INTRODUCTