Archives of Surgical Research | How I Do It?

Thyroidectomy: How I do it

My Romance with The Thyroid and The White Lady: A Tale Of 43 Years

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(Narrated by Zaitoon Zafar & Mr Talat Waseem FRCS England)

IMPORTANCE Thyroidectomy still remains a highly technical procedure if not done properly can lead to multiple complications. The art involved in learning thyroidectomy involves many important factors. Learning thyroid surgery starts with higher level of conviction, nourishes with delicate tissue handling, art of compulsive hemostasis, knowledge of anatomy and skill to dissect within planes and manifests into success with a belief in perfection.

KEY WORDS Techniques, Thyroidectomy, recurrent laryngeal nerve

HOW TO CITE: Azim KM. Thyroidectomy: How I do it. *Archives of Surgical Research*. 2020;1(2):3-5. https://doi.org/10.48111/2020.02.02

How I Do It

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https://doi.org/10.48111/2020.02.02

I was not born to be a surgeon, in fact I was afraid to be a surgeon, and even more afraid to be trained by the great Prof Syed Zafar Haider— like many others. Prof Zafar Haider was on a mission run and very few could run along! I think destiny has its own plans and the things planned in the heavens are probably better suited to a man's needs provided he has the courage to work hard and be patient. In short, I was the one made to serve him, to walk along and run along! My thyroid skill is a small byproduct of this kindred.

To train and to get trained in head and neck surgery, both require patience and hard work. I cannot emphasize enough on the role of mentorship, and the mentee's obedience and conviction to learn this type of surgery. The quality of dissection within planes and mastery over hemostasis are the basic pre-requisites. My compulsive personality and love for perfection are my own two quality assurance measures that have helped me gain and maintain the quality of care that I have provided over the years. To play within the neck safely all above remain instrumental. I have loved the white lady (recurrent laryngeal nerve) and preserved it well!

To understand thyroid surgery, it would probably be prudent to know its history a bit! I would recommend another fine article about history of thyroid surgery written elsewhere[1].

A Moor physician named Albucasis performed the first successful thyroidectomy in 952. Unfortunately, he was pushed aside in the books of history and for hundreds of years there was almost no progress in thyroid surgery. In 1850, the mortality rate for thyroid surgery was incomprehensibly high (50%), patients usually died from hemorrhage. It wasn't until Professor Emil Theodor Kocher arrived onto the scene that progress started up again. Iodine deficient goiter was a common disease in his native mountainous region of Switzerland, and Kocher performed over 5000 thyroidectomies for goiter. Kocher advocated precise, gentle, meticulous surgery that preserved the parathyroid glands and the recurrent laryngeal nerve[1–3].

A complete thyroidectomy was considered a risky procedure when Kocher started his work, estimates put the mortality of thyroidectomy as high as 75% in 1872. He advocated subtotal thyroidectomy for the treatment of goiter, an operation that is still practiced today. For his work in the physiology, pathology and surgery of the thyroid he received the Nobel Prize in 1909 in Physiology or Medicine[2].

Now, thyroid surgery has become quite safe. Techniques, equipment and understanding of the disease pattern have all helped in this regard. In Pakistan, this is in large part due to Prof Syed Zafar Haider, from whom I learnt this all.

A few days ago, I went through "Surgery of the Thyroid & Parathyroid Glands" by Gregory Randolph[4]. It is a beautiful book and I would recommend for an Endocrine Surgery Fellowship Curriculum. In another book, Daniel Oertli has described the technique of thyroidectomy most of the thyroid surgeons are pursuing[5]. I would narrate few of the steps:

1. Kocher's incision; a transverse, slightly curved incision about 2 cm above the suprasternal notch, a 4- to 5-cm incision allows safe thyroidectomy in most cases and results in excellent cosmesis

2. Splitting of the strap muscles in the midline. Small crossing vessels are treated with bipolar coagulation. For a bilateral approach, the left thyroid lobe is first dissected.

3. Using Kocher's forceps, lateral retraction of the upper pole of the thyroid lobe is applied in order to open up the avascular space between the lobe and the cricothyroid muscle, thus exposing the external branch of the superior laryngeal nerve

4. By blunt dissection of the isthmus, it is freed from the underlying trachea and divided between transfixing ligatures.

