it does not, however, assess any mechanism to address the issue of intimidation and victimization within the OR environment, the mechanism for redressal and role of faculty training in this regard."

e. Student's Self-Regulation, Motivation & Participation:

Based on the literature review, it has been seen that students' attitude and their level of interest and responsiveness determines the drive of the surgeon to teach. It was stated by an expert that "according to Lyon's model of OR-based learning, a student's capacity to self-regulate is of pivotal importance and is an independent predictor of student's quality of OR experience."

Regarding mini-STEEM, an expert mentioned that "the inventory does not assess students' talent to self-regulate, readiness to participate, and motivation to make this learning process more productive."

And "likewise, mini-STEEM does not explore the role of students' self-confidence, focus on practicing the motor and

affective skills, and pre-operative self-review of the learning material to prime for a more enriched learning experience."

DISCUSSION

Medical students' learning experience is unique, differs from a resident's learning perspective, and is multifactorial. Previously, experts in this area have identified and prioritized various intermediary items, which regulate the learning process and quality outcomes. Many factors related to the structured learning process, organization, educator, student, and psychosocial domains determine the quality of overall learning experience in the OR setting. Previously, mini-STEEM, an abbreviated version of STEEM, has been used to assess the OR learning process's quality. However, its content validity has been challenged recently, considering expanding dimensions of the OR learning process.

There is a growing body of literature that directs and indicates the expanding role of a structured learning process despite the difficulties of its implementation within the OR setting. The structured learning process involves careful course planning, delivery process, and assessment involving the psychomotor and affective components apart from the operative learning's cognitive portion. Similarly, educator-related and student-related factors significantly influence the learning process within the OR setting. Teacher's interest, competence, style, and welcoming attitude are independent predictors of quality OR learning. Faculty training in this regard can be pivotal and also provides chances for better student handling within the OR setting. The students' interest, receptive attitude, capacity to self-regulate learning and social handling within the OR can alter the outcomes of the learning process. The organizational support in terms of providing adequate technology and administrative support has additive value. Psychosocial training of the faculty and the students can positively affect the quality of learning process.

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Archives of Surgical Research | Original Investigation

Quality Assurance Of Operating Room-Based Learning: Development & Validation Of 'Surgical Operating Room Educational Experience Measure' For Medical Students (SOREEMST)

Jahangeer Ahmad, Talat Waseem, Zaitoon Zafar, Rizwan Qaiser Danish

INTRODUCTION Operating Room (OR) based learning experience has traditionally remained challenging owing to complex medical, psychosocial, educational and administrative factors and, so is its measurement of success. Recently, mini-STEEM, an abbreviated form of Surgical Theater Educational Experience Measure (STEEM) has been employed to evaluate the OR-based learning experience of medical students. However, its content and construct validity has been challenged, in light of updated extensive literature review, justifying the need for a more robust, reliable and content valid instrument.

METHODS Extensive literature review was done to identify and evaluate various factors affecting students' OR based learning within the OR setting and a conceptual framework was developed. Artino et al's (AMEE Guide 87) seven-step approach was used to develop and validate this new instrument, which has been named Surgical Operating Room Educational Experience Measure (SOREEMST). Content Validity Index (I-CVI) was measured, with a range between 0.68-1 for all items. Following principles of Structural Equation Modeling (SEM) and piloting on 535 students, Exploratory Factor Analysis (EFA) was carried out to finally retain 50 items for subsequent model fitness in Confirmatory Factor Analysis (CFA) through SPSS-AMOS 24.

RESULTS Against previously identified 26 constructs, 100 items were initially designed and expert-validated for clarity, relevance and comprehension. Cognitive interviews were done to optimize item clarity and comprehension, and finally the items were piloted on a pool of 536 students. Reliability and internal consistency were analyzed through Cronbach's alpha and exploratory factor analysis (EFA) to refine and choose final 50 items for SOREEMST. Which model best fit to conceptual framework was confirmed through Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM).

CONCLUSIONS SOREEMST is a reliable, novel, content/construct valid instrument to assess the quality of the OR based learning experience of medical students and may be used to quality assure the OR-based learning process.

KEY WORDS Operating Room; Operation Theater; Learning; Student; Resident; Quality of Learning Experience; Structured Learning; STEEM; mini-STEEM; SOREEMST

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Original Investigation

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The Operating Room (OR) provides a real-life opportunity to understand the dynamics of surgical care and learning, however, the process of learning and teaching within this continuously evolving environment still remains challenging for both, the surgical educator and the medical student.^{1, 2} Resident learning within the OR setting pins around the principles of apprenticeship model and self-directed learning that follows Lyon's Model and Knowle's principle of andragogy.^{3, 4} These models provide a reasonable outcome in terms of resident training; however, the dynamics of medical students' learning remain quite disparate, unstructured and opportunistic. Consequently, medical students do not benefit greatly by applying the same

principles of teaching and learning as do the surgical residents. Many emotional, socio-environmental, organizational factors and factors related to educational relevance and surgical educator play a role in this realm.^{2,5,6} The quality of learning within the OR and the quality assurance of this learning has long been a subject of scientific enquiry and debate.

Nagraj et al have previously proposed an instrument, mini-STEEM, to assess the quality of student learning within OR environment, which is an abbreviated form of Kevin Cassar's Surgical Theater Educational Environment Measure (STEEM).^{7, 8} STEEM is a reliable, content valid instrument for resident training.^{7, 8} Mini-STEEM, on the contrary, although reliable with Cronbach's alpha value of 0.82, does not

assess all domains which pertain to medical students' learning experiences within the OR setting. We have recently identified various limitations within mini-STEEM which pertain to its content and construct validity.⁶ This necessitates the development of a new instrument which encompasses all the domains of the student learning within OR setting as identified recently.^{1, 2, 6} The objective of this study is to develop an improved, reliable and content valid instrument which comprehensively evaluates various aspects of the medical student's OR based learning.

METHODS

Following ethical approval from local institutional review board, the study was conducted according to Artino et al's AMME Guide 87.⁹ Seven steps were followed and the sequence of the components of the study have been highlighted in Figure 1.

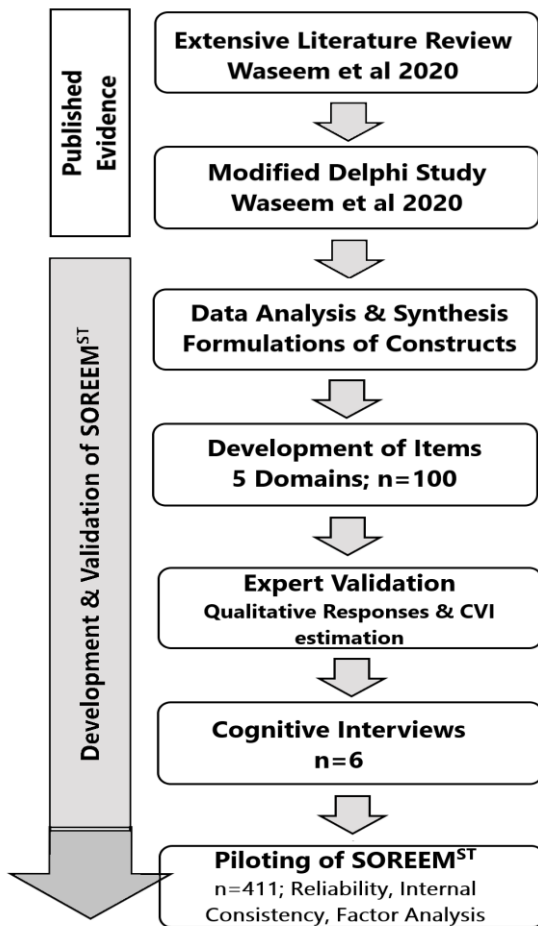


Figure 1: Flow Chart describing the components of study and instrument development

Initially, following PRISMA flow chart (highlighted previously in Waseem et al, 2020) the literature search was done through PubMed, ERIC and Google Scholar (described

in detail previously, Waseem et al). Thematic analysis and review were performed to identify the factors influencing OR based student learning. Additionally the review consisted of analysis of various models available for OR based learning which pertain to the medical students' learning in the OR and various scales currently being used to assess the medical student's OR based learning.^{7, 8, 10, 11, 12, 13} Students were qualitatively assessed in terms of their perceptions and thoughts about their OR based learning through a previously conducted Delphi based analysis and 26 different constructs were identified which in varying proportions affect student's OR based learning⁶ (Table 1).

Themes (5)	Subthemes (26)
STRUCTURED LEARNING PROCESS (Structured Course /Lesson Planning, Content Selection, Delivery, Assessment & Administration)	1. Structured or Opportunistic OR learning
	2. Content Selection, delivery, assessment and their alignment to essential aspects of graduate learning
	3. Designing and Communicating Learning Objectives for OR learning should be mandatory
	4. Clarity of Learning Objectives
	5. Feasibility of learning objectives to be realistically achievable
	6. Synchronization of the learning objectives with rest of the teaching.
	7. Importance of Personal Learning Objectives in OR Learning
	8. Optimal student-teacher interaction & opportunities for equal participation promote OR learning experience
QUALITY OF THE FACULTY & TRAINING (Educator Related Factors)	1. Interest of educator
	2. Importance of educator's behaviour and attitude
	3. Competency of educator
	4. Importance of teaching style
	5. Importance of teacher's preparedness
ORGANIZATIONAL SUPPORT	1. Significance of OR orientation session.
	2. Importance of environmental readiness
	3. Synchronization simulation / Lab activities with OR lessons
	4. Importance of adequate visualization in student learning
PSYCHOSOCIAL MANAGEMENT & TRAINING (Psychosocial Factors)	1. Impact of anxiety in OR environment
	2. Effect of fear, intimidation or victimization in OR learning environment
	3. Impact of feeling welcome in OR
STUDENT'S SELF-REGULATION, MOTIVATION & PARTICIPATION (Student Related Factors)	1. Ability to self-regulate learning in OR
	2. Impact of student motivation
	3. Impact of self confidence
STUDENT'S SELF-REGULATION, MOTIVATION & PARTICIPATION (Student Related Factors)	4. Student's Prior Knowledge & Pre-lesson self-review of reading material
	5. Student's Readiness to participate
	6. Student's Focus on Practice

Table 1: Factors Affecting Student Learning within OR Setting: Extracted Themes & Subthemes

These factors were content validated in terms of clarity, comprehension and relevance.

Structural Equation Modeling (SEM) is an extended analytical technique of General Linear Modeling and regression analysis where we can test many equations simultaneously but it also enables modeling of errors and many dependent variables in one go. SEM takes confirmatory approach to data analysis rather than exploratory approach^{14, 15} which can incorporate observed and unobserved variables simultaneously. Factor analysis is the best known procedure to test the relationship between a set of latent and observed variables. When the link between observed and latent variables is uncertain, we use EFA and determine factor loadings of various factor¹⁴, of course, parsimoniously as less as possible.

Based on these 26 constructs 100 items were initially designed (Table 1). These items were expert validated by 8 experts in terms of clarity, relevance and comprehension (Table 2). Cognitive interviews were done with 8 students to judge their perspective about the proposed items with concurrent prompting. The study was piloted among 535 students to assess its reliability, internal consistency through Cronbach alpha estimation and through exploratory factor analysis (EFA) (Appendix 1) and confirmatory factor analysis (CFA). Based on EFA finally 50 items were chosen to include in SOREEMST and the model confirmation done through SEM (Appendix 1).

All statistical analysis was done in SPSS and SPSS AMOS 24. Cronbach alpha estimation was done for reliability and internal consistency. Content validity index was measured as described previously.¹⁶

RESULTS

To identify various factors influencing student's OR-based learning extensive literature reviews have been done.^{2, 17} We have also previously done an updated extensive literature review and have prioritized various factors based on their relative importance.⁶ Based on these previous studies we did literature synthesis and identified 26 constructs under 5 domains (Table1) (Previously published, Waseem et al 2020). Against these constructs, 100 questionnaire items (Table 2) were developed as described by Artino et al previously.⁹ These items were subjected to expert validation through qualitative means and through estimation of content validity index (I-CVI) as described previously.¹⁶ Table 2 describes CVI for each item in column 3. Respondent item-suitability was judged through cognitive interviews and finally the piloting was done on the students. The SOREEMST scores were estimated for various domains of OR-based learning experience as shown in Table 2. In this study we generated a pool of 100 items and ran EFA (Appendix 1) where items were deleted that have loadings less than 0.30 as suggested by Hu and Bentler or their presence reduces the reliability of construct or they have negative covariance or high errors residual covariances.¹⁸ Then Confirmatory Factor Analysis was run in

AMOS 26 (Figure 2), The results of which are given in Table 3.

The results show that retained items have factor loadings greater than 0.40 except Q3 which has factor loadings 0.359. As samples size is large enough (N=535) so we can retain this item with less loading. Cronbach Alpha, Composite Reliabilities and Average variance extracted for convergent Validity which are all higher than threshold value (>0.50) is given in this table. Composite reliability is the measure of internal consistency better than Cronbach Alpha (which relies on parallelity or equal loadings of variables) which should be greater than the benchmark of 0.7 to be considered adequate.¹⁹ Here all the values are higher. Based on the EFA and Model fitness 50 items were selected for the SOREEMST which have been described in Appendix 2.

DISCUSSION

Medical student's learning experience is unique, differs from a resident's learning perspective and is multifactorial.² Previously, experts in this area identified and prioritized various intermediary items, which regulate learning process and quality outcomes. Many factors related to structured learning process, organization, educator, student and psychosocial domains determine the quality of overall learning experience in the OR setting. Previously, mini-STEEM which is an abbreviated version of STEEM, has been used to assess the quality of the OR learning process. Recently, its content validity has been challenged, considering expanding dimensions of the OR learning process.

There is a growing body of literature which directs and indicates the expanding role of structured learning process despite difficulties of its implementation within the OR setting. The structured learning process involves careful course/ lesson planning, delivery process and assessment involving the psychomotor and affective components apart from the cognitive portion of the operative learning. Similarly, the educator related and student related factors significantly influence the learning process within the OR setting. Teacher's interest, competence, style and welcoming attitude are independent predictors of quality OR learning. Faculty training in this regard can be pivotal. This also provides better student-body management within the OR setting. Student's interest, receptive attitude, capacity to self-regulate learning and social handling within the OR can alter the outcomes of OR learning process. Organizational support in terms of providing adequate technology and administrative support has additive value. Psychosocial training of the faculty and the students can have positive effect on improving quality of learning process.

Item	Item Description	Expert Validation I-CVI estimation	Piloting (n=535)	
			Mean Score	SD
1	My teaching and learning in operating room are well-planned and organized	0.94	4.806	.5153
2	My teacher follows the lesson-plans delivered to us at start of the session	0.79	4.813	.5108
3	I am on my own for my learning within operating room	0.73	1.579	1.1647
4	Content selection for OR sessions is done in coordination with students at my institution	0.91	4.716	.8620
5	The content taught in OR sessions is relevant	0.84	4.811	.5119
6	The OR learning sessions contain right mix of elective surgical cases	0.79	4.464	1.2505
7	I also get opportunity to experience emergency cases in operating room apart from elective cases	0.84	4.475	1.2508
8	Preoperative and postoperative care are a part of my learning within OR setting	0.70	4.497	.5005
9	Lessons are taken in preoperative area to teach preoperative care of patient	0.79	4.473	1.2507
10	My teachers provide a meaningful commentary while performing a surgical procedure	0.92	4.779	.6534
11	My teacher explains the anatomical background of each step while performing surgery	0.91	4.714	.8625
12	Running commentary about the surgical procedure keeps me engaged	0.86	4.811	.5119
13	Lessons are taught in postoperative area to teach postoperative care	0.93	4.495	1.2053
14	My teacher discusses the theoretical background of the surgery in the post op class to strengthen my concepts	0.87	4.720	.8611
15	My teachers conduct follow-up classes after the surgical procedure to clarify my concepts and queries	0.91	4.493	1.2053
16	Number of sessions that I undergo in OR are optimal for my required level of learning	0.83	4.462	1.2504
17	The lessons in operating room address my practical skills	0.85	4.471	1.2507
18	My OR lessons are exam-oriented	0.99	4.710	.8634
19	I am also tested about practical skills apart from theoretical knowledge in OR lessons	0.85	4.460	1.2504
20	I get a constructive feedback about my OR learning performance	0.99	4.708	.8639
21	My teachers provide learning objectives of the planned lesson prior to its delivery.	0.92	4.822	.5049
22	Provision of learning objectives prior to lesson keeps me focused	0.85	4.781	.6526
23	My teachers teach at large as per availability of the operative cases in OR	0.91	4.705	.8648
24	My teachers teach at large in operating room as the opportunity of learning arises	0.82	4.495	.5004
25	The learning objectives provided to me about the OR session are clear and understandable.	0.99	4.800	.5186
26	My OR lessons are planned according to the stated learning objectives	0.87	4.789	.6493
27	I am taught in OR what my teacher wishes to teach	0.93	4.718	.8616

28	The learning objectives of the OR sessions are realistic and feasible	0.86	4.495	1.2053
29	OR lesson planning is done according to the available resources at my institution	0.85	4.456	1.2503
30	My OR learning objectives conform to available provisions at my institution	0.84	4.505	1.2053
31	My teachers teach me in OR in line with lessons being taught in the rest of curriculum	0.87	4.469	1.2506
32	Lessons of simulation lab and the OR activities are synchronized to logically enhance my learning	0.91	4.477	1.2508
33	The lessons in operating room fit with my existing understanding about the topics being taught	0.91	4.467	1.2506
34	I have my own personal learning objectives for the OR sessions	0.77	3.574	1.1242
35	In busy OR environment, I try to learn things on my own	0.69	3.576	1.1257
36	I go through learning material on my own beforehand, in accordance with the planned surgical procedures	0.79	3.587	1.1348
37	My learning in OR is not being affected by number of students within my batch rotating for OR lessons	0.88	1.579	1.1647
38	My class size in OR is optimal for my learning	0.97	4.495	1.2053
39	The students in my batch rotating in operation theatre have ample and equal opportunities for learning	0.98	4.495	.5004
40	When we enter Operating room, it becomes too crowded	0.71	3.583	1.1318
41	Equal participation of students is ensured during OR sessions	0.84	4.032	.7867
42	My teacher is quite enthusiastic about my learning in OR	0.98	4.507	1.2053
43	My teacher is more focused on his work than teaching me in OR sessions	0.88	1.675	1.1767
44	My teacher takes optimal interest in my learning in OR sessions	0.72	4.779	.6704
45	My teacher's behaviour in OR sessions is quite supportive for my learning	0.78	4.075	.8108
46	My teacher is quite helpful for me in OR sessions	1	4.503	1.2053
47	My teacher encourages my learning in OR sessions	0.84	4.707	.8643
48	My teachers in OR are quite friendly and welcoming and easy to share with	0.81	4.710	.8634
49	In OR setting I am welcomed for learning	0.79	4.505	1.2053
50	I have trouble asking questions or sharing my views in OR	0.91	1.751	1.1929
51	My teacher is quite competent in teaching OR lessons	0.79	4.695	.8669
52	My teacher has a good grip on content of OR lessons	0.91	4.794	.6468
53	I am not comfortable with teaching competency of my teacher in OR	0.82	1.593	1.1970
54	I like my teacher's teaching style in OR sessions	0.89	4.720	.8611
55	Teaching style of my teachers in OR conforms to my needs	0.82	4.469	1.2506
56	My teacher adapts different learning styles to meet the needs of lesson	0.84	4.456	1.2503
57	My teacher is adequately prepared for my OR lessons	1	4.503	1.2053
58	My teacher is usually unprepared for OR lessons	0.81	1.679	1.1857
59	My teacher prepares environment in OR conducive for	0.71	3.574	1.1242

60	our learning My teachers conduct orientation session within OR prior to starting lessons	0.8	4.821	.5061
61	I did not have any orientation session in OR prior to start of lessons	0.8	1.654	1.2354
62	OR orientation session at beginning of my rotation was quite helpful for me	0.98	4.787	.6501
63	My institution is keen to facilitate us in terms of infrastructure and administrative issues that we face while learning in OR	0.98	4.725	.8596
64	Our operating rooms are well equipped with gadgets to aid our learning	0.79	4.499	1.2053
65	Theatre administration is difficult to reach for issues related to my learning in OR	0.84	1.757	1.2058
66	My operation theatre complex is equipped with modalities important for my learning in OR	0.86	4.710	.8634
67	My lessons within simulation and skill labs align well with my teaching in OR	0.89	4.507	1.2053
68	My OR learning activities conform to my learning opportunities in simulation lab	0.83	4.471	1.2507
69	My lesson-plan in simulation lab is unrelated to OR learning activities	0.87	1.675	1.1767
70	I find it difficult to observe operative procedures adequately	0.86	4.047	.7954
71	LED screens, microphones and additional measures have been provided to improve our visualization of the surgical procedure	0.85	4.510	1.2052
72	Our institution has special arrangements to improve visualization of operative procedures for the students	0.9	4.497	1.2053
73	OR environment is quite friendly	0.89	4.774	.6558
74	Neither me or my friend feel intimidated by any staff member in OR setting	0.79	4.712	.8630
75	I feel anxious in OR setting	0.82	1.680	1.1901
76	I am discriminated in OR sessions because of my race.	0.93	1.589	1.1879
77	I am discriminated in OR sessions because of my sex	0.86	1.632	1.1823
78	I am discriminated in OR setting based on my religion	0.91	1.572	1.1457
79	I can question to my teachers freely	0.86	4.815	.5096
80	I feel being victimized in operating room	0.91	1.641	1.2048
81	I feel welcomed in OR sessions	0.69	4.800	.6442
82	The staff in operating theatre is friendly and supportive	0.95	4.779	.6534
83	I feel myself as part of the team when I enter the theatre	0.83	4.512	1.2052
84	Within busy routines of operating room, I can self-regulate my learning	0.89	3.561	1.1132
85	Despite non-supportive circumstances, I am able to significantly learn during the OR session	0.93	4.492	1.2053
86	In OR setting, it is important to plan my learning on my own	0.88	3.572	1.1226
87	My motivation level is high during OR sessions	0.76	3.564	1.1164
88	My enthusiasm controls my learning in OR setting.	0.72	3.572	1.1226
89	My OR learning is proportional to my interest in OR	0.82	4.811	.5119
90	My self-confidence affects my overall learning in the operating room	0.77	4.492	1.2053

91	I feel confident and it positively affects my academic performance in OR	0.82	4.464	1.2505
92	Non-judgmental teaching style improves my confidence	0.85	4.785	.6510
93	My overconfidence may affect negatively in learning process	0.75	4.695	.8669
94	I am well-prepared by watching procedure videos and reading material prior to having OR lessons	0.88	4.712	.8630
95	My prior knowledge affects my overall learning in OR	0.82	4.475	1.2508
96	My prior skills affect my overall learning in OR	0.77	4.462	1.2504
97	I am adequately receptive for learning within OR environment	0.90	4.488	1.2052
98	My OR learning is proportional to my receptiveness for learning	0.76	4.779	.6534
99	I focus on repetition of surgical skills in simulation lab and OR	0.8	3.578	1.1272
100	My focus on repetition of skills improves quality of learning in simulation lab and OR	0.94	4.512	1.2052

Table 2: SOREEMST Expert Validation and Scores based on 5 domains identified through literature review.

SOREEMST is a comprehensive instrument to evaluate medical student's learning experience in the OR setting and evaluates all potential dimensions of students' OR based learning process. Its content validity has been expert validated. High Cronbach's alpha and good factor loading for each item are testament for its quality assured structure. It has been employed in our local cohort of the students to assess the quality of learning.

This instrument, however, has its limitations; it is quite lengthy and may exhaust respondents. Similarly, it has been piloted only in a single institution and its external validity and generalizability still needs to be explored. Additionally, we tried to explore the relationship of 26 constructs identified through SEM, however, this added greatly to the complexity of model and model fits failed. Despite this limitation, the expert validity and strong association of the five identified themes gives great strength to the conceptual model.

In conclusion, SOREEMST is a detailed instrument to evaluate the quality of the learning process within the OR setting. It comprehensively evaluates all domains of the learning process within the OR setting and the quality of the education experience. It may be useful for quality assurance of OR based student learning at an institutional level, and may also be used to determine the quality of OR based learning experiences as more and more structured clinical encounters are designed for the enriched learning experience within operating room.

Items/Themes			Factor Loadings	Critical Ratio	P	Composite Reliability	Average Reliability	Cronbach Alpha
Quality of Faculty & Training	<---	QUALITY_OF_OR LEARNING_EXPERIENCE	.997	94.435	***			
Organizational Support	<---	QUALITY_OF_OR LEARNING_EXPERIENCE	.994	89.507	***			
Psychosocial Factors	<---	QUALITY_OF_OR LEARNING_EXPERIENCE	.735	22.994	***			
Student's Self-regulation, Motivation & Participation	<---	QUALITY_OF_OR LEARNING_EXPERIENCE	.999	94.435	***			
Structured Learning Process	<---	QUALITY_OF_OR LEARNING_EXPERIENCE	.998	22.052	***			
Q1	<---	Structured Learning Process	.695	Fixed		0.986	0.768	0.981
Q3	<---	Structured Learning Process	.359	8.251	***			
Q4	<---	Structured Learning Process	.774	17.522	***			
Q5	<---	Structured Learning Process	.704	15.987	***			
Q6	<---	Structured Learning Process	.979	21.918	***			
Q7	<---	Structured Learning Process	.979	21.913	***			
Q9	<---	Structured Learning Process	.980	21.924	***			
Q10	<---	Structured Learning Process	.679	15.442	***			
Q13	<---	Structured Learning Process	.985	22.033	***			
Q14	<---	Structured Learning Process	.775	17.543	***			
Q15	<---	Structured Learning Process	.986	22.060	***			
Q16	<---	Structured Learning Process	.979	21.910	***			
Q17	<---	Structured Learning Process	.979	21.908	***			
Q18	<---	Structured Learning Process	.773	17.499	***			
Q33	<---	Structured Learning Process	.979	21.912	***			
Q20	<---	Structured Learning Process	.771	17.462	***			
Q21	<---	Structured Learning Process	.713	16.196	***			
Q25	<---	Structured Learning Process	.690	15.685	***			
Q28	<---	Structured Learning Process	.986	22.048	***			
Q30	<---	Structured Learning Process	.987	22.073	***			
Q32	<---	Structured Learning Process	.979	21.916	***			
Q38	<---	Structured Learning Process	.984	22.025	***			
Q82	<---	Psychosocial Management & Training	.957	Fixed		0.906	0.599	0.910
Q79	<---	Psychosocial_ M & T	.911	41.194	***			
Q78	<---	Psychosocial_ M & T	.551	14.702	***			
Q77	<---	Psychosocial_ M & T	.541	14.336	***			
Q76	<---	Psychosocial_ M & T	.533	14.073	***			
Q74	<---	Psychosocial_ M & T	.865	34.501	***			
Q73	<---	Psychosocial_ M & T	.958	51.837	***			
Q72	<---	Organizational Support	.988	Fixed		0.968	0.835	0.962
Q71	<---	Organizational Support	.989	108.588	***			
Q67	<---	Organizational Support	.988	105.731	***			
Q64	<---	Organizational Support	.989	106.945	***			
Q63	<---	Organizational Support	.778	28.025	***			
Q60	<---	Organizational Support	.713	23.201	***			
Q57	<---	Quality of Faculty & Training	.988	Fixed		0.964	0.800	0.955
Q56	<---	Quality of Faculty & Training	.976	84.445	***			
Q51	<---	Quality of Faculty & Training	.770	27.324	***			
Q50	<---	Quality of Faculty & Training	.400	10.033	***			
Q49	<---	Quality of Faculty & Training	.988	103.512	***			
Q46	<---	Quality of Faculty & Training	.988	104.908	***			
Q42	<---	Quality of Faculty & Training	.987	102.832	***			
Q100	<---	Student's Self-regulation, Motivation & Participation	.984	Fixed		0.969	0.798	0.965
Q98	<---	Student's Self-regulation, Motivation & Participation	.683	21.343	***			

Q96	<---	Student's Self-regulation, Motivation & Participation	.980	85.315	***
Q95	<---	Student's Self-regulation, Motivation & Participation	.979	84.736	***
Q94	<---	Student's Self-regulation, Motivation & Participation	.778	27.969	***
Q91	<---	Student's Self-regulation, Motivation & Participation	.979	84.545	***
Q89	<---	Student's Self-regulation, Motivation & Participation	.701	22.452	***
Q85	<---	Student's Self-regulation, Motivation & Participation	.984	90.919	***

Table 3: Factor Loadings, Reliabilities and Average Variance Extracted

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Appendix 1:

Exploratory Factor Analysis and Item Selection

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. My teaching and learning in operating room are well-planned and organized	418.94	3848.854	.813	.983
2. My teacher follows the lesson-plans delivered to us at start of the session	418.93	3849.340	.812	.983
3. I am on my own for my learning within operating room	419.32	3829.803	.485	.983
4. Content selection for OR sessions are done in coordination with students at my institution	419.03	3809.093	.857	.983
5. The content taught in OR sessions are relevant	418.93	3849.233	.812	.983
6. The OR learning sessions contain right mix of elective surgical cases	419.28	3756.007	.936	.982
7. I also get opportunity to experience emergency cases in operating room apart from elective cases	419.27	3756.649	.932	.982
8. Preoperative and postoperative care are a part of my learning within OR setting	419.24	3909.710	-.142	.983
9. Lessons are taken in preoperative area to teach preoperative care of patient	419.27	3756.474	.933	.982
10. My teachers provide a meaningful commentary while performing a surgical procedure	418.96	3836.152	.797	.983
11. My teacher explains the anatomical background of each step while performing the surgery	419.03	3809.057	.857	.983
12. Running commentary about the surgical procedure keeps me engaged	418.93	3849.285	.811	.983
13. Lessons are taught in postoperative area to teach postoperative care	419.25	3759.437	.948	.982
14. My teacher discusses the theoretical background of the surgery in the post op class to strengthen my concepts	419.02	3809.228	.857	.983
15. My teachers conduct follow-up classes after the surgical procedure to clarify my concepts and queries	419.25	3759.210	.950	.982
16. Number of sessions that I undergo in OR are optimal for my required level of learning	419.28	3755.865	.937	.982
17. The lessons in operating room address my practical skills	419.27	3756.498	.933	.982
18. My OR lessons are exam-oriented	419.03	3808.750	.859	.983
19. I am also tested about practical skills apart from theoretical knowledge in OR lessons	419.28	3755.915	.937	.982
20. I get a constructive feedback about my OR learning performance	419.03	3808.606	.860	.983
21. My teachers provide learning objectives of the planned lesson prior to its delivery.	418.92	3849.733	.815	.983
22. Provision of learning objectives prior to lesson keeps me focused	418.96	3836.274	.796	.983
23. My teachers teach at large as per availability of the operative cases in OR	422.45	3995.139	-.867	.984
24. My teachers teach at large in operating room as the opportunity of learning arises	422.24	3892.968	.126	.983
25. The learning objectives provided to me about the OR session are clear and understandable.	418.94	3848.755	.809	.983
26. My OR lessons are planned according to the stated learning objectives	418.95	3836.723	.795	.983
27. I am taught in OR what my teacher wishes to teach	422.46	3994.500	-.865	.984
28. The learning objectives of the OR sessions are realistic and feasible	419.25	3759.344	.949	.982
29. OR lesson planning is done according to the available resources at my institution	419.29	3755.733	.938	.982
30. My OR learning objectives conform to available provisions at my institution	419.24	3759.844	.946	.982
31. My teachers teach me in OR in line with lessons being taught in the rest of curriculum	419.27	3756.412	.933	.982
32. Lessons of simulation lab and the OR activities are synchronized to logically enhance my learning	419.27	3756.637	.932	.982
33. The lessons in operating room fit with my existing understanding about the topics being taught	419.27	3756.245	.935	.982
34. I have my own personal learning objectives for the OR sessions	420.17	3905.728	-.042	.983
35. In busy OR environment, I try to learn things on my own	421.32	3898.801	.007	.983
36. I go through learning material on my own beforehand, in accordance with the planned surgical procedures	420.16	3906.202	-.045	.983

37. My learning in OR is not being affected by number of students within my batch rotating for OR lessons	422.16	3974.856	-.512	.984
38. My class size in OR is optimal for my learning	419.25	3759.486	.948	.982
39. The students in my batch rotating in operation theatre have ample and equal opportunities for learning	419.25	3909.639	-.141	.983
40. When we enter Operating room, it becomes too crowded	421.33	3898.448	.009	.983
41. Equal participation of students is ensured during OR sessions	419.71	3897.255	.033	.983
42. My teacher is quite enthusiastic about my learning in OR	419.24	3759.888	.945	.982
43. My teacher is more focused on his work than teaching me in OR sessions	419.42	3824.524	.516	.983
44. My teacher takes optimal interest in my learning in OR sessions	418.96	3833.950	.803	.983
45. My teacher's behaviour in OR sessions is quite supportive for my learning	419.67	3899.395	.010	.983
46. My teacher is quite helpful for me in OR sessions	419.24	3759.688	.947	.982
47. My teacher encourages my learning in OR sessions	419.04	3808.435	.861	.983
48. My teachers in OR are quite friendly and welcoming and easy to share with	419.03	3808.649	.860	.983
49. In OR setting I am welcomed for learning	419.24	3759.904	.945	.982
50. I have trouble asking questions or sharing my views in OR	419.49	3823.235	.518	.983
51. My teacher is quite competent in teaching OR lessons	419.05	3807.899	.864	.983
52. My teacher has a good grip on content of OR lessons	418.95	3836.892	.796	.983
53. I am not comfortable with teaching competency of my teacher in OR	419.33	3829.305	.475	.983
54. I like my teacher's teaching style in OR sessions	419.02	3809.157	.858	.983
55. Teaching style of my teachers in OR conforms to my needs	419.27	3756.356	.934	.982
56. My teacher adapts different learning styles to meet the needs of lesson	419.29	3755.699	.938	.982
57. My teacher is adequately prepared for my OR lessons	419.24	3759.722	.946	.982
58. My teacher is usually unprepared for OR lessons	419.42	3824.267	.514	.983
59. My teacher prepares environment in OR conducive for our learning	420.17	3905.717	-.042	.983
60. My teachers conduct orientation session within OR prior to starting lessons	418.92	3849.814	.812	.983
61. I did not have any orientation session in OR prior to start of lessons	419.40	3825.022	.488	.983
62. OR orientation session at beginning of my rotation was quite helpful for me	418.96	3836.552	.796	.983
63. My institution is keen to facilitate us in terms of infrastructure and administrative issues that we face while learning in OR	419.02	3809.432	.857	.983
64. Our operating rooms are well equipped with gadgets to aid our learning	419.24	3759.518	.948	.982
65. Theatre administration is difficult to reach for issues related to my learning in OR	419.50	3823.015	.514	.983
66. My operation theatre complex is equipped with modalities important for my learning in OR	419.03	3808.634	.860	.983
67. My lessons within simulation and skill labs align well with my teaching in OR	419.24	3759.929	.945	.982
68. My OR learning activities conform to my learning opportunities in simulation lab	419.27	3756.501	.933	.982
69. My lesson-plan in simulation lab is unrelated to OR learning activities	422.07	3980.411	-.544	.984
70. I find it difficult to observe operative procedures adequately	421.79	3905.489	-.051	.983
71. LED screens, microphones and additional measures have been provided to improve our visualization of the surgical procedure	419.23	3760.145	.944	.982
72. Our institution has special arrangements to improve visualization of operative procedures for the students.	419.24	3759.519	.948	.982
73. OR environment is quite friendly	418.97	3836.027	.795	.983
74. Neither me or my friend feel intimidated by any staff member in OR setting	419.03	3808.793	.859	.983
75. I feel anxious in OR setting	422.06	3980.597	-.539	.984
76. I am discriminated in OR sessions because of my race.	419.33	3829.368	.478	.983
77. I am discriminated in OR sessions because of my sex	419.37	3826.036	.503	.983
78. I am discriminated in OR setting based on my religion	419.31	3830.171	.491	.983
79. I can question to my teachers freely	418.93	3849.409	.813	.983
80. I feel being victimized in operating room	419.38	3825.653	.496	.983
81. I feel welcomed in OR sessions	418.94	3837.324	.794	.983
82. The staff in operating theatre is friendly and supportive	418.96	3836.291	.795	.983
83. I feel myself as part of the team when I enter the theatre	419.23	3760.249	.943	.982
84. Within busy routines of operating room, I can self-regulate my learning	420.18	3905.063	-.038	.983
85. Despite non-supportive circumstances, I am able to significantly learn during the OR session	419.25	3759.091	.951	.982
86. In OR setting, it is important to plan my learning on my own	420.17	3905.527	-.041	.983
87. My motivation level is high during OR sessions	420.18	3905.184	-.038	.983

88. My enthusiasm controls my learning in OR setting	420.17	3905.561	-.041	.983
89. My OR learning is proportional to my interest in OR.	418.93	3849.188	.813	.983
90. My self-confidence affects my overall learning in the operating room	419.25	3759.207	.950	.982
91. I feel confident and it positively affects my academic performance in OR	419.28	3756.029	.936	.982
92. Non-judgmental teaching style improves my confidence	418.96	3836.393	.797	.983
93. My overconfidence may affect negatively in learning process	419.05	3807.940	.863	.983
94. I am well-prepared by watching procedure videos and reading material prior to having OR lessons	419.03	3808.793	.859	.983
95. My prior knowledge affects my overall learning in OR	419.27	3756.560	.932	.982
96. My prior skills affect my overall learning in OR	419.28	3756.026	.936	.982
97. I am adequately receptive for learning within OR environment	419.25	3759.006	.951	.982
98. My OR learning is proportional to my receptiveness for learning	418.96	3836.186	.796	.983
99. I focus on repetition of surgical skills in simulation lab and OR	420.16	3905.823	-.043	.983
100. My focus on repetition of skills improves quality of learning in simulation lab and OR	419.23	3760.151	.944	.982

Appendix 2

Surgical Operating Room Educational Experience Measure for students—SOREEMST



Name:		Age/ Sex:	
Year of Education		Institution	
Date			

Questionnaire Items (50)	Strongly Disagree	Partially Disagree	Neutral	Agree	Strongly Agree
1. My teaching and learning in operating room are well-planned and organized	①	②	③	④	⑤
2. I am on my own for my learning within operating room	①	②	③	④	⑤
3. Content selection for OR sessions is done in coordination with students at my institution	①	②	③	④	⑤
4. The content taught in OR sessions are relevant	①	②	③	④	⑤
5. The OR learning sessions contain right mix of elective surgical cases	①	②	③	④	⑤
6. I also get opportunity to experience emergency cases in operating room apart from elective cases	①	②	③	④	⑤
7. Lessons are taken in preoperative area to teach preoperative care of patient	①	②	③	④	⑤
8. My teachers provide a meaningful commentary while performing a surgical procedure	①	②	③	④	⑤
9. Lessons are taught in postoperative area to teach postoperative care	①	②	③	④	⑤
10. My teacher discusses the theoretical background of the surgery in the post op class to strengthen my concepts	①	②	③	④	⑤
11. My teachers conduct follow-up classes after the surgical procedure to clarify my concepts and queries	①	②	③	④	⑤
12. Number of sessions that I undergo in OR are optimal for my required level of learning	①	②	③	④	⑤
13. The lessons in operating room address my practical skills	①	②	③	④	⑤
14. My OR lessons are exam-oriented	①	②	③	④	⑤
15. I get a constructive feedback about my OR learning performance	①	②	③	④	⑤
16. My teachers provide learning objectives of the planned lesson prior to its delivery.	①	②	③	④	⑤
17. The learning objectives provided to me about the OR session are clear and understandable.	①	②	③	④	⑤
18. The learning objectives of the OR sessions are realistic and feasible	①	②	③	④	⑤
19. My OR learning objectives conform to available provisions at my institution	①	②	③	④	⑤
20. Lessons of simulation lab and the OR activities are synchronized to logically enhance my learning	①	②	③	④	⑤
21. The lessons in operating room fit with my existing understanding about the topics being taught	①	②	③	④	⑤
22. My class size in OR is optimal for my learning	①	②	③	④	⑤

23. My teacher is quite enthusiastic about my learning in OR	①	②	③	④	⑤
24. My teacher is quite helpful for me in OR sessions	①	②	③	④	⑤
25. In OR setting I am welcomed for learning	①	②	③	④	⑤
26. I have trouble asking questions or sharing my views in OR	①	②	③	④	⑤
27. My teacher is quite competent in teaching OR lessons	①	②	③	④	⑤
28. My teacher adapts different learning styles to meet the needs of lesson	①	②	③	④	⑤
29. My teacher is adequately prepared for my OR lessons	①	②	③	④	⑤
30. My teachers conduct orientation session within OR prior to starting lessons	①	②	③	④	⑤
31. My institution is keen to facilitate us in terms of infrastructure and administrative issues that we face while learning in OR	①	②	③	④	⑤
32. Our operating rooms are well equipped with gadgets to aid our learning	①	②	③	④	⑤
33. My lessons within simulation and skill labs align well with my teaching in OR	①	②	③	④	⑤
34. LED screens, microphones and additional measures have been provided to improve our visualization of the surgical procedure	①	②	③	④	⑤
35. Our institution has special arrangements to improve visualization of operative procedures for the students	①	②	③	④	⑤
36. OR environment is quite friendly	①	②	③	④	⑤
37. Neither me or my friend feel intimidated by any staff member in OR setting	①	②	③	④	⑤
38. I am discriminated in OR sessions because of my race.	①	②	③	④	⑤
39. I am discriminated in OR sessions because of my sex	①	②	③	④	⑤
40. I am discriminated in OR setting based on my religion	①	②	③	④	⑤
41. I can question to my teachers freely	①	②	③	④	⑤
42. The staff in operating theatre is friendly and supportive	①	②	③	④	⑤
43. Despite non-supportive circumstances, I am able to significantly learn during the OR session	①	②	③	④	⑤
44. My OR learning is proportional to my interest in OR	①	②	③	④	⑤
45. I feel confident and it positively affects my academic performance in OR	①	②	③	④	⑤
46. I am well-prepared by watching procedure videos and reading material prior to having OR lessons	①	②	③	④	⑤
47. My prior knowledge affects my overall learning in OR	①	②	③	④	⑤
48. My prior skills affect my overall learning in OR	①	②	③	④	⑤
49. My OR learning is proportional to my receptiveness for learning	①	②	③	④	⑤
50. My focus on repetition of skills improves quality of learning in simulation lab and OR	①	②	③	④	⑤

Key Performance Indicators Of Anesthetic Practice: A Clinical Audit

Aamir Bashir, Imran Aslam, Aamir Waseem, Itrat Hussain Kazmi, Muhammad Mubeen

IMPORTANCE Anesthesia is one of the essential requirement before most of surgical procedure. This perioperative medicine practice require skill, training and implementation of standards. Various tools have been used for monitoring of clinical practice standards. These practice standards and performance indicators could be either from pre-anesthesia optimization, perioperative management, or post-operative outcome. This clinical audit was carried out at a tertiary care teaching hospital. Three key performance indicators were selected including incidence of 1) postoperative nausea & vomiting, 2) post-operative pain and 3) hypothermia. This audit highlighted requirement of improvement in practice for optimum pain management in general surgery and orthopedic cases as well as adequate management of hypothermia in elderly patients.

KEY WORDS Key Performance Indicators; KPI; Anesthesia; Post-operative Care

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Clinical Audit

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Anesthetic practice and protocols have been much improved in recent times. Safe delivery of anesthesia, early recovery and prevention of complications are desired in clinical setting.¹ This can be carried out by clinical training, monitoring of the practice standards and improvement where required. Multiple key performance indicators have been used in anesthetic practice including incidence of post-operative nausea & vomiting, post-operative pain, incidence of hypothermia and many others.² Enhanced recovery from anesthesia and surgery has been implicated as an important indicator for valuation of clinical practice. Above mentioned indicators are important components of enhanced recovery program. Their results can be helpful in implementation of enhanced recovery program in clinical practice.³

OBJECTIVES

To evaluate the outcome of different key performance indicators of anesthesia in surgical patients.

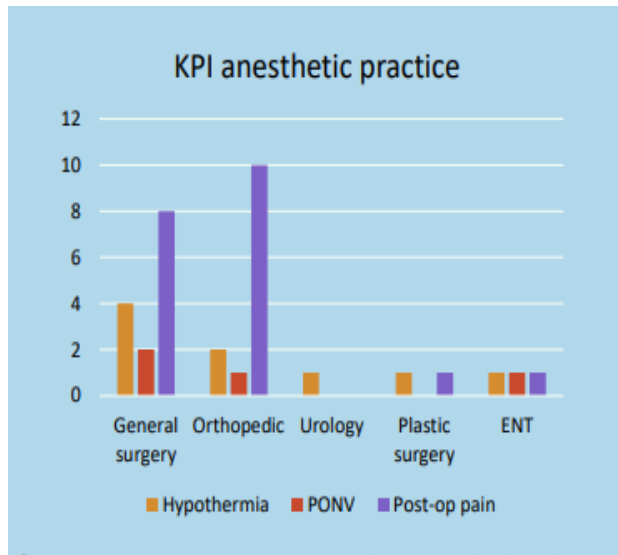
METHODS

This clinical audit was carried out in recovery room of the operation theatre at Shalamar Hospital Lahore, Pakistan. Three indicators were selected keeping in view their importance in patient care and management. These

included 1) incidence of post-operative nausea & vomiting, 2) post-operative pain and 3) incidence of hypothermia. Data were collected from the files of 100 surgical patients in the month of November 2020 in the recovery room with the help of recovery staff and documented in prescribed Performa.

RESULTS

A total of 100 surgical patients including pediatric, adults and elderly were included in audit. Age range was about 1 years to 89 years. Overall, 85% cases were conducted under general anesthesia while 15% under spinal anesthesia. Considering gender, 48% cases were male and 52% were female. Percentages of different surgical specialties were also noted. Regarding key performance indicators results, incidence of post-operative nausea & vomiting remained less than 5% in all types of surgeries. Considering post-operative pain, around 10% of the patients of orthopedic surgery experienced moderate to severe pain and about 8% of general surgical patients experienced moderate to severe pain, however, patients suffering pain from ENT and plastic surgery remained around 1% while patients of urology surgery were pain free. Regarding hypothermia, it remained less than 5% overall where general surgical patients suffered more hypothermia as compared to orthopedic, urology, ENT or plastic surgery. Also, hypothermia was noted more in patients of advanced age.



Graph 1: Key performance indicators of anesthesia practice

DISCUSSION

Clinical practice cannot be improved unless we can find areas of improvement. Completing an audit is only the beginning. While it can be relatively simple to perform an initial audit, taking the next step and improving care quality is much harder and labor intensive. NICE Guidelines, Royal College or other professional societies in form guidelines, or the findings of various confidential enquiries provide a chance to re-examine our existing practice and to ensure auditing leading to quality improvement projects.⁴ Audit provides an evidence to design and contemplate future quality assurance projects. The sources of such evidence and data are from randomized controlled trials, smaller non-randomized studies or even expert opinion and guidance from bodies such as NICE, as described above. Audit provides an evidence that we have an issue and we need to work on them. Audit defines the gaps for quality improvement projects.⁵ Generally, simply exhorting people to 'do better' does not work at enhancing quality. Introduction of process facilities and is more productive than trying to change the minds. Designing and

implementing such programs facilitates the process of improvement. This is a continuous process of managing, survey, implementing and re-examining.^{6,7} Different bench marks have been decided for these quality indicators. For example, generally accepted bench mark for post-operative nausea & vomiting is that it should be less than 30%, our results remained quite well. As for example, Paul and colleagues found incidence of postoperative nausea and vomiting up to 11% in low risk patients while up to 27% in high risk patients.⁸ With reference to incidence of postoperative pain, ideally should be no pain, so we can say that we need to improve our practice especially in general surgical and orthopedic surgical procedures. Joshi and colleagues have previously highlighted the importance of pain control as inadequate pain management has consequences for the health and care resources.⁹ Considering postoperative hypothermia, its usually accepted bench mark is less than 10%, we remained well, but still it should be improved especially in elderly patients. Vural and colleagues found incidence of hypothermia around 11%. They concluded that adequate measures of temperature control could help in prevention of inadvertent hypothermia.¹⁰

The improvement in practice need continues monitoring, quality improvement meetings and training of staff. This is followed by regular audits to find the areas of improvement and the results of interventions done and to find further areas of improvement. Our audit has certain limitations as it was a limited sample size. We can have larger sample size to get more authentic results to implement changes. However, implementing adequate management measures can help to reduce the incidence of above mentioned clinical problems and it can lead to improved patient outcome helping also in implementing enhanced recovery from anesthesia and surgery program.

CONCLUSION

This audit highlighted requirement of improvement in practice for optimum pain management in general surgery and orthopedic cases as well as adequate prevention and management of hypothermia in elderly patients.

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Impact of Complacency and Lack of Assertiveness on Interprofessional Surgical & Medical Teams in Health and Social Care

Hira Ashraf, Talha Asad

IMPORTANCE Health care system has high pressure job settings where members from different disciplines interplay. Interprofessional teams in this system have a dynamic environment where doctors, nurses, medical staff and social workers come together to make decisions of prime importance for patients' health and safety. Traditionally interprofessional surgical teams have prevalence of hierarchy. Team members from different professional background are not given equal liberty to raise their concerns. Reluctance and lack of role clarity results in loss of critical thinking and active engagement in complex environment of operating room. Coordination and cooperation between surgical team members are essential components for better service delivery. Lack of job clarity, job satisfaction, lack of assertiveness and dominance of doctors and nurses are some of the important factors that should be dealt with to improve future practice of social workers in health department. Their identity building will require confidence, persistence and assertiveness.

KEY WORDS Complacency; Surgical Teams; Interprofessional Teams; Social Care;

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Review Article

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Medical social work emerged initially in Britain and Ireland, where lady almoners were appointed. Gradually this profession was guided by biopsychosocial concept of health and it expanded to clinics, NGOs, disease control programs and community. British model of health social work is adapted globally¹. However, empowerment of this profession varies according to sociopolitical, economic and health status of the country. In most developed countries it is recognized and established as a profession, with health social workers working as an independent body having a defined set of authority, status, and distinct role in interprofessional teams. However, in developing countries there is dire need to strengthen health care system. There is lack of skilled training and motivation in health workers of developing countries. In addition, migration to developed countries, where better salaries and training opportunities are offered to health workers, is negatively impacting health care system of developing countries². Strengthening health social work in developing countries requires motivation, financial incentives and career development.

Social work has been part of health care for over a hundred years³. Earlier it was known as Medical Social Work, however, since the shift of health model from biomedical to psychosocial the term Health Social work is coined. Formerly diseases were considered to be caused by germs and cured only by doctors¹. Social work has incorporated biopsychosocial model and holistic approach in the health care system. Social work has combined the role of social, cultural

and economic factors in health, along with the effect of disease and illness on personal and family coping, and the significance of interprofessional collaboration on health problems. Health social workers have incorporated the concept of social support and follow-up care in the field of medicine. It has brought in light the significance of care alongside cure in health care system⁴.

In health care system there is significant overlap of knowledge between members from different disciplines in interprofessional teams. However, medical and nursing staff dominate the field and hold the highest rank⁵. In interprofessional surgical teams', members from different disciplines obediently comply with decisions made by leading surgeons. Working in this complex and dynamic environment is challenging for social workers. Hence, in this apparently autonomous field their decision-making policies are dominated by medical staff. Health social workers face obstacles in negotiating decisions that fall under their domain. Expectations of social workers regarding their roles in team are not met. Jobs that legitimately fall under their domain are not handed over by authoritative team members⁶. In these challenging circumstances maintaining territorial boundaries is essential to provide best care to the patients. Medical and surgical teams play a significant role in decision making of patients that fall under their domain. Within a hospital setting decisions made by leading doctors overshadow the participation required from other team members. Distinctive participation of team members is essential for interprofessional collaboration to deliver best

possible care to the patients. Lack of authority in treatment decisions gradually leads to lack of role clarity, dissatisfaction, low performance and less progression in working field. Complacency and assertiveness are the behaviors required to counter the factors which impair effective participation by members of interprofessional teams. Organizations and team leaders should aim towards training complacent and assertive followers, as their active engagement and critical thinking can shape the leaders and organizations.

COMPLACENCY

Social workers in health care system work under influence and authority of medical and nursing staff. Expression of knowledge and personal identity is this complex contestable environment has always threatened professional identity of social workers. Roach Anleu concluded that social workers in hospitals have limited authority in patient's treatment decision and they work under dominance of medical profession ⁷.

Operating room teams have diverse educational background. Traditionally interprofessional team work has been neglected which results in prevalence of hierarchy in operating rooms. Team members feel reluctant to raise their concerns and question decisions of members considered higher up in operating room hierarchy ⁸. Prevalence of hierarchy results in lack of role clarity among operating room team members. In addition, team members lower in the hierarchy have a more significant role to play in post-operative care of patients. In US 90% post-operative cases of hip fracture are discharged to post-acute care for rehabilitation. Goal of this rehabilitation process is medical and functional recovery prior to safe return to community ⁹. This goal is only achievable with collaboration of patient, doctors, medical staff and health social workers. Similarly, post-traumatic stress disorder usually persists in patients following initial trauma and requires early intervention and support by social workers ¹⁰. Health social workers have certain significant roles in pre stage and post stage of rehabilitation of post-operative cases including preparing patient for post-operative outcomes, support to patient and family, psychosocial and grief counseling, case management, referrals, counselling in cases of terminal illness and disability, compliance to treatment, assessment and early intervention in case of suicidal thoughts and planning follow-up. Interprofessional team meetings, detailed case discussions, critical thinking and active engagement of all team members is required for effective recovery and rehabilitation of patients.

Role clarity in authority on treatment method decision, extent of treatment plan that lies within domain, expectations from team members and evaluation of work are essential aspects that need to be well understood by members of all disciplines in interprofessional teams. Role clarity is required for independent decision making, open

discussion on concerns, confident presentation of views from different disciplines, satisfaction with job, supervision and interprofessional relations and well coordination in team work ⁶. All these factors play a key role in delivery of best possible care to the patient by multidisciplinary teams. Job clarity is a significant concern due to status issues, competition, overlapping role in treatment, opposition of views by authoritative team members and resultant hindrance in flow of information in interprofessional teams. Job clarity is linked with dedication, advancement and satisfaction in job ¹¹. Job satisfaction is associated with a number of components such as persistence, tolerance, confident expression of opinion, effective resolution of conflicts, assertiveness, backing off when required and knowing how to deal with authoritative strategies. Job clarity and job satisfaction are directly associated with patient benefit. With well-coordinated team work patients are less likely to receive conflicting statements from the team members ⁶. Job satisfaction is directly linked with better service delivery to the patient. Authority struggle and conflicts within teams only compromises patient safety, treatment and care.

Social workers lack clarity about their roles in interprofessional teams. This lack of clarity gives rise to several conflicts such as stress associated with lack of awareness about their domain of expertise and their authority in treatment decision. They lack the insight of expectations held from them by the patients and team members. These stresses should be dealt with in order to survive and grow professionally. French and Caplan concluded that lack of role clarity results in miscommunication and distrustful relationship in interprofessional teams ¹². Flow of essential information to concerned member of the team can be compromised with lack in role clarity.

Knowledge of social workers is gained from allied fields. Their contribution is neither understood nor valued by dominating clinicians in health care system ¹³. These leading professionals in interprofessional teams tend to aggregate the patients in their own domain. In addition, they also dictate and decide the division of patients in different professional groups. Social workers view of psychopathology takes social, cultural, psychological, spiritual and ecological factors into consideration while treating a patient ³. While doctors medically view psychological, biological or intrapsychic factors as causes of psychopathology. This discrepancy between social workers and doctors medical view of psychopathology can lead to imposition of opinion of the dominant profession ¹⁴.

Job clarity is found to be associated with gender. Female health social care workers are more aware of their roles and domain. This may be associated with male dominance in health care system, with males generally perceived to have higher authority and status as medical staff members ⁶. This poses females to situations where they need to be more aware of their authority and expertise. Hence, males are less aware of their roles.

Job satisfaction is also found to be associated with number of practicing years. This may be associated with continuation of job by the satisfied group of people. Less satisfied health social workers are seen to drop out over the years due to dissatisfaction and lack of role clarity. A social worker is able to act effectively in interprofessional teams after long term practice in different situations, adapting strategies that can best benefit the delivery of their roles in the team. Satisfaction is attained in this challenging profession with a demanding role after years of molding and adaption of behaviors that work in best interest of one's own self⁶. Lack of role clarity leads to high stress level, low performance, lack of interest and less progression in the working field¹⁵. Lack of clarity is a key factor in feeling helpless, anxiety, dissatisfaction, lack of adjustment to requirements and failure in social workers. It eventually results in burnout irrespective of the job settings. A study on large sample of social workers in mental health, child welfare and family agencies concluded that job clarity is a significant predictor of job satisfaction¹¹. Confidence is an essential behavioral trait required at work place to develop claims to expertise by all members of interprofessional teams. Equal participation of members in teams is required for flow of information and division of jobs in respective domains in order to provide best possible care to the patients.

LACK OF ASSERTIVENESS

Assertiveness is an essential behavior component in health care system. It enables individuals to express their ideas, feelings, concerns and rights, without denying the rights of others¹⁶. It is a vital skill for maintaining successful interprofessional communication. It can be general or situation specific⁶. Assertiveness at work place varies with situations, receptive or opposing behavior of team members, job settings and consequences on interprofessional relations and behaviors.

Assertiveness is different from aggressive, passive or submissive behaviors¹⁷. All of these behaviors are associated with violation and ignorance of others rights. These negative behaviors ultimately result in disappointment, frustration, stress and burnout¹⁶. However, assertiveness is the expression of one's own rights without denying the rights of others. It is required for maintaining emotional, physical and mental well-being in stressful working environments such as health care system¹⁸. It is essential for maintaining positive working environment in order to express concerns regarding patient's health and safety to people in authority.

Health and social care workers are advocates of patients and assertiveness is required to put forward concerns regarding patient health¹⁹. Miscommunication or lack of communication can affect patient safety and is a major factor to cause adverse incidents. Health and social care workers need to maintain effective communication with patients, their families, as well as the team members. Hence, effective

communication skills are required to advocate patients and raise concerns when their safety is compromised²⁰.

In complex environment of operating rooms effective exchange of information is required between team members for incident prevention and incident recovery. Without effective communication the interdependent goal of effective and safe surgical intervention is not coordinated. Communication failures are common in operating rooms and these failures are seen more frequently between instead within professions. Surgical cases are seen to be affected due to these failures in 90% of cases⁸. Standardized communication, assertiveness and education can facilitate communication in operating rooms.

Efficacy of operating room team members depends on leadership of the surgeons. Surgeons are required to be socially capable of managing their team members. However, the success of a team depends not only on the leader but also on its members lower in hierarchy. Assertiveness of team members is identified as a significant behavior to make a team effective and safer²¹. In operating room team of surgeons, anesthetists, nurses, operating department practitioners and theatre runners interplay their roles to smoothly run this complex environment. Assertive team members exert greater effort to attain the team goal of patient safety and well-being by challenging the decisions of team leaders and putting forward alternatives as solution. Their critical thinking and active engagement are also seen to directly influence job satisfaction and higher performance output. Organizations and leaders should aim towards training assertive followers, as they can shape leaders and organizations. Assertive followers should also be encouraged in theatre environment due to high workload. During a critical point of procedure surgeons become task-focused and are less aware of their surrounding situation, it is role of the supporting staff to identify the situational problems and notify surgeons²¹. Flattening of hierarchy can train assertive followers and empowered followers have greater role clarity. However, assertiveness can only be encouraged if team leaders are open to criticism.

In health care system team members are usually not seen to be supportive of assertive communication in interprofessional dealings²². It leads to adaptation of negotiating behavior in health and social care workers. Instead of expressing their own views and concerns regarding patient safety, they are seen to agree with and accept decisions of higher authorities²³. This eventually leads to unsafe practice and compromise on patient health and safety²⁴.

Assertiveness is strongly co-related with role clarity within a team. It is also associated with job satisfaction⁶. In health care system a multidisciplinary team includes clinicians, therapists, nurses, nurse aids and social workers. Co-ordination and co-operation between these team members is crucial for service delivery to the patients. Diagnosis, management and follow-up care requires a well-coordinated teamwork. However, stresses in health care

systems pose several challenges in maintaining a healthy interprofessional team work.

Social workers can clarify their domain by negotiating their views and methods to authoritative team members and resisting their attempts to define social workers domain of expertise. Assertive skills are significant tools for social workers through which they can define their expertise and domain. Assertiveness enables them to define their domain to team members through problem solving approach over issues related to job functions. Assertive team members have better role clarity⁶. They are better equipped to deal with conflicts in interprofessional teams. They are able to advocate views and concerns regarding patient's safety and propose treatment decisions within their professional domain and expertise.

Assertiveness is the ability to reject opinions of others, express one's own interests, raise concerns regarding patient's safety, and express positive and negative feelings without anxiety¹⁶. Assertiveness enables social workers to actively defend their domain and define their territorial boundaries in interprofessional teams. It gives them the ability to put forward their concerns, respect others opinions, sort interprofessional conflicts, maintain harmonious relation with fellow team members and execute their work in best interest of the patients.

However, it is seen that social workers markedly lack assertiveness in work place. Hence, they fail to resolve conflicts in interprofessional teams²⁵. Lack of assertiveness is associated with self-recrimination and low self-esteem. It leads to failure of developing equal relationship with other team members. Health and social care workers lacking assertiveness are subjected to violation at work place²⁶. This inability to express views and concerns leads to compromise on patient's safety. Assertiveness is also associated with undue anxiety in certain situations due to fear of opposition or rejection by fellow team members. Social workers agree to work at lower wages in poor conditions without clarity about their roles. They lack the ability to understand and defend their domains. This eventually leads to compromise on patient safety⁶.

Assertiveness in continuously defining territorial boundaries and domain of expertise over years is associated with role clarity and job satisfaction. Social workers can present their management plan as advocates of patients through assertive skills and defend opposition by other disciplines in

interprofessional teams. Assertive skills are also essential in resolving inter-staff conflicts, respecting each other's territorial boundaries and maintaining a well-coordinated team work. A clear understanding of organizational policies and job description of each team member is essential for presenting a united team work to provide care in the best interest of the patient. Sundel and Sundel proposed that health social workers with better assertive skills are more likely to sort and cope with interprofessional conflicts with supervisors, team members, colleagues and patients⁶.

RECOMMENDATIONS

Communication skill training should be incorporated in training of health and social care workers. These training sessions can be delivered in form of lectures, demonstration, role play, group discussions or e-learning by faculty or qualified trainee. Assertiveness is essential for interacting with patients, their families and other interprofessional team members. To reduce adverse outcomes and increase patient safety assertive communication skill training should be incorporated in teaching.

CONCLUSION

Health care system has high pressure job settings where members from different disciplines interplay. Interprofessional teams in this system have a dynamic environment where doctors, nurses, medical staff and social workers come together to make decisions of prime importance for patients' health and safety. Strengthening the role of each member of these interprofessional teams requires improvement in communication skills. Improvement in communication skills can develop assertiveness, complacency, equal team relationship, satisfaction, self-esteem and reduce stress. High quality care cannot be provided to the patients unless issues of demotivated staff are addressed. Behaviors such as complacency and assertiveness are required to be incorporated in the training of health and social care workers to maintain territorial boundaries in decision making.

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Perioperative Management Of Blood Pressure In Pheochromocytoma

Asif Hussain, Jawaria Avais, Usman Mahmood, Muhammad Tariq Rahim, Shahid Hameed Bhatti, Wardah Nasir

IMPORTANCE: Pheochromocytoma (& paraganglioma) are rare neuroendocrine tumors with variable clinical manifestations, familial and genetic components, complex management, significant comorbidity, and mortality. Blood pressure and cardiac complications are the most important one which needs particular attention before operating on such cases. Adequate perioperative management of blood pressure, blood volume, and other associated cardiovascular issues can reduce mortality and morbidities. A multidisciplinary team approach involving endocrinologists interested in managing such cases and the endocrine surgical team experienced in operating such cases is vital.

This review will focus mainly on managing blood pressure in the perioperative period, various pharmacological options, and clinically relevant pros & cons of each therapy based on the available evidence from the literature.

KEYWORDS: Pheochromocytoma, Paraganglioma, Perioperative hypertension in Pheochromocytoma

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Review Article

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A rare neuroendocrine tumor of chromaffin cells in the adrenal medulla (pheochromocytoma) counts 80-85% of the cases, or paravertebral sympathetic chain (paraganglioma) is 15-20% of the cases. The annual incidence in the European population is 0.2 per 100,000 per year. The traditional rule of 10% (which states that 10% are malignant, 10% are bilateral, 10% are extra-adrenal, 10% are normotensive and 10% are familial) is not always true as 29% are malignant, 24 % are extra-adrenal and 32% are familial^{1,2}.

Symptoms: Classic manifestations are recurrent or chronic sympathetic over activity (Hypertension, weight loss, sweating, palpitations) and elevated catecholamines (CAs). Hypertension is present in around 90 % but maybe paroxysmal in 30%-50% of these cases. Vasoconstriction-related bowel ischemia can cause abdominal pain. Papilledema can cause visual symptoms. Almost one-third to one-half of patients are diagnosed incidentally on abdominal imaging.

DIAGNOSIS

Biochemical testing: It needs evidence of both excessive release of catecholamines (Cas) and anatomical localization of the CA secreting tumor. Biochemical tests include plasma CAs including Epinephrine (E), Norepinephrine (NE), Dopamine (DA), or their intermediate metabolites including metanephrine (MN) or normetanephrine (NMN),

and terminal metabolites such as vanillylmandelic acid (VMA). Plasma levels of free metanephrine (MN) have a sensitivity of 97% and specificity of 93% and are the most reliable tests for the biochemical diagnosis of pheochromocytoma³.

Imaging studies: Radiological tests needed to locate the PPGL includes CT chest/abdomen and pelvis as a first choice. MRI is preferred in those with contrast allergy, head and neck tumor, or those where radiation risk is unacceptable such as the reproductive age group. MRI is also superior for paraganglioma. Nuclear scans such as MIBG scintigraphy (I-Metaiodobenzylguanidine, a functional analog of norepinephrine which is taken up the adrenergic tissues), FDG-PET scan, and/or Somatostatin receptor imaging are used for metastatic disease or occult lesions not detectable on CT / MRI or for preoperative staging of extra-adrenal tumors⁴.

Genetic testing: It is recommended for all patients. PPGL can be part of various syndromes such as MEN2, von-Hippel-Lindau (VHL) syndrome, Succinate Dehydrogenase Enzyme mutation, and NF1. Also, one-third of the cases have germline mutation, which is mainly autosomal dominant inheritance⁵.

TREATMENT OF BLOOD PRESSURE

Surgery is the mainstay of treatment unless contraindicated. Release of excessive CAs during surgery

can cause fatal cardiovascular complications such as malignant Hypertension with end-organ damage, such as heart failure, arrhythmia, acute coronary syndrome, stroke, renal failure, etc.

Receptors and catecholamines: Alpha 1 is present on arteries, pupillary smooth muscles, and urinary sphincter. These are excitatory receptors and stimulate smooth muscle contraction, leading to vasoconstriction, pupillary dilatation, and the urinary sphincter's contraction. Beta-1

receptors are present on cardiac tissue and cause increased heart rate, myocardial contractility, and impulse conduction. Beta-2 receptors are present on bronchioles, blood vessels, the biliary system, and uterine smooth muscles. When stimulated, these receptors relax the smooth muscles in the bronchioles, blood vessels & uterus). Beta receptors on liver cells induce glycogen breakdown. Alpha 2 receptors present at pre-synaptic sympathetic nerves and have an inhibitory role in controlling sympathetic outflow [Table 1]

Sympathetic Receptors	Location	Functions	Symptoms	Antagonistic Drugs
Alpha-1	Arteriolar smooth muscles	Vasoconstriction	Hypertension	Prazosin
	Urinary sphincter	Urinary retention & prevention	Urinary retention	Terazosin
	Radial smooth muscles of pupil	of retrograde ejaculation	Mydriasis and worsening	Doxazosin
		Pupillary dilatation	of narrow angle glaucoma	Phenoxybenzamine
Alpha-2	Central sympathetic system	Inhibit sympathetic outflow	Reduced sympathetic	Phenoxybenzamine
	Sympathetic nerve endings		outflow	
Beta-1	SA & AV Node	Increase heart rate & conduction	Tachycardia	Metoprolol
	Myocardial cells	Increase force of contraction	Hypertension	Bisoprolol
	Conduction system of the heart.		Tachyarrhythmia	Atenolol Esmolol
Beta-2	Smooth muscles of bronchioles, arterioles and uterus.	Bronchodilatation	Hypotension	Propranolol
		Vasodilatation	Tocolytic affect	Nadolol
	Hepatocytes	Uterine relaxation	Hyperglycemia	Timolol
		Glycogenolysis		

Table 1: Sympathetic receptor and related antihypertensive drugs

Abbreviations: AV Node: Atrio-ventricular node, SA: Sino-atrial node. Note all beta-2 blockers are also beta-1 blockers, but selective beta-1 blockers don't block beta-2 receptors at pharmacological doses.

Dopamine causes renal vasodilation, systemic vasoconstriction, and negative inotropic effect.

NE has predominant Alpha 1 effect, hence Hypertension. Epinephrine (having more methylation has more affinity for beta receptors) at medium dose has a dominant beta impact. Therefore, hypotension and at high doses have an alpha effect too, hence Hypertension. Similarly, DA can have a variable effect on BP. So, BP depends on the type and quantity of chemicals secreted by the tumor⁶.

Perioperative BP control: Target BP is <130/80 sitting and no less than 80/45 while standing. A heart rate of 60-70 sitting and 70-80 standing. Anti-hypertensive is started early for adequate control of BP. Even asymptomatic cases should have a perioperative assessment about BP control to avoid Intra op surge. Alpha 1 blocker are the first-choice drug, whereas beta-blockers are added after adequate alpha blockade to prevent vasospasm. Other options include calcium channel blockers and CAs synthesis inhibitors which can be used/added if needed⁷.

