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Assessment of complications observed in thyroidectomy patients in Bihar population

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Abstract
Thyroidectomy is a very common surgical procedure worldwide and is performed by surgeons with varied training. The outcome and complication rates are largely dependent on surgeon's skill and experience, the extent of surgery, indication of surgery and number of thyroid surgeries performed at that particular centre. The objective of this study is to determine the frequency of post-operative complications after thyroid surgery.
The study was planned in the Department of Surgery in the V.I.M.S, Pawapuri, Bihar from Aug 2018 to Dec 2018. Total 35 patients identified with the thyroid disorder were enrolled in the present study. The patients having swelling of the neck due to other reasons were excluded from the present study.
Thyroid diseases requiring surgery are common in young females. Females predominate in both Non-neoplastic and Neoplastic Thyroid diseases. The Incidence of malignant Thyroid disease is more in males compared to females. The commonest post thyroidectomy complication was hypocalcaemia. Male gender, old age and extensive thyroid surgery for malignant thyroid disease and huge goitre were associated with increased complication rate.

Keywords: thyroidectomy, thyroid, complications, goitre, etc

Introduction
A thyroidectomy is an operation that involves the surgical removal of all or part of the thyroid gland. General, Endocrine or Head and Neck Surgeons often perform a thyroidectomy when a patient has thyroid cancer or some other condition of the thyroid gland (such as hyperthyroidism) or goiter. Other indications for surgery include cosmetic (very enlarged thyroid), or symptomatic obstruction (causing difficulties in swallowing or breathing). Thyroidectomy is a common surgical procedure that has several potential complications or sequelae including: temporary or permanent change in voice, temporary or permanently low calcium, need for lifelong thyroid hormone replacement, bleeding, infection, and the remote possibility of airway obstruction due to bilateral vocal cord paralysis. Complications are uncommon when the procedure is performed by an experienced surgeon.
The thyroid produces several hormones, such as thyroxine (T4), triiodothyronine (T3), and calcitonin. After the removal of a thyroid, patients usually take a prescribed oral synthetic thyroid hormone—levothyroxine (Synthroid)—to prevent hypothyroidism.
Less extreme variants of thyroidectomy include: "hemi thyroidectomy" (or "unilateral lobectomy")—removing only half of the thyroid and "is thmectomy"—removing the band of tissue (or isthmus) connecting the two lobes of the thyroid. A "thyroidectomy" should not be confused with a "thyroidotomy" ("thyrotomy"), which is a cutting into (-otomy) the thyroid, not a removal (-ectomy) of it. A thyroidotomy can be performed to get access for a median laryngotomy, or to perform a biopsy. (Although technically a biopsy involves removing some tissue, it is more frequently categorized as an -otomy than an -ectomy because the volume of tissue removed is minuscule.) [1]

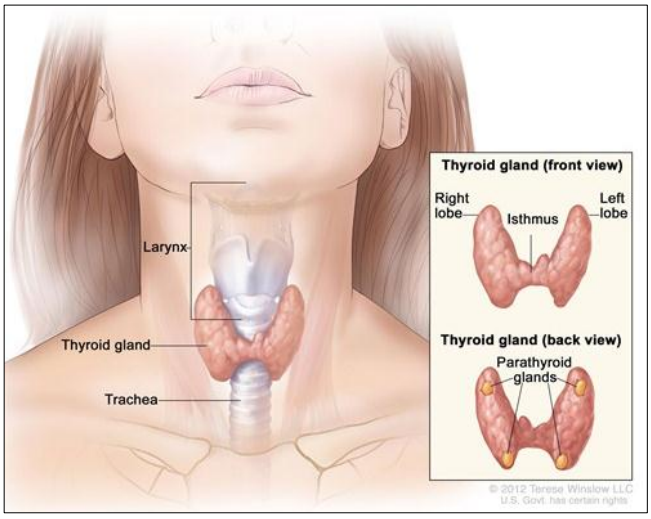

Fig 1: Anatomy of the thyroid and parathyroid glands

This operation involves removing the half of the thyroid gland that has the nodule. It is sometimes called a "diagnostic lobectomy" because the preoperative diagnosis may be uncertain and part of the reason for the operation is to make a diagnosis of cancer or no cancer. These patients may have had a FNA biopsy result that is non-diagnostic, suspicious for malignancy, or shows a follicular or Hurthle cell neoplasm.
A diagnostic lobectomy may or may not involve a frozen section. A frozen section is biopsy of the nodule that is taken during the operation while the patient is still under anesthesia.