5. Capsular dissection of the Hilum of the thyroid gland

6. Preservation of the parathyroid tissue

7. The transection of the vessels running to the lower pole is usually done after proper exposition of the RLN

8. During the final steps of the thyroidectomy, the lobe is dissected away from the trachea under constant exposure and preservation of the RLN

9. The strap muscles are sutured continuously with a 3-0 absorbable thread, the platysma with a 4-0 thread, and the skin is closed by an intradermal running suture using 5-0 absorbable thread.

10. Postoperatively, a smooth collar may be used for the first 24 hours and the patient should be advised to keep a head up position of about 30° in order to minimize venous congestion and swelling of the soft tissues around the wound.

This technique is superb and reproducible; however, I have few cents to share.

I follow Lahey's technique, which Prof Syed Zafar Haider learnt from Lahey Clinic and later inculcated in me. Dr Frank Lahey was founder of the Lahey Clinic, a physician-led nonprofit teaching hospital of Tufts University School of Medicine based in Burlington, Massachusetts. He is regarded as one of America's greatest teachers of surgery. He was a huge proponent of adequate exposure for the thyroid surgery[1].

In the mid to late 1930s, Frank Lahey proposed the division (as opposed to the splitting mentioned in Step2) of the strap muscles, full exposure of superior poles and visualization of the Recurrent Laryngeal Nerve (RLN) and parathyroid glands. He showed that the RLN could be dissected along its course and that this could be a safer way of operating on the thyroid[6]. At the time, the rates of nerve injury stood at 3% while in Lahey's clinic the nerve injury rates were 1.5%[1,6]. He operated on 3000 nerves at risk and followed up with the patients. As a result of this endeavor, the nerve injury rate come down to 0.6%. In conclusion he says; "As the result of exposing at least 3,000 recurrent laryngeal nerves in a period sufficiently long (three years) to permit late complications to occur if they were to occur, it may be said that the routine exposure of recurrent laryngeal nerves in thyroid surgery is a safe and justifiable procedure and will diminish, if not largely eliminate, injuries to that nerve".

I believe in generous exposure and can attest that, with adequate exposure and proper dissection within planes all this is reproducible. Hence, I still believe, despite living in the era of IONM (intraoperative nerve monitoring), the surgeons still can be trained on visual ques and can reproduce high quality outcomes in terms of nerve safety and parathyroid preservation.

Lahey operated until the weeks before his death. He himself performed over 10,000 thyroidectomies, and his clinic exceeded over 40,000 during his reign, with the overall mortality of 0.1%[1]. This is phenomenal in terms of quality outcomes.

In agreement with Dr Lahey, we routinely identify and visualize RLN and its branches in all cases and we understand that without visualization everything is blind and at stake. Extra-capsular dissection can be quite helpful in this regard. The problem lies when we are dissecting at the level of the ligament of Berry and here many factors play which can be related to anatomy, mobility of gland, presence of malignancy in upper pole and fibrotic texture of tissue mostly. These factors can influence plane of dissection and essentially if we stay along the capsule here and try to minimize handling of nerve, the chances of neuropraxia can be as low as 1-2%. Here the dissection along the branches or RLN itself becomes riskier and can lead to higher rate of neuropraxia ranging up to 11%. This when observed in overall practice dilutes to around 5-6% and remains largely under-reported. We believe that when compared in terms of plane of dissection here at the ligament of Berry, dissection towards gland is safer. Unfortunately, in many cases because of anatomical reasons or tissue pathology we still have to get along RLN. In difficult cases IONM can be helpful in preventing permanent RLN compromise, but closer handling of nerve especially when it splits into smaller branches can be quite difficult scenario.

Learning thyroid surgery starts with higher level of conviction, nourishes with delicate tissue handling, art of compulsive hemostasis, knowledge of anatomy and skill to dissect within planes and manifests into success with a belief in perfection.

CONFLICTS OF INTEREST:

The author declares that there are no conflicts of interest regarding the publication of this paper.

ARTICLE INFORMATION

Accepted for Publication: April 26, 2020. Published Online: June 30, 2020. https://doi.org/10.48111/2020.01.02

Financial Support and Sponsorship: Nil.

Conflicts of Interest: There are no conflicts of interest

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