Alpha antagonists: Common side effects include orthostatic hypotension, fluid retention, retrograde

ejaculation, and may also worsen narrow-angle glaucoma. Selective & non-selective both works well for blood pressure control. The choice depends on side effects, institutional preference, and CVS risks. Few studies showed alpha blockade is unnecessary as many other effective drugs are available, which can help avoid alpha-blockers-related side effects and minimize the time needed for alpha-blockers to optimize blood pressure.

Alpha 1 blocker such as Doxazosin, 2-8mg/day (long-acting, once a day dose can be used. Another selective alpha-1 blocker is the short-acting drug Prazosin: 0.5-1mg three times a day, max dose: 15mg/day. Terazosin is also a short-acting alpha-1 blocker with 2-10mg/day. Short-acting drugs have the advantage of no postoperative hypotension, but they may not provide a good cover during operation. Alpha 1 blocker has no crossing of BBB and can avoid many side effects such as sedation. Non-Selective Alpha-Blockers: Phenoxybenzamine can be used at a dose of 10mg twice a day (maximum dose is 1mg/kg/day). Infusion 0.5mg/kg/day 3-5 days before operation can also be used. Long-acting (cover per op period, post-op hypotension). As it can cross BBB, hence sedation is a common side effect. Alpha2

blockage causes side effects such as tachycardia, nasal congestion⁸. [Table 2].

Drug	Class	Dose	Comments
Doxazocin	Alpha-1 Blocker	2-8mg/day, OD	Long acting
Prazocin	Alpha-1 Blocker	0.5-1mg TDS, Max dose: 15mg/day	Short acting
Terazocin	Alpha-1 Blocker	2-10mg/day, OD	Long acting
Phenoxybenzamine	Alpha 1&2 blocker	10mg BD Max 1 mg/kg/day. Infusion 0.5mg/kg/day	Short acting
Amlodipine	CCA	5-10mg OD	Long acting
Nifedipine	CCA	20-120mg/day, (divided doses)	Short acting
Nicardipine	CCA	60-120mg/day	Short acting
Metyrosine	CA Synthesis Inhibitor	500 mg/day Max dose: 2gm/day	Long acting.
Nitroprusside	Vasodilator	0.5-10 mcg /kg/min infusion	Infusion. Used for hypertensive emergency only.
Phentolamine	Alpha-blocker (non-selective)	2.5-5 mg at 1mg/ min & if needed repeat every 3-5 minutes	IV Boluses or infusion. Used for hypertensive emergency only.
Mg Sulphate	Vasodilator	loading dose: 40-60mg/kg, then infusion 1-2gm/hour	Infusion. Used for hypertensive emergency only.

Table 2: Various drugs used and their dosage.

Beta-Blockers: Beta-blocker is used as add-on therapy to avoid alpha blockade-related tachycardia or CAs related cardiomyopathy, or CAs related tachycardia. One needs to be careful about the beta-blocker-related risk of hypotension, bradycardia, or cardiac arrest, especially in patients who have CAs related cardiomyopathy (CMP). B1 selective drugs such as atenolol or metoprolol can be used. B1 & Alpha 1 blocking drugs such as labetalol or carvedilol can also be used. Still, the beta effect is more potent than alpha. Hence it can't replace the regimen of alpha-blocker followed by beta-blocker⁹.

Calcium Channel Blockers (CCB): CCB is used as alternative therapy when alpha-blockers can't be used due to contraindications or add-on therapy when alpha-blockers are not enough or as monotherapy for mild Hypertension. CCB can avoid many side effects of the alpha blockade and help reduce CAs related cardiomyopathy and coronary spasm. Monotherapy may not be enough for most cases except those who have mild Hypertension or are only biochemically active. Drugs includes Amlodipine (5-10mg/day), Nifedipine 30-120 mg/day, Nicardipine 60-120 mg/day¹⁰, [Table 2].

CAs synthesis Inhibitors (Metyrosine): Metyrosine blocks Tyrosine Hydroxylase and prevents tyrosine conversion to DOPA. As it can cross BBB, hence side effects such as sedation, depression, extrapyramidal side effects due to lack of catecholamine in the brain. Also, it may not be commonly available in many countries. It's not enough when used alone but works better when combined with alpha-blockers. Dose is 500 mg/day (maximum dose is 2gm/day). It usually needs 3-5 days to kick in and reduces

50-60% of CAs. Hence it needs to be started 2-3 weeks before surgery. It is beneficial in those with metastatic disease or add-on therapy when other drugs are not enough¹¹.

CVS Evaluation: CAs related to cardiomyopathy (CMP), arrhythmia, coronary spasm, arteriosclerosis, left ventricular hypertrophy are the risks associated with excessive catecholamine exposure.

History, examination, ECG & Echocardiogram should be done to assess the cardiac functions. Arrhythmias risk can be reduced by using beta-blockers¹².

Correction of Hypovolemia: It is due to prolonged vasoconstriction. It can be managed by increasing sodium and fluid intake to avoid sudden hypotension during or after surgery. Saline infusion day before surgery and during the perioperative period is helpful. Cautions need to be exercised for those with heart failure or renal failure. Metabolic control, especially any hyperglycemia, is also essential for such cases^{9,13}.

Avoid precipitants: Norepinephrine & Epinephrine release is provoked by steroids, glucagon, vasopressin, Angiotensin II receptor blockers. Similarly, sympathomimetic drugs such as cocaine, amphetamine, phentermine, phenylethylamine should be avoided. NE Reuptake Inhibitors, including TCAs, SnRI are avoided. Avoid strenuous physical activity, alcohol, and smoking as all of these causes increased release of Cas^{9, 12, 14}.

Clinically or Biochemically silent Tumours: The clinically silent but biochemically active tumor should receive alpha

blockade or CCB preoperatively to avoid per op hypertensive issues. Biochemically silent tumors: may receive pre-op medication depends on CVS risk assessment^{8,9,15}.

Hypertensive Crisis: Precipitant factors include stress, postural change, activity, operative manipulation, drugs, & beta-blockers without alpha-blockers. It is usually defined as BP > 180/120 with or without end-organ damage [16]. Drugs needed to treat includes Sodium Nitroprusside Infusion (0.5-10 mcg /kg/min). Other options are Phentolamine boluses: 2.5-5 mg at 1mg/ min & if needed repeat every 3-5 minutes. Mg Sulphate infusion can also be used if the above does not work (loading dose: 40-60mg/kg, then infusion 1-2gm/hour). It is arteriolar and also inhibits CAs release^{13, 17}, [Table 2].

Peri-operative Hypotension: It is also expected due to intravascular hypovolemia, anaesthetics-related drop in blood pressure, the effect of the anti-hypertensive drugs used, &/or loss of catecholamines once a tumor is resected¹⁸. Additionally, any cardiac decompensation can add to hypotension. Chronic high catecholamine exposure can also cause downregulation of autonomic receptors,

making this hypotension resistant to vasopressors [19]. Initial management includes adequate IV fluid replacement, optimizing anti-hypertensive drugs being used, and, if needed using vasopressors. It's important to exclude and manage any cardiac decompensation^{12,13, 20}.

CONCLUSION

Adequate management of pheochromocytoma patients during the perioperative period is crucial, mainly focusing on control of blood pressure, cardiac complications, intravascular hypovolemia, hypertensive crisis, and postoperative hypotension. Adequate cardiovascular assessment is needed before surgery. Many drug options are available, which can be used based on the severity of Hypertension, associated comorbidities, and drug side effects. Alpha-blockers are the cornerstone of blood pressure management in such cases. Other medications such as beta-blockers, calcium channel blockers, Metyrosine, etc., are often used as add-on therapy. Perioperatively and postoperatively, a drop in blood pressure should also be managed vigilantly.

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Archives of Surgical Research | Case Report

Lipoma of Colon Presenting with Intestinal Obstruction: A Rare Entity

Muhammad Touseef Asghar, Nayab Fatima, Maira Dastgir Nousherwani

IMPORTANCE Lipomas are the most common benign tumors affecting soft tissues of the human body. Lipomas of GIT are, however, rare. When present, they are usually at the level of submucosa and only rarely involve the muscle layer or serosa. Most of the submucosal lipomas of GIT are present in the colon (65-75%), only 25% in the small intestine and occasionally in the stomach or jejunum. These lesions are usually asymptomatic and are found incidentally on autopsies. In cases when they do become symptomatic, it is when they get ulcerated. Hence, are consequently only detected when they cause intussusception and obstructive symptoms. The present case report is of a 50-year-old female who came with sudden onset of severe lower abdominal pain. She was diagnosed with possible submucosal lipoma of ascending colon with the intraluminal extension and an associated intussusception on CT abdomen with contrast. She was operated and a histopathological examination confirmed the diagnosis.

KEY WORDS: lipoma; colon; acute abdomen; intussusception; volvulus; hemicolectomy

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Case Report

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Lipomas of the gastrointestinal tract are rare and symptomatic variants even rarer.¹ They can occur at any age but most commonly present between ages 50 to 60 years in adults; while also being scarce in children. Lipomas only become symptomatic when their advancement causes occurrences like intussusception, which lead to symptoms of obstruction like pain.¹ Imaging modalities such as CT scan or MRI are usually used to confirm the diagnosis of intestinal lipoma. Of the lipomas that do occur in GIT, common site is in the large intestine but infrequently the small intestine and the stomach are also involved. They are usually single but can be multiple in number involving both large and small intestines causing multiple areas of volvulus or intussusceptions.¹

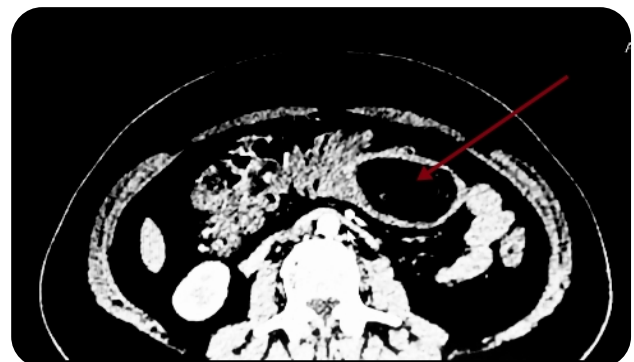
CASE REPORT:

A 50 years old female presented to the Surgical Outpatient Department of Shalamar Hospital on 12th of December 2020 with the complain of lower abdominal pain which was sudden in onset, of severe intensity, and with no history of fever, nausea, vomiting, or constipation. On examination, there was fullness in the epigastrium and right hypochondrium. However, no definite mass was palpable. There was no abdominal distention, guarding or rigidity; only mild tenderness in right hypochondrium was positive. Ultrasound abdomen was advised followed by CT abdomen with contrast before admission and routine workup for surgery was done after admission which included complete blood count (CBC including hematocrit), Serum electrolyte (Na+, K+, Ca+2, Mg+2, Phosphorus), Blood sugar random, Archives of Surgical Research

creatinine and Viral markers for Hepatitis B and C were advised. All hematological investigations were within a normal range.

Ultrasound abdomen showed an indeterminate, well defined, rounded, echogenic SOL (65*40mm) in the left lumbar region, deep to subcutaneous planes; anterior to psoas muscle. Mass was showing minimal flow on doppler ultrasonography.

CT scan abdomen with contrast showed a large polypoidal fat-containing lesion (lipoma) noted to involve the ascending colon arising from the submucosa with an intraluminal extension having a large pedunculated fatty component in the distal transverse colon measuring 51×36mm. This led to intussusception of a part of the ascending and the proximal transverse colon into the distal transverse colon with traction changes.



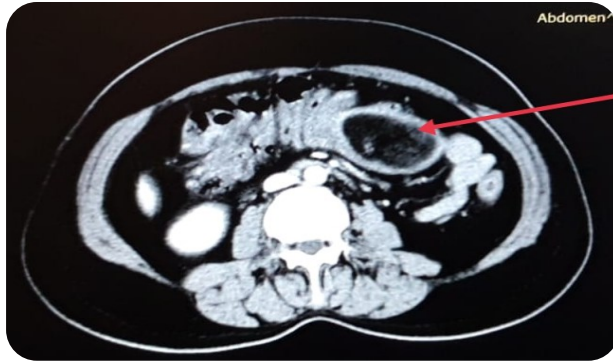


Fig 1: Triphasic CT Scan Abdomen (Arterial and Venous Phases)

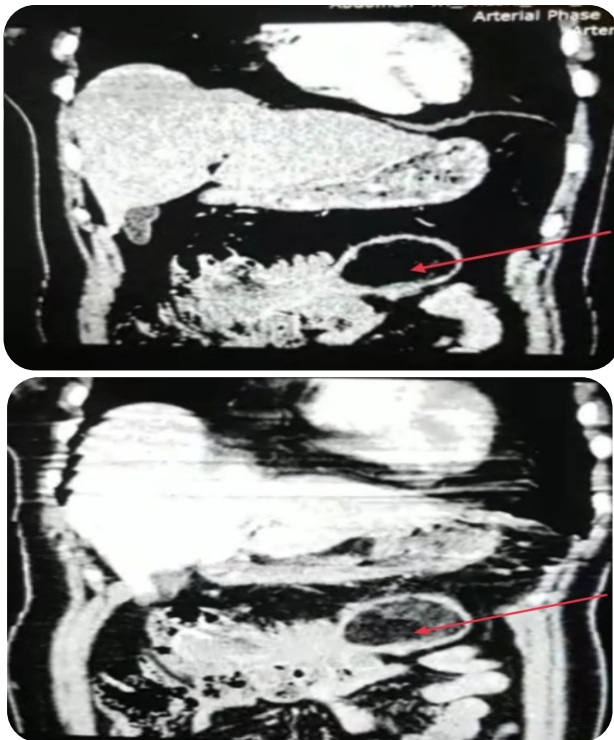


Fig 2: Triphasic CT Scan Abdomen (Arterial and Venous Phases)

She was admitted on the 16th of December 2020 and after bowel preparation was put on the list for surgical procedures of the next day, for the Right Hemicolectomy.

Operatively, there was a large mass in the hepatic flexure of the colon which was mobile and firm in consistency. Serosa was not involved. There was no associated regional lymphadenopathy, no liver metastasis, and no ascites. The rest of the GIT was found to be normal. Standard Right Hemi Colectomy was performed and a surgical specimen consisting of a segment of ascending colon with an externally palpable large polypoidal mass attached with a stalk to the cecal wall along hemicolectomyum, an appendix with attached mesoappendix and cecum was sent for histopathology. Postoperatively, the patient was kept in the High Dependency Unit for 24 hours and later in the ward. She passed flatus and stool on the fourth post-op day and

oral liquids were started on the fifth post-op day. The patient was discharged and on the follow up she was vitally stable. The wound was healthy; stitches were removed on the tenth post-op day.

The result of the tissue biopsy showed lipoma, composed of mature adipose tissue, and revealed areas of infarction and fibrous strands. The final diagnosis of Submucosal polypoid lipoma (7.8cm) with surface ulceration located in the ascending colon and projecting into the ileum was made. The rest of the examination was unremarkable.

DISCUSSION:

Colonic lipomas are rare, benign, non-epithelial tumors of mesenchymal origin. They are often solitary lesions originating from submucosal found in the proximal colon. They typically measure less than 2cm.² They are composed of mature adipose tissue, are located in large intestines; more specifically colon.¹ They are usually asymptomatic and are consequently found as an incidental finding on autopsies¹. Giant colonic lipomas greater than 4 cm present with non-specific obstructive gastrointestinal symptoms such as abdominal pain, abdominal distention, constipation, or gastrointestinal bleeding.² They become symptomatic when they lead to obstruction due to intussusceptions¹ and/or ulcerate. The incidence of colonic lipoma is 65-75%. Alaaddin et al³ described a case of a 30-year-old woman who presented with complains of worsening abdominal pain both in the upper and lower quadrants. She was diagnosed with giant colonic lipoma causing intussusception. Cartelle et al² reported a case of giant colonic lipoma presenting as intermittent colonic obstruction with hematochezia. J Surg⁴ reports a case of a 56-year-old female who presented with a large lipoma of the ascending colon. Kikuchi et al⁵ presented a case of a 43-year-old man who was diagnosed with intussusception secondary to the descending colon lipoma. The patient had presented with acute appendicitis simultaneously occurring as his primary complain. Ghanam et al⁶ presented a case of a 61-year-old male. He experienced abdominal pains and rectal prolapse. He was diagnosed with pedunculated colonic lipoma prolapsing through the anus. Feo et al⁷ presented a case of a 50-year-old man with chronic abdominal pain due to colo-colic intussusception secondary to lipoma of the left colon. Rabbet et al⁸ presented a case of colo-colic intussusception secondary to a sigmoidal lipoma, in a 40-year-old man. Chehade et al⁹ presented a case of an adult female presenting to a hospital setting with hematochezia and right lower quadrant pain. She was diagnosed with a large ileocecal submucosal lipoma through CT abdomen and colonoscopy. Hu CC et al¹⁰ presented a case of a 50 year old man who had abdominal pain and lower GI bleed diagnosed. He was subsequently diagnosed with Giant colonic lipoma arising from the ileocecal valve and causing cecal-transverse colonic intussusception.

CONCLUSION:

Although lipomas of GIT are rare, in cases of their occurrence when they show symptoms of intestinal obstruction, they usually arise from colon. As discussed above, many cases of intestinal obstruction have been reported due to underlying lipomas. Hence, they should be considered as part of differential diagnosis made when acute abdomen presents due to intussusception or intestinal obstruction. C.T scan and MRI are the mainstays for the diagnosis of this disease. Other

investigations such as barium enema and colonoscopy are also used as diagnostic tools. In the case we presented, ultrasound abdomen and C.T scan were the main investigations. As the patient presented with acute pain and suspicion of intussusception was cleared on CT scan abdomen, colonoscopy was not performed.

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Archives of Surgical Research | Case Report

Primary Hyperparathyroidism Presenting With Pancreatic Pseudocyst: An Unusual Presentation

Maira Dastgir Nousherwani, Hira Tariq, Talat Waseem

IMPORTANCE The association between hyperparathyroidism and pancreatitis has been under debate for many years. The incidence of hyperparathyroidism related pancreatitis ranges between 1.5-7%. Here, we report a case of a parathyroid adenoma related pancreatitis in a 54-year-old lady, who had a month-long history of epigastric pain. The pancreatic pseudocyst rooted from hypercalcemia occurring secondary to excess PTH secretion by pituitary adenoma. The patient underwent surgery for both the adenoma and pseudocyst followed by normalization of serum calcium and PTH levels and resolution of the symptoms.

KEY WORDS Primary Hyperparathyroidism; Pancreatic Pseudocyst; Pancreatitis

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Case Report

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Primary hyperparathyroidism (PHPT) is an endocrine disorder characterized by hypercalcemia and elevated levels of parathyroid hormone secreted by an overactive parathyroid gland.¹ A solitary pituitary adenoma accounts for PHPT in approximately 80% of the cases. Other causes include hyperplasia of multiple parathyroid glands and a rare parathyroid carcinoma.² Presentation of PHPT varies from being asymptomatic³ to the development of renal stones⁴, electrolyte imbalance, gastrointestinal disturbances and acute pancreatitis^{5,6}. Acute pancreatitis is inflammation of pancreas known to be caused by gallstones (30-60%), alcohol (15-30%), post Endoscopic Retrograde Cholangiopancreatography (ERCP) pancreatitis (5-10%), and hypertriglyceridemia (1.3-3.8%). It is very rare for PHPT to present as an acute pancreatitis since hypercalcemia itself is the cause of pancreatitis in 1.5-7% of the population⁷. Here, we report a rare case of pancreatic pseudocyst occurring secondary to parathyroid adenoma induced hypercalcemia which was subsequently confirmed on histopathology.

anterior to the pancreas, suggestive of pancreatic pseudocyst and a 21mm right renal pelvic partially obstructing calculus causing right sided hydronephrosis. Contrast enhanced CT scan was then performed confirming pancreatic pseudocyst showing a large unilocular thick-walled cyst (139×75×65 mm) anterior to pancreatic neck, body and tail with thick internal enhancing partial septations and surrounding changes of acute inflammation.

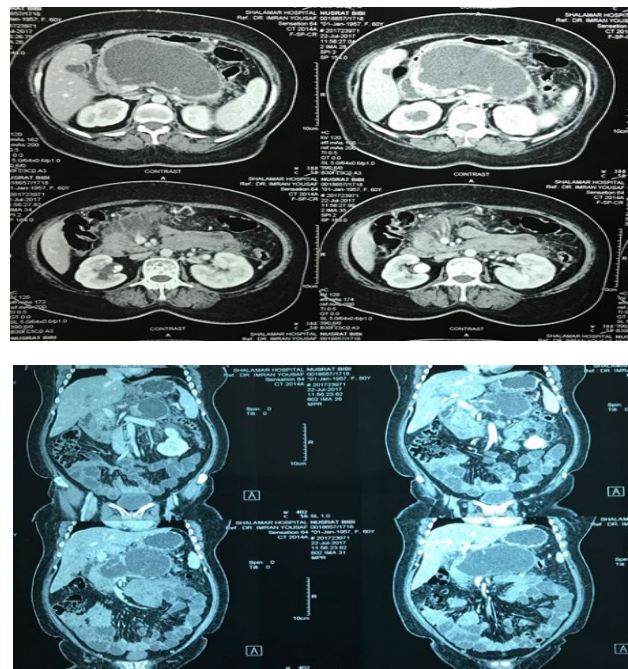


Fig 1a and b: CT scan film showing axial and coronal section.

CASE PRESENTATION

A 54-year-old Pakistani lady had acute bout of acute pancreatitis and was conservatively treated. She again had epigastric pain a month later along with fullness in epigastrium. Her initial laboratory investigations showed normal LFTs and RFTs. Her serum calcium level was raised (12.8 mg/dl), serum sodium was low (130 mmol/L). Ultrasound abdomen and pelvis showed a large thick-walled cystic lesion with internal heterogenous contents

Patient was diagnosed as a case of pancreatic pseudocyst. A thorough review of the case showed elevated calcium levels and the previous ultrasounds nullified the presence of gallstones. Her serum calcium, serum PTH and vitamin D levels were investigated and we found raised serum PTH level (541.9 pg/ml), hypercalcemia (11.8 mg/dl) and low levels of vitamin D (<7.50 nmol/l). On further evaluation, a well-defined lobulated hypo echoic lesion (15×6mm) inferior to right pole of lower lobe of thyroid gland was found on ultrasound neck representing parathyroid adenoma. Sestamibi scan further confirmed the findings. After proper hydration and resuscitative measures, patient underwent surgery of parathyroid adenoma which was found at the inferior pole. Right inferior parathyroidectomy was done and the specimen was sent for histopathology.

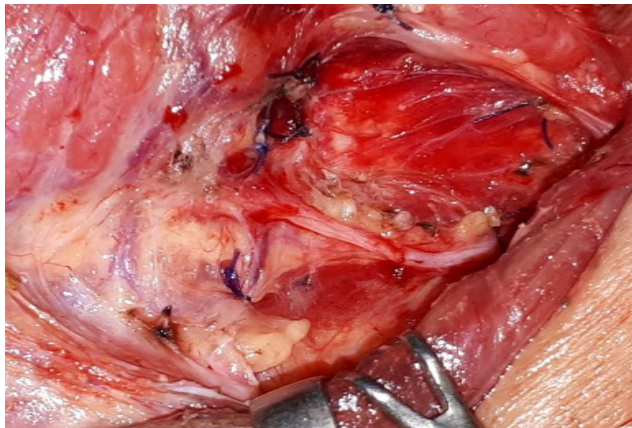
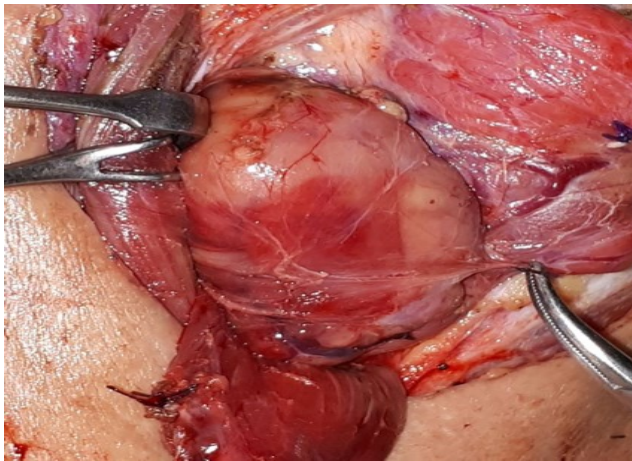


Fig 2 a & b: Gross parathyroid adenoma which was found at inferior pole (a) and recurrent laryngeal nerve is seen preserved following parathyroidectomy (b).

Post operatively patient's serum calcium and serum PTH levels dropped to 8.2 mg/dl and 2.5 pg/ml respectively. The histopathology report later confirmed a parathyroid adenoma of (2.5×1.0×0.5 cm) embedded in fibrofatty tissue. Patient's recovery period was smooth and she was discharged on 4th post-operative day with calcium supplements. Patient was readmitted for management of pancreatic pseudocyst. Imaging showed persistent

pancreatic pseudocyst (14×9.7×8 cm) for which open surgical cystogastrostomy was performed. Patient was discharged on 8th post-operative day with full recovery and remained symptom free on follow up.

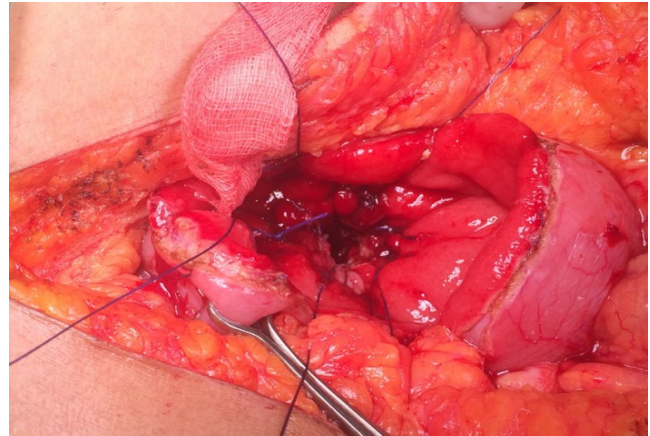


Fig 3: Open Cystogastrostomy was performed for pancreatic pseudocyst

DISCUSSION

Diagnosis of primary hyperparathyroidism (PHPT) is characterized by hypercalciuria, hypercalcemia and elevated PTH levels. The association between pancreatitis and PHPT has long been debated. There is no clear-cut pathophysiological basis for this presentation. However, it is thought that hypercalcemia induces acid lysosomal hydrolases to accelerate the conversion of trypsinogen to trypsin leading to autodigestion of pancreas.^{8 7 9} Others argue that precipitation of calcium in the pancreatic ductal system causes obstruction through calculi, inciting recurrent attacks of pancreatitis.¹⁰ It has been suggested that hypercalcemia poses 1.3 times increased risk of acquiring pancreatitis.¹¹ Pancreatitis in PHPT occurs when calcium levels exceed beyond a threshold level as proved by certain studies demonstrating increased calcium levels in patients of PHPT with pancreatitis as compared to those without pancreatitis.¹² The incidence of PHPT presenting as pancreatitis was determined in an old Mayo clinical experience from 1950-1975, which turned out to be 1.5%.¹³ Jacob stated that out of 1284 patients admitted for pancreatic disease and 101 patients admitted for PHPT, 13 patients (1%) had concomitant PHPT and pancreatitis with 8 patients having no additional cause of pancreatitis other than hypercalcemia. He also proposed that PHPT may manifest as acute pancreatitis, recurrent pancreatitis without chronic pancreatitis, chronic pancreatitis with or without calcifications or PHPT complicated by pancreatitis in post-operative period.¹⁴ Cases have now been reported where pancreatitis was the only manifestation of PHPT^{15 16} 7. The most effective treatment for PHPT is ultimately surgical removal of parathyroid gland, resulting in

normalization of serum calcium levels and resolution of the associated symptoms. Our patient had no symptoms related to hypercalcemia other than epigastric pain and vomiting which turned out to be due to pancreatic pseudocyst formation as confirmed on CT abdomen. The serum calcium levels dropped to normal after parathyroidectomy but the symptoms vanished completely only after cystogastrostomy for the pancreatic pseudocyst was done.

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CONCLUSION

Although, it is rare for PHPT to present as pancreatitis, we should never overlook its possibility. Pancreatitis is caused most commonly due to gall stones and alcohol but the workup must include the other less common causes including hypercalcemia. The disease has a good prognosis if diagnosed and managed promptly and effectively.

Management Of A Patient With Severe Supra-Glottic Oedema After Thyroid Surgery

Imran Aslam, Aamir Bashir, Aamir Waseem, Itrat Kazmi, Muhammad Mubeen

IMPORTANCE Post thyroidectomy respiratory complications are rare but life threatening conditions. They need prompt recognition and early management to avoid catastrophic situation. The reason for respiratory complications are multifactorial ranging from throat oedema to haematoma compressing the airway. This is a case of middle aged man who underwent thyroidectomy for large compressing goitre. He developed stridor after recovery from general anaesthesia and extubation. He required re-intubation, elective ventilation in intensive care unit and tracheostomy on following day due to failure of extubation trial because of severe supra-glottic oedema. Patient was successfully weaned off from mechanical ventilator support later on and discharged home safely.

KEY WORDS Supraglottic Edema, Thyroidectomy, Airway Management

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Review Article

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Post-thyroidectomy respiratory distress is a rare but life threatening condition. Its incidence varies between 0.1% to 1.4%. It may present ten minutes to a week postoperatively, most commonly occurring within 6 hours. Compartment syndrome caused by hematoma below strap muscles can hamper venous and lymphatic drainage leading to laryngopharyngeal oedema¹. Management includes immediate intubation or tracheostomy. Anesthetists face many challenges while intubating due to airway edema and multiples attempts may aggravate this edema and may lead to hypoxia. Assistance by an experienced anesthetist armed with difficult airway equipment and a surgeon skilled in tracheostomy is mandatory.

CASE PRESENTATION

A 55-year-old male patient presented at Shalamar Hospital Lahore, Pakistan for redo thyroid surgery for malignant large goitre causing tracheal compression. Routine pre-anesthesia assessment and required radiological investigations were done and he was planned for total thyroidectomy. Procedure was conducted under general anesthesia with endotracheal intubation. Surgery went uneventful and he was extubated fully awake after reversal of muscle relaxants. Immediately after extubation, patient developed inspiratory stridor with increasing amount of blood in the drain. He was intubated immediately by anaesthetic consultant for drainage of neck hematoma and then extubated. However, he developed severe respiratory distress and inspiratory stridor and decreasing oxygen

saturation, requiring re-intubation and mechanical ventilation for 24 hours in intensive care unit. On following day, after detail discussion among anesthetic consultant, intensive care unit consultant and ENT surgeon, patient was brought to operation theatre for extubation with stand by preparation for emergency tracheostomy if required. He was extubated on operating table, and remained well for 30 minutes. He again developed respiratory distress, therefore, it was decided to proceed for tracheostomy for securing airway. Tracheostomy was done under general anesthesia with laryngeal mask airway to avoid further manipulation of airway. Video-laryngoscopy revealed severe supra-glottic edema which was the reason for his inspiratory stridor. He was shifted back to intensive care unit with tracheostomy tube, remained well and was transferred to ENT ward the very next day and later on discharged to home. His family was kept well informed throughout, all events were documented in patient medical record and hospital administration was also taken into confidence. Patient had an uneventful course after tracheostomy and had no residual complications like recurrent laryngeal nerve injury.

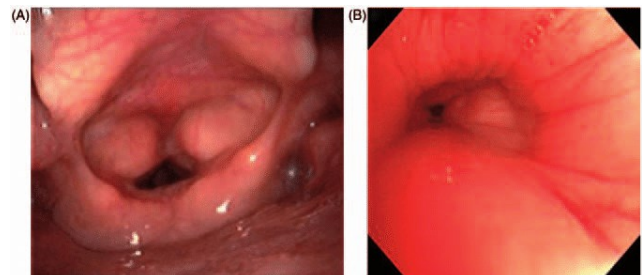


Figure 1. (A view of supra-glottic edema as seen through video-laryngoscope)

DISCUSSION

Airway complications are challenging for anesthesiologists. It requires prompt recognition and timely management to avoid serious complications including hypoxia and brain injury. Standard protocols exist for management of difficult airway both in elective and emergency cases. However, obstructed airway after thyroid surgery could be a very serious complication that at times, could only be managed with surgical airway in the form of tracheostomy. Other complications after thyroid surgery include, neck hematoma, injury to recurrent laryngeal nerve, tracheomalacia, and hypocalcemia². Supra-glottic airway edema again could be multifactorial after thyroid surgery including bleeding, airway instrumentation, in situ endotracheal tube, history of upper respiratory tract infection^{3, 4}. In our case it was probably due to redo surgery and repeated endotracheal intubation. Clinical presentation of patients could vary in case of upper airway obstruction. It can be more serious and sudden onset in pediatric population and more gradual in adult patients. However,

after surgery, it is usually early as there is surgical insult contributing to that. Reintubation with endotracheal tube and mechanical ventilation is usually required in case of severe edema but it takes time for settlement of airway edema to allow for adequate airway patency. These patients may require surgical airway in the form of tracheostomy⁵. Whatever is the case, goal remains to manage the airway to avoid immediate and long term hypoxic complications. This case was efficiently managed initially with drainage of hematoma and overnight mechanical ventilation followed by tracheostomy because of extubation failure.

CONCLUSION

Early detection and immediate intervention remains the principal goal to manage this complication. Tracheostomy is a safe procedure and gives a good alternative to delayed endotracheal extubation in post-thyroidectomy patients with respiratory distress.

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Archives of Surgical Research | Letter to the Editor

Role of Central Induction Policy (CIP) in getting General Surgery Residency in Punjab: Is it Working Fairly for the Residents?

Punjab Government introduced central induction policy to streamline the process of induction in Punjab public hospitals for doctors desiring to seek level III training. After the implementation of central induction policy (CIP), the process of induction has become somewhat transparent and automatic, but it also highlights some flaws in our health care system and attitude of Punjab government towards health professionals. The policy and selection criteria is continuously changing since the start of CIP and sometimes even at eleventh hour without any prior notification. Moreover, the government keeps announcing limited number of seats in every induction because it does not want to pay more doctors. In fact, the government has always been reluctant to recruit more doctors despite the fact that Pakistan is severely lacking in the number of doctors. Before going into further details I would like to share the current selection criteria of CIP (January induction 2021)

Let's divide it into three sections.

SECTION A: ACADEMIC PERFORMANCE

1. 40 marks of FCPS Part1: All successful candidates will get 30 marks out of 40. But if a candidate has done JCAT for MS/MD, then they will get marks according to their percentage in JCAT.
2. 20 marks of degree. It hardly makes a difference of 1 mark between a good and an average student. An average student will get approximately 13.5 to 14 marks.
3. Attempt marks. There are total 5 marks allotted for passing each professional exam in first attempt. One mark is deducted for subsequent attempts in any professional exam.
4. Distinctions marks. 2 marks for each distinction. Maximum two distinctions are accepted. Majority of the students are satisfied with this section of CIP criteria.

SECTION B: HOUSE JOB AND PARENT INSTITUTE

1. If the candidate is a public sector graduate and has done house job in parent institute then, they will get 5 marks.
2. If the candidate is public sector graduate and did house job at non parent teaching hospital they will get 2.5 marks.
3. Private graduates will get 2.5 marks of house job if they have done house job in their parent hospital or at some other government teaching hospital.