The pathologist will examine one or two slices of the thyroid nodule under the microscope and try to make a diagnosis. If definite cancer is found on the frozen section, then the patient would likely have a total thyroidectomy. It is important to note that frozen section is not 100% accurate. Since the pathologist is looking at only one or two slices of the nodule, there is a good chance that there may be evidence of cancer, just not in the slices that are examined. More often than not, the pathologist cannot make the diagnosis of follicular or Hurtle cell cancer on frozen section and it is necessary to wait for the final pathology (permanent sections that require special processing and allow for the entire specimen to be reviewed). The final pathology usually is ready about 5-7 business days after the surgery. If the cancer is not found on the frozen section, but found on the final pathology, then a second surgery may be needed to remove the rest of the thyroid gland (completion thyroidectomy). Ultimately, whether or not to send a frozen section will depend on the experience and expertise of the surgeon.

This operation involves removing all or nearly all of the thyroid gland. It may be done for benign thyroid conditions that affect both thyroid lobes, such as large goiter or Graves' disease, or it may be done for cancer. A near-total thyroidectomy means that the surgeon decided to leave a very small amount of benign thyroid tissue behind. Thyroid tissue may be intentionally left behind in areas around important structures, such as the nerves that control the voice, swallowing, and breathing, or the parathyroid glands. All patients who undergo a total or near-total thyroidectomy will need to be on life-long thyroid hormone replacement after surgery.

A completion thyroidectomy involves removing the remaining thyroid tissue after a patient has had a previous partial thyroid resection (i.e. lobectomy). It may be done years later or it may be done soon after a lobectomy (as early as the next week). The reasons for completion thyroidectomy are the same as for a lobectomy or total thyroidectomy. All patients who undergo a completion thyroidectomy will need to be on life-long thyroid hormone replacement after surgery [2].

Traditionally, the thyroid has been removed through a neck incision that leaves a permanent scar. More recently, minimally invasive and "scarless" approaches such as transoral thyroidectomy have become popular in some parts of the world.

Thyroidectomy is a very common surgical procedure worldwide and is performed by surgeons with varied training. The outcome and complication rates are largely dependent on surgeon's skill and experience, the extent of surgery, indication of surgery and number of thyroid surgeries performed at that particular centre. The objective of this study is to determine the frequency of post-operative complications after thyroid surgery.

Methodology

The study was planned in the Department of Surgery in the V.I.M.S, Pawapuri, and Bihar from Aug 2018 to Dec 2018. Total 35 patients identified with the thyroid disorder were enrolled in the present study. The patients having swelling of the neck due to other reasons were excluded from the present study. All the patients were informed consents the aim and objective of the present study was conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.

These patients were evaluated with a detailed history, thyroid profile, history of drug intake, history of previous surgeries or radiation, imaging studies of the neck, fine needle aspiration cytology of thyroid swelling, and complete hemo gram. After evaluation, patients requiring surgery were assessed for fitness for surgery; informed written consent was obtained and proceeded with surgery. Specimen sent for histopathological confirmation of diagnosis.

Results & Discussion

Table 1: Age & Sex of the Patients

Parameters	No. of Patients
Total Cases	35
Sex of Patients	
Male	12
Female	23
Age:	
Less than 20 years	0
21 – 30 years	18
31 – 40 years	9
41 – 50 years	4
Above 50 years	4

Table 2: Causes, Types & Complications

Condition	No. of Cases	Percentage of Cases
Causes for thyroidectomy		
Graves' disease	5	14
Multinodular goitre	22	63
Thyroiditis	3	9
Thyroid carcinoma	5	14
Total	35	100
Types of thyroidectomy		
Total thyroidectomy	28	80
Subtotal thyroidectomy	6	17
Hemi thyroidectomy	1	3
Total	35	100
Incidence of complications		
Hypocalcaemia	2	6
Recurrent laryngeal nerve palsy	0	0
Haemorrhage	0	0
Hyperparathyroidism	2	6

A glance at the history of thyroidectomy reveals how it was developed by pioneer endocrine and thyroid surgeons through various stages till the present era of minimal access surgery. Though, open conventional thyroidectomy is still the favoured approach worldwide, a plethora of Endoscopic Thyroidectomy (ET) techniques ranging from totally endoscopic, video-assisted, trans-axillary, chest-wall approaches have been already employed. Even novel approaches such as thoracoscopic, robotic, trans-oral, post auricularroutes have been explored. Though none of them are validated universally, chest-wall and trans-axillary approaches are favoured by the majority.