PARENT INSTITUTE MARKS

5 marks for applying in parent institute. For example, if someone graduated from Sheikh Zyed Medical College Rahim Yar Khan and applied in the same hospital, they will get 5 additional marks. Now, this candidate will be 7.5 marks ahead of all private graduates and 5 marks ahead of other government graduates. This makes a huge difference. If any three Sheikh Zaydians apply for surgery training in their parent institute, all private and other government graduates would be virtually out of competition.

SECTION C: EXPERIENCE AND RESEARCH MARKS

This is the most controversial but crucial section. Here central induction policy doesn't remain transparent anymore:

1. Five Experience marks for every 6 months in BHU and RHC may be achievable but it is a hard nut to crack to get BHU and RHC appointment. If the candidate doesn't have a strong reference then he/she will never be able to get BHU/RHC and consequently will never get seat in any hospital. The part BHU/RHC play in learning is another matter. It's nothing but just a hurdle to get residency.
2. Candidates will get research scores only if they publish their research in W category journals of HEC. W category journals are highest ranked journals and it takes an average of 14 months' time to get research published in these journals. Research demands a lot of time and hard work. How would a fresh graduate be able to write in W category journal so early? Research marks shouldn't be included in CIP.

POSSIBLE SOLUTIONS

These are some suggestions which can make induction relatively easier. Government should be working on training more specialists and should create more seats in order to overcome the deficiency of doctors.

1. Increase the number of seats: CPSP conducts FCPS part 1 exam 4 times in a year. Roughly 1500 to 2000 candidates pass the exam in each attempt. So total number of candidates become approximately 6k and

total number of seats are 1400(January and July induction combined).

2. Things go wrong at BHU/RHC level, either exclude BHU/RHC marks or everyone who passes part 1/JCAT should get equal chance to get BHU/RHC.
3. Make it optional for those who are regular MO/WMO and are eligible for deputation to apply on deputation seats. If they are on deputation seats then don't let them apply on open merit. This will make these doctors out of competition and government will not have to pay them extra.
4. Entrance exam of MS/MD (JCAT) is much more balanced, conceptual and scenario based with little or no repetition, while FCPS part 1 is mostly repetition from previous papers. CPSP should accept the worth of MS/MD. AS both FCPS and MS are level III qualifications and done under the supervision of the same supervisors. But CPSP is always reluctant to accept MS/MD. That's why people prefer FCPS from private hospitals instead of MS/MD from government hospitals. Now a day's trend is get FCPS tag regardless of the competency of supervisors. This trend should be discouraged.

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Author Guidelines

Archives of Surgical Research (ASR) ASR ISSN: 2709-684X (Print), 2709-6858 (Online) is dedicated to the local, national, and global advancement of surgical research, education and clinical practice. It aims to promote continued development in surgery through the dissemination of knowledge, ideas and good practice across surgical specialties. ASR provides readers with critically peer-reviewed, carefully selected and edited, and up-to-date publications about advancements in all surgery specialties.

The journal aims to uphold the highest standards at the cutting-edge of research, provide a focus for evidence-based medicine through the publication of review articles and special issues, and give the findings context through the publication of editorials, commentaries and letters from the surgical community. We encourage enforcement of reporting guidelines and encourage the registration of all research involving human participants in a publicly accessible research registry.

As a journal covering all surgical specialties, ASR aims to facilitate the transfer of important ideas and thought systems between and across specialties. Hence, ASR will help prevent the trend of increasing sub-specialization which leads to 'tunnel-vision' and the unfortunate concealment of important surgical advances within specific specialties.

The journal is ICMJE, DOAJ and COPE compliant and follows the guidelines and policies instituted by these bodies. Manuscripts which have been published as copyrighted material elsewhere cannot be submitted. In addition, manuscripts under review by the journal should not be resubmitted to copyrighted publications. However, by submitting a manuscript, the author(s) retain the rights to the published material. In case of publication they permit the use of their work under a CC-BY license [<http://creativecommons.org/licenses/by/4.0/>], which allows others to copy, distribute and transmit the work as well as to adapt the work but not to make commercial use of it.

I. DOWNLOADABLE DOCUMENTS AND FORMS (FROM THE JOURNAL WEBSITE)

- ASR-Letter of Undertaking (WORD FORMAT) (PDF FORMAT)
- ASR-Ethical Compliance Undertaking (WORD FORMAT) (PDF FORMAT)
- ASR-Reviewer Suggestion Form (WORD FORMAT) (PDF FORMAT)
- ASR-Consent Form of Case Reports (WORD FORMAT) (PDF FORMAT)
- ASR-Peer Reviewer Proforma (WORD FORMAT) (PDF FORMAT)
- ASR-Manuscript Submission Checklist (WORD FORMAT) (PDF FORMAT)

- ASR-Disclosure Form (WORD FORMAT) (PDF FORMAT)
- ASR-Title Page Sample (WORD FORMAT)

Authors are required to follow [ICMJE Guidelines](#) for reporting research work. Before submitting, kindly ensure that the following aspects are present. Please also review journal policies listed below in website especially about Ethical Publishing, Professional Misconduct about Scientific Reporting, Plagiarism, and Peer Review Process etc. before writing a manuscript.

For the correspondence author:

- E-mail address
- House address

Manuscript: The Manuscript files should be prepared in a manner to facilitate double blind peer review process. The title page containing author and institutional information should be submitted separately from the body of the manuscript. The manuscript should include:

- Cover Letter
- Title Page
- Article Body Text
- All figures (with relevant captions)
- All tables (including titles, description, references)
- Ensure all figure and table citations in the text match the files provided
- Supplemental files, if applicable
- Letter of Undertaking
- Ethical Compliance Undertaking
- Reviewer Suggestion Form (One Reviewer should preferably from outside Pakistan)
- Plagiarism Check Report (Optional)
- Relevant Consent Forms
- IRB Approval Letter
- Disclosure Form
- Proof of Submission of Article Processing Charges (APC) Contact Support Person

2. SUBMISSION CHECKLIST

(HIGH LEVEL OF COMPLIANCE IS REQUIRED; THE ARTICLES NOT IN COMPLIANCE WOULD BE RETURNED)

The authors must comply with these important checklist items prior to submitting their manuscript for publication as the non-compliant manuscripts would be returned without review: -

1. Manuscripts should be prepared following Uniform requirements for manuscripts submitted to Biomedical Journals as approved by the International Committee of Medical Journal Editors (www.icmje.org). The manuscript handling is done through Committee on Publication Ethics (COPE) guidelines.
2. The submission file is in Open Office, Microsoft Word, or RTF document file format. The text is single-spaced; uses a 12-point font; employs italics, rather than underlining (except with URL addresses); and all illustrations, figures, and tables are placed within the text at the appropriate points, rather than at the end.
3. All original manuscripts should have Abstract in structured format up to 350 words. It should mention Objective, Methodology, Results, Conclusions and appropriate Key Words.
4. Please strictly follow the author guidelines for writing your manuscript. Non-compliant manuscripts would be returned without review without any exception. Referencing should be done through Mendeley, Endnote or any other such referencing software. In text citation should be in form superscript. The manuscripts with improper citation would be returned without review. A sample manuscript submission file may be downloaded from this website.
5. The submission files should have a. Cover Letter describing the value of research work being submitted, b. Title Page containing the Manuscript Title, Authors, affiliations, contributions—an example of title page can be downloaded from this website, c. Article Text File having body of the main manuscript, d. Images and Tables, e. IRB approval Letter, f. Signed Letter of Undertaking, g. Consent Form for Case Report h. Article Processing Charges Submission Proof, i. Ethical Undertaking. Make sure that quality of Images is according to specifications provided in author guidelines. j. Reviewer Suggestion Form. k. Disclosure Form
6. Title page should contain title of the write-up, Name of the author/co-authors, their qualifications, designation & institutions they are affiliated with and mailing address for future correspondence, E-mail address, Phone, Cell Phone number besides a short running title of the manuscript. Don't type the name of the author/s on other pages in the manuscript except the title page to ensure the double blinding of the review process.
7. Prior to submission the manuscript should be checked for plagiarism preferably through Turnitin or some other medium and the similarity index should exceed 19%.
8. You have the proof in PDF/ JPEG form of submission of Article Processing Charges (APC).
9. All submissions are received through online portal through www.archivessr.com.
10. All randomized control trials should be prepared according to CONSORT Guidelines. All Clinical Trials submitted for publication must be registered in a registry e.g. <https://clinicaltrials.gov/>. Provide registration number.
11. Disclosure regarding source of funding and conflict of interest if any besides approval of the study from respective Ethics Committee/Institution Review Board.
12. Manuscript must be submitted along with IRB/Ethics Committee Approval letter.
13. Case Reports should be submitted along with Consent Form wherever applicable.

Corresponding Author Name _____ Sig. _____

Date _____

Manuscript Title: _____

Further Considerations:

- Manuscript has been checked for correct spelling and grammar
- All Reporting Guidelines have been met
- All references mentioned in the Reference List are cited in the text, and vice versa
- All figures and tables are cited in text
- Permission for use of copyrighted material from other sources has been obtained
- A conflict of interest statement is provided, even if the authors have no conflicting interests to declare
- All research and clinical trials are registered in a public registry

- Journal policies detailed in this guide have been reviewed
- Referees and reviewers suggested by author(s) comply with journal policies as well.

3. BEFORE INITIATING SUBMISSION PROCEDURE

Ethical Confines

The work detailed in the manuscript must be approved by the appropriate ethical committees related to the institution(s) in which it was performed, including verification that all subjects involved gave informed consent. Records of written consent must be kept by the author. Studies involving experiments with animals must follow institution guidelines for the care of animal subjects. Any identification markers of patients and volunteers – including names, initials, and hospital numbers – must NOT be used.

Declaration of Interest

All authors must disclose financial and personal relationships with individuals or organizations that could potentially introduce bias to their article. Examples of possible conflicting interests include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications or registrations, and grants or other funding. If there are no interests to declare, then please: 'Declaration of interest: none'. This summary statement will be published if the article is accepted.

Submission Declaration and Verification

Verify that the work described has not been published previously (except in the form of an abstract, a published lecture or academic thesis), that it is not being considered for publication anywhere else, that its publication is approved by all authors, and by the responsible authorities/institutions where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form without the written consent of the copyright-holder. Verify that the work is original – all manuscripts are checked for plagiarism, and if found to be plagiarized above a certain degree, the author is liable to be blacklisted.

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Inclusive language acknowledges diversity, conveys respect, is sensitive to differences, and promotes equality of opportunity. Content must not imply that one individual is superior to another on the basis of age, gender, race, ethnicity, culture, sexual orientation, disability or health condition. Authors should ensure that writing is free from bias, stereotypes, slang, and references to dominant culture. Avoid using markers of identification – including age, gender, race, ethnicity, culture, sexual orientation, disability or health when referring to subjects unless absolutely necessary. Always use the gender-neutral 'they' when referring to singular subjects unless the gender of the subject has particular influence on the research matter.

Authorship and Author Rights

Manuscripts by multiple authors must be signed by all the authors and contain details of contribution of every individual author. All authors must fulfill criteria for authorship. Authorship credit should be based on:

- Significant contribution to formation or design of study, procurement of data, or analysis and interpretation of data (Acquisition of funding, collection of data, or general supervision of the research group alone does not justify authorship)
- Drafting the article or revising it analytically
- Final approval of the version to be published
- Agreement to be responsible for all aspects of the work, and ensuring that the accuracy or integrity of any part of the work is maintained.

If a large, multi-center group has conducted the work, the group should identify the individuals who accept responsibility for the manuscript. These individuals should fully meet the criteria for authorship defined above and

complete journal-specific author and conflict of interest disclosures. When submitting a group author manuscript, the corresponding author should clearly indicate the preferred citation and should clearly identify all individual authors as well as the group name. Other members of the group should be listed in the acknowledgements. In case of suspicion of gift authorship the journal may refuse further processing of the manuscript. Manuscripts with more than *Eight* authors will not be accepted for further processing and will be rejected. An author (or employer or institution) has certain rights to reuse work that this journal will not infringe upon.

Registration of Research and Clinical Trials

All types of research studies and clinical trials involving human participants should be preferably registered prior to submission, and proof of registration must be provided. Unregistered trials and studies may not be published.

Role of Funding Source

The funding source must be disclosed along with their degree of involvement with the research matter, if any, in the design, collection, analysis or interpretation of data; in the writing of the article, or in the decision to submit the article for publication. If the funding source had no involvement, then this should be stated. Any authors found guilty of scientific misconduct will be blacklisted from future publications.

4. PREPARATION

Reviewing Process

This journal is reviewed using a *double blind* method through OJS. The following categories the journal will accept, out of guest editorials, original articles, review articles, case reports, clinical updates, short communications, book reviews, case studies, clinical notes, Continuation of Medical Education (CME), obituaries, letters, Knowledge-Attitude-Practice (KAP) studies, routine surveys and cross sectional studies. The authors are required to suggest potential referees for the review process. The journal however would have to discretion to get the article reviewed by the suggested faculty or not.

Reporting Guidelines

Compliance with the relevant reporting guideline is mandatory for submission of the following guidelines:

1. Submit a completed checklist, indicating the page numbers where compliance to the guidelines was ensured.
2. Mention in the 'Methods' section that the research is being reported in line with the relevant guideline, which should be named and cited.

Randomized Controlled Trials

All randomized controlled trials submitted for publication in Archives of Surgical Research must include a completed

Consolidated Standards of Reporting Trials (CONSORT) flow-chart and ensure that all features of the CONSORT checklist are present. A copy of the CONSORT checklist must be uploaded in supplemental material. Refer to the CONSORT statement website [here](#).

Systematic Reviews

Systematic reviews are to be reported in accordance to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) Guidelines and must include the flow-chart as a figure and the checklist as a supplemental material. Please download a PRISMA Flowchart and a PRISMA Checklist [here](#). To aid and improve the methodological quality of your article, include an AMSTAR 2 checklist as well, which is available [here](#).

Cohort, Case-control and Cross-sectional studies

Cohort, Case-control and Cross-sectional studies must be compliant with the STROCCS criteria (Strengthening the reporting of cohort studies in surgery), which is available [here](#). Cite the following paper: Agha RA, Abdall-Razak A, Crossley E, Dowlut N, Losifidis C, Mathew G, for the STROCCS Group. STROCCS 2019 Guideline: Strengthening The Reporting Of Cohort Studies in Surgery. Each study type has its own checklist which must be uploaded as supplemental material.

Diagnostic, Quality Improvement and Qualitative studies

Diagnostic studies should be reported according to the STARD statement criteria (Standards for the Reporting of Diagnostic Accuracy studies). The [flow-chart](#) should be a figure and [checklist](#) should be uploaded as supplementary material. Quality Improvement studies must comply with the Standards for Quality Improvement Reporting Excellence (SQUIRE) criteria, which is available [here](#). Qualitative studies require the Consolidated criteria for Reporting Qualitative Research (COREQ) checklist, available [here](#).

Health Economic Evaluation

Health Economic Evaluation studies should conform to the CHEERS statement, available [here](#).

Tumour Marker Prognostic Study

Tumor Marker Prognostic studies should be reported according to the REMARK criteria.

Before and After Studies

Before and After studies measure specific characteristics of a population or group of individuals after an event or intervention, compare them with those characteristics before the event or intervention, then measure the effects of the event or intervention. These studies should conform to the [STROCCS](#) statement.

Experimental Animal Studies

Animal studies must be reported according to the ARRIVE guidelines (Animals in Research: Reporting In Vivo Experiments) and must include the checklist as supplemental material. An example of a completed checklist can be found [here](#). The institutional protocol number must be included at the end of the abstract.

Qualitative Surveys

Qualitative Surveys should be reported according to the criteria detailed in the [SRQR Guidelines](#). Guidelines for synthesis of qualitative research can be found [here](#). Guidelines for interviews and focus groups are available [here](#).

Case Series

Ensure that the case series is compliant with the [PROCESS Guidelines](#) and submit a completed PROCESS checklist. State that the work has been reported in line with the PROCESS criteria and cite the following paper: Riaz A. Agha, Mimi R. Borrelli, Reem Farwana, Kiron Koshy, Alex Fowler, Dennis P. Orgill, for the PROCESS Group. The PROCESS 2018 Statement: Updating Consensus Preferred Reporting Of CasE Series in Surgery (PROCESS) Guidelines.

Article Structure

Title Page

The title page should give the title in capital letters and a shorter running title. Avoid abbreviations and formulae if possible. In addition, the title page should also include:

- Correctly spelled names of all authors, and their affiliation addresses where the actual work was done. Include the e-mail address of each author.
- Signpost clearly the correspondence author who will maintain contact at all steps of reviewing and publication, and post-publication, and answer any questions about the research. All information must be updated in case of any changes.
- Present/permanent address of every author.
- The source of funding of the research.
- The number of figures and tables, the total word count and the total number of pages of the manuscript.
- A sample Title Page has been uploaded on this page above.

Abstract

All original articles must accompany a structured abstract of up to 250-350 words. It should state aims of the study, methodology and materials used, results obtained, and conclusions reached. Specify how the sample selection of study subjects or experimental animals was carried out, specify the observational and analytical methods, and give specific data and its statistical significance, where possible. Highlight novel and significant aspects of the study. Avoid references, but if necessary, cite the author(s) and year(s). Avoid non-standard or uncommon abbreviations, but if necessary they must be defined at their first mention in the abstract. This page should constitute of the abstract and keywords only.

Keywords

Right after the abstract, provide a maximum of 6 keywords, using British spelling. Avoid general and plural terms and

multiple concepts (avoid, for example, 'and', 'of'). Only abbreviations firmly established in the field may be appropriate. These keywords will be used to aid the indexing process of the journal.

Introduction

Outline the aims of the work and provide sufficient background information, avoiding a lengthy literature review or a summary of the results.

Methodology

Provide adequate details to allow the research to be reproduced by an independent researcher. If experimental apparatus is used, the manufacturer's name and address should be included in parentheses. Methods that have previously been published should be summarized, and signposted by a reference. If quoting directly from a previously published method, use quotation marks and cite the source. Any alterations to existing methods should also be described. If a drug is used, its common name, dose and route of administration must be included. For patients, age and sex with mean age \pm standard deviation must be given where relevant to the data. Statistical methods employed for comparisons of data sets must be mentioned and any computer programs used for calculations must be specified.

Results

Results should be clear and succinct. They must be presented in the form of text, tables and illustrations. The content of the tables should not be repeated in the text; the tables should be numbered and identified and referenced to as their number. A conclusion that either supports or negates the hypothesis should be included. If the data is inconclusive, that should also be noted.

Discussions

This should emphasize present findings of the research, and the differences and similarities with prior work done in the field by other researchers. Data must not be repeated in the discussion, and lengthy citations and reviews must be avoided. Highlight the original and central aspects of the study and the conclusions that they lead to.

References

Please make sure that Mendley or some other software is used for referencing. The articles without compliance in this area would be sent back. **American Medical Association (AMA Referencing Style) should be used.** References should be typed in sequential numbers in superscript for in-text citations, and numbered sequentially in the Reference List provided at the end. Maximum references for original article should not exceed 40; they should not exceed 10 for case reports, and 80 for reviews. Authors should ensure that locally published studies are given precedence. Add DOI number of documents where it is available.

References from books should include author, title, publisher, and year of publication. Example:

Das J.C. *Power System Harmonics and Passive Filter Designs*. John Wiley & Sons, Inc; 2015.

For articles in journals, the authors, title of article, name of journal, year of publication, and an article identifier and page range (where available) must be included. See the following example:

Zhu Z, Hoffman JE. Condensed-matter physics: Catching relativistic electrons. *Nature*. 2014;513(7518):319-320.

Websites that are blogs and subject to changes by the author must be used as sparingly as possible, and when included, the author's name, the title, the name of website, date of publication, date on which the website was accessed, and a link to the website must all be included. Example:

Andrew E. After Years Of Conflict, Huge Project Could Help Scientists Decipher The Brain. IFLScience. Published June 18, 2015. Accessed October 30, 2018. <https://www.iflscience.com/brain/after-years-conflict-huge-project-could-help-scientists-decipher-brain/>

For government reports, technical reports, and scientific reports, if the report number is unavailable, then cite the report as a book. For reports it is usually not individual people that are credited as authors, but a governmental department or agency. Include the name of the agency, the title of the report, the publisher, and the year of publication. An example is as follows:

Government Accountability Office. *The Manager, the Government, and the Accounting Profession*. U.S. Government Printing Office; 1968.

References to Ph.D. dissertations, Master's theses or Bachelor theses follow the format outlined below, and must include author, title, publication detail if applicable, and year of publication.

Campbell AJ. History transformed: Sengoku Daimyo in Japanese popular media. Published online 2012.

For newspaper articles, citation must include the author, title, name of newspaper, full date and page number. The example is as follows:

Kinsley M. Paid Leave Counts as Progress. *New York Times*. May 27, 2017:SR3

Avoid referencing personal communications and unpublished observations, but they must be presented in parentheses in the text if included, and not in the list of references in the appendix. A research article may not be cited as "Under Publication" or "In Press" unless it has been accepted for publication. In such a case, the name of the journal must be given.

Acknowledgements

All contributors who do not meet the criteria for authorship should be credited in this section. It should include persons who provided technical help, writing assistance and general support or supervision. Financial and material assistance must also be credited. Persons who have added to the material but do not justify authorship can be listed as "clinical investigators", "participating investigators", "scientific advisors", "reviewers", or "data collectors."

5. FURTHER CONSIDERATIONS

World Limits

Maximum length of the original manuscript should not exceed 4000 words including title page, table and references. For review articles, the maximum word count is 3500, however considering the demand of the subject it can be up to 8000 words. Maximum number of tables & illustrations should not exceed 5. Short reports of cases, clinical experience, drug trials and their adverse effects can be submitted. Maximum length of these case reports should not exceed 800 words, 5 maximum number of references, and 2 table or illustrations. For letters, maximum words are 600 with 5 references. Extra charges will be applicable for lengthy manuscripts.

Units, Abbreviations and Formulae

Système Internationale (SI) units should be used, with the traditional equivalent in parentheses where appropriate. Avoid non-standard or uncommon abbreviations, but if necessary they must be defined at their first mention. Submit math equations as editable text. Add simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., X/Y. Variables are to be written in italics. Powers of e should be denoted by exp. Any equations that have been presented separately from the text (if referred to explicitly) must be numbered consecutively.

Artwork

Make sure to use uniform lettering and sizing of original artwork. For original illustrations, use Arial, Courier, Times New Roman, Symbol, or a font that looks similar. Number the illustrations according to their order in the text with a logical naming convention for the artwork files. Provide captions to illustrations separately. Size the illustrations close to the desired dimensions of the published version, avoiding any files that are disproportionately large. Submit each illustration as a separate file. If the electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply in the native document format without alterations or conversions. If the application used is not part of Microsoft Office, convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

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- TIFF (or JPEG): Color or gray-scale photographs (halftones); ensure a minimum of 300 dpi.
- TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings; ensure a minimum of 1000 dpi.
- TIFF (or JPEG): For combinations of bitmapped line/half-tone (color or gray-scale), ensure a minimum of 500 dpi.

Do not supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a low number

of pixels and limited set of colors. Do not supply files that are too low in resolution. Ensure that each illustration has a separate caption that is not attached to the figure. A caption should comprise of a short title and a brief description of the illustration. Avoid text in the illustrations themselves but explain the symbols and abbreviations used.

Tables

Submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or separately at the end in an appendix. Number tables consecutively according to their sequence in the text and present any table notes below the table body. Keep the use of tables to a minimum and ensure that the data included in them is not repeated in results described elsewhere in the article. Avoid using vertical rules and shading in table cells.

Supplementary Material, Research Data, and Video

Supplementary material such as applications, images, and sound clips, can be published with the article to enhance it. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). Submit this material with the manuscript and supply a concise, descriptive caption for each file. If you want share data that supports your research publication, where appropriate, interlink the data with the article. Research data refers to the results of experimentation that validate research results. To enable reproducibility and data reuse, share the software, code, models, algorithms, protocols, methods and other useful materials related to the project. If you have made your research data available in a public data repository, link the dataset directly into your article. To enable transparency, we require you to state the availability of data in your submission if your data is unavailable to access or unsuitable to post. Authors who wish to submit video files with their article are encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed, or separately at the end. Keep the file in one of the recommended file formats with a preferred maximum size of 150 MB per file, 1 GB in total.

6. AFTER COMPLETION

Proofreading

Final version of the article is sent to corresponding author for proof reading before publication. In case of changes, corrections should be sent to the editor by email.

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Letter of Undertaking

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Printed Copy

One printed copy will be sent to the correspondence author. Authors can order additional copies at the rate of cost. Payment for additional copies should be sent in with the publication charges.

Submission

All manuscripts must be Word documents.

Ombudsperson

The journal's managing Editor can be contacted by authors and other personnel in case any grievances should arise by e-mail.

7. PRIVACY POLICY

Archives of Surgical Research is committed to the protection of your personal information. The privacy policy outlined here applies only to information collected by Archives of Surgical Research through the <http://www.archivessr.com/>.

Information We Collect

We will request personal data from you to ascertain your individual user profile that may support all online activities allotted as an author, editorial member, or other connected role. Data like your name, postal address, e-mail address, telephone number and geographic locale are used as identifiers to permit access to certain content or to a secure

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This statement may be periodically updated.

If you are concerned about how your information is stored, please contact us by email at editor@archivessr.com

8. PUBLISHING ETHICS

Archives of Surgical Research follows the [COPE Core Practices](#) and [ICMJE's Recommendations to conduct, report, edit and publish Scholarly Work in Medical Journals](#), and expected an ethical behavior from authors, reviewers and editors to follow guidelines. We also follow the [Principles of Transparency](#) circulated through WAME.

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Archives of Surgical Research (ASR) defines research & publication misconduct as follows:

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- Data falsification/fabrication : intentional misrepresentation of research results
- Conflict of interest: a conflict of interest exists when a manuscript's or journal's author, editor, reviewer have a financial or personal relationship that may influence their intentions or bias.
- Redundant publication : when a published work (or substantial sections from a published work) is/are published more than once (in the same or another language) without adequate acknowledgment of the source/cross-referencing/justification (<https://publicationethics.org/category/keywords/redundant-publication>)

Any allegations of misconduct brought to the journal's attention will be dealt with immediately and seriously. ASR

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ASR utilizes Turnitin to assess all submitted manuscripts, a plagiarism percentage upwards of 24% is unacceptable and articles not in accordance with this rule will be rejected.

In cases of citation manipulation, relevant [COPE guidelines](#) will be followed.

In case of suspected data falsification/fabrication, respective authors will be asked to clarify and explain their methods. Failure to do so will result in:

1. rejection of their submitted manuscript
2. communication of the authors' misconduct will be made to relevant institutions and regulatory bodies
3. black-listing of the authors from ASR for all future submissions

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Furthermore, Archives of Surgical Research (ASR) consults [COPE guidelines](#) if a reviewer is suspected of appropriating or mismanaging author material and may refer such cases to COPE if required.

Data and reproducibility

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In case of suspected data falsification/fabrication, respective authors will be asked to clarify and explain their methods.

To Improve transparency, we encourage use of and link to international standard reporting guidelines such as those listed in the EQUATOR Network. We encourage pre-registration of clinical trials (and other study designs) in an online clinical study database before data are collected (eg, ClinicalTrials.gov). We encourage journal pre-registration and peer review of study protocols before data are collected (eg, as promoted by the Center for Open Science).

We have [system of scrutiny](#) to find such data manipulations, if found may result in:

1. Rejection of their submitted manuscript
2. Communication of the authors' misconduct will be made to relevant institutions and regulatory bodies
3. Black-listing of the authors from ASR for all future submissions

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Post-publication Review and Audit

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Conflict of Interest Policy

Adopted from Conflict of Interest in Peer-Reviewed Medical Journals which is prepared by WAME Editorial Policy and Publication Ethics Committees.

Articles would be published with statements or supporting documents declaring:

Authors' conflicts of interest

Sources of support for the work, including sponsor names along with explanations of the role of those sources if any in

study design; collection, analysis, and interpretation of data; writing of the report; the decision to submit the report for publication; or a statement declaring that the supporting source had no such involvement; and Whether the authors had access to the study data, with an explanation of the nature and extent of access, including whether access is ongoing.

To support the above statements, editors may request that authors of a study sponsored by a funder with a proprietary or financial interest in the outcome sign a statement, such as "I had full access to all of the data in this study and I take complete responsibility for the integrity of the data and the accuracy of the data analysis."

Disclosure form is available from the website, which has been adapted from ICMJE Disclosure Form and should be filled at the time of acceptance of manuscript. Disclosures are also obtained whenever deemed necessary at the time of review and editorial tasks.

9. EDITORIAL POLICIES

[Principles of Transparency and Best Practice in Scholarly Publishing](#) are followed as per ICMJE guidelines. This Journal strives to adhere to the **Principles of Transparency and Best Practice in Scholarly Publishing** which could be found in the **DOAJ** Web site completely,

This Journal has established a guideline for editorial independence as delineated below. The guideline generally follows that created by the World Association of Medical Editors.

1. This Journal is operated by Pakistan Endocrine & Thyroid Surgeons Association (PETSAs), which is publishing organization.
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5. This Journal actively seeks input regarding editorial matters from the physician Editors-in-Chief in an advisory capacity, as well as from the other editorial board members, internal editorial staff, and readers.
6. Editors-in-Chief of this Journal is empowered to create content and commentary free of commercial and organizational influence. All authors and editors operate without conflict of interest and all potential conflicts are disclosed (please also see Conflict of Interest Policy).

10. PEER REVIEW POLICY

We follow ICMJE recommendations on the manuscript handling. The practice of peer review is to ensure that only good science is published. It is an objective process at the heart of good scholarly publishing and is carried out by all reputable scientific journals. Our referees play a vital role in maintaining the high standards Review Policy and all manuscripts are peer reviewed following the procedure outlined below:

Initial manuscript evaluation

The Editor first evaluates all manuscripts. It is rare, but it is possible for an exceptional manuscript to be accepted at this stage. Manuscripts rejected at this stage are insufficiently original, have serious scientific flaws, have poor grammar or English language, or are outside the aims and scope of the journal. Those that meet the minimum criteria are normally passed on to at least 2 experts for review. Most of the submitted manuscripts are reviewed except few invited or editorial content.

Type of Peer Review

Policy employs double blind reviewing, where both the referee and author remain anonymous throughout the process.

How the Referee is selected

Whenever possible, referees are matched to the paper according to their expertise and our database is constantly being updated. The referee is selected both from the editorial team and outside and depending on the author suggestions.

Referee Reports

Referees are asked to evaluate whether the manuscript: - Is original - Is methodologically sound - Follows appropriate ethical guidelines - Has results which are clearly presented and support the conclusions - Correctly references previous relevant work. This is a systematic process and works on the well-designed Peer Review Proforma. The confidentiality of the peer review is ensured. Reviewers are encouraged to report conflict of interest, ethical misconduct etc.

Language correction is not part of the peer review process, but referees may, if so wish, suggest corrections to the manuscript.

How long does the review process take?

The time required for the review process is dependent on the response of the referees. Should the referee's reports contradict one another or a report is unnecessarily delayed, a further expert opinion will be sought. The Editor's decision will be sent to the author with recommendations made by the referees, which usually includes verbatim comments by the referees. Revised manuscripts might be returned to the initial referees who may then request another revision of a manuscript.

Final Report

A final decision to accept or reject the manuscript will be sent to the author along with any recommendations made

by the referees, and may include verbatim comments by the referees.

Editor's Decision is Final

Referees advise the editor, who is responsible for the final decision to accept or reject the article.

Conflict of Interest

All reviewers and editors have to declare any potential conflicts of interest if any. We follow COPE and ICMJE guidelines in this regard.

Editorial and Peer Review Processes Generally Follow these Steps:

We follow and request from authors, reviewers and editors the "ICJME Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals". Editorial reviewer policy is independent of any financial, academic or any other interest.

- When an article is submitted to Archives of Surgical Research, Editor makes the first check of submitted articles (structure, plagiarism, scientific quality).
- Article may be rejected, sent back for structural revision, or sent to at least two reviewers for peer review.
- After peer review process, articles may be rejected, sent back for revision requested by reviewers or accepted for publication.
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- Post-publication review and peer review is encouraged and is managed through letter to the editors.

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We follow ICMJE and [COPE Guidelines](#) for appropriate consenting. Patient's privacy should not be breached without taking consent. In written descriptions there should not be any specifications regarding patients including names, hospital numbers, photographs or pedigrees unless the information is needed for scientific purposes and the patient

allows for publication with written informed consent. It should be disclosed by authors to the patients that any identifiable material could be available on the Internet or in printed form after publication. Patient consent ought to be written and archived with the journal, the authors, or both, as settled by local rules and regulations. Applicable laws vary from territory to territory, and journals should make their own policies with legal guidance. Since a journal that archives the consent will be aware of patient identity, some journals may decide that patient confidentiality is better guarded by having the author archive the consent and instead providing the journal with a written statement that attests that they have received and archived written patient consent.

Nonessential identifying details should be omitted. Informed consent should be obtained if there is any doubt that anonymity can be maintained. For example, masking the eye region in photographs of patients is inadequate protection of anonymity. If identifying characteristics are de-identified, authors should provide assurance, and editors should so note, that such changes do not distort scientific meaning.

The requirement for informed consent should be included in the journal's instructions for authors. When informed consent has been obtained, it should be indicated in the published article.

- International Committee of Medical Journal Editors ("Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals")

12. GUIDELINE FOR REVIEWERS

Peer review in all its forms plays an important role in ensuring the integrity of the scholarly record. The process depends to a large extent on trust, and requires that everyone involved behaves responsibly and ethically. Peer reviewers play a central and critical part in the peer-review process, but too often come to the role without any guidance and unaware of their ethical obligations.

Archives of Surgical Research follows [COPE Guidelines](#) for educating the reviewers for the review process.

13. ETHICAL EDITING FOR EDITORS

Becoming an editor of Archives of Surgical Research is an exciting but daunting task, especially if you are working alone without day to day contact with editorial colleagues. This [short guide](#) aims to summarize key issues and to provide links to relevant pages of the COPE website as well as those of other organizations. We encourage the editorial team to consult COPE and ICMJE resources frequently for their training and handling of the manuscript and various editorial issues.

14. GUIDELINES FOR JOURNAL MANAGEMENT

We believe that Archives of Surgical Research serves as an important part of the scientific literature. Hence, its management should be of the highest quality and ethically sound. We follow [COPE Guidelines](#) to manage the top hierarchy in terms of conflicts of interest and ethical considerations. We also follow [COPE Guidelines](#) for maintaining relationship of journal management to the Pakistan Endocrine & Thyroid Surgeons Association to

ensure editorial independence. The journal editorial teams meet periodically at least biannually. The editorial team is independent of the society and is managed by a transparent process two yearly as per the ethical confines suggested by COPE, ICMJE and local guidelines.

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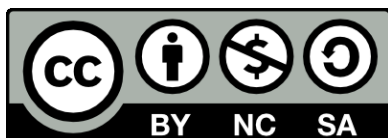
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