The prefer redsurgical management for these conditions would be total thyroidectomy. Among various thyroid ectomy procedures, 40% are done for malignancy ad 60% are done for benign conditions. The malignancies that are commonly encountered are papillary carcinoma of thyroid in about 80% cases. The other malignancies are follicular carcinoma, anaplastic carcinoma, and small cell carcinoma.

Nearly, 67% of thyroidectomies were performed on women.

This is similar to Der *et al*. study1 which showed increased incidence among women. Katz and Bronson [3] study showed that the indications for thyroid disorders were 19% Graves' disease, 62%nodules, and 19% malignancy of thyroid gland like papillary carcinoma, medullary carcinoma, follicular carcinoma, and anaplastic carcinoma.

The study conducted by Gough and Wilkinson [4] study had incidence of 0.7% hypo parathyroidism and 2.2% recurrent laryngeal nerve palsy following total thyroidectomy. Jessie and Harrison4 study had 5-71% incidence of transient hypo parathyroidism and 0-3.5% of permanent hypo parathyroidism.

To avoid the risk of damage, accurate exposure of nerve by careful dissection is necessary. Comparatively, the risk of hypo parathyroidism and recurrent laryngeal nerve palsy are common with total thyroidectomy. Nerve injury when temporary has a rapid recovery which is beneficial for the patient. Nerve injury could be due to other causes such as use of laryngoscope during intubation, pressure caused by a cuffed tube, overstretching of the nerve while positioning the patient with hyperextended neck [5].

There is increasing recognition that total thyroidectomy is also the appropriate surgical treatment for benign toxic and nontoxic multi nodular goitre, particularly when the nodular disease involves both lobes [6-7]. The advantages of total thyroidectomy in such cases are the prompt relief of symptoms; provision of a definite histological diagnosis, especially when the clinical features indicate the possibility of thyroid malignancy (the reported risk is about 5%–10%); and no risk of disease recurrence. On the other hand, nontotal thyroidectomy, such as subtotal thyroidectomy or unilateral lobectomy, is a less satisfactory procedure because, by leaving residual thyroid tissue, the patient is exposed to a higher risk of recurrent disease (23%–45%) that is not treatable by thyroxin suppression therapy and will, therefore, involve repeat surgery [8]. Moreover, non-total thyroidectomy does not avoid the risk of postoperative complications. In fact, the complication risk of non-total thyroidectomy is similar to that of total thyroidectomy, and the risk of repeat surgery owing to recurrence is up to 20 times greater with non-total thyroidectomy [9].

High complication rates of total thyroidectomy (hypo parathyroidism and recurrent laryngeal nerve palsy) have been reported in some case studies [10], whereas in many other studies the reported incidence has been low. Gough and Wilkinson1 reported recurrent laryngeal nerve palsy and permanent hypo parathyroidism following total thyroidectomy at the rates of 0.7% and 2.2%, respectively. Perzik [11] reported an incidence of nerve injury of only 0.4% and no hypo parathyroidism. Similar low rates of permanent complications associated with total thyroidectomy have been reported in other studies [12]. In addition, several studies reported no significant difference in complication rates among patients undergoing total thyroidectomy compared with those undergoing subtotal thyroidectomy [13-14]. Complication rates were shown to be higher after total thyroidectomy when the surgery was performed by surgeons who were not specialized in endocrine surgery.

Conclusion

Thyroid diseases requiring surgery are common in young females. Females predominate in both Nonneoplastic and Neoplastic Thyroid diseases. The Incidence of malignant Thyroid disease is more in males compared to females. The commonest post thyroidectomy complication was hypocalcaemia. Male gender, old age and extensive thyroid surgery for malignant thyroid disease and huge goitre were associated with increased complication rate.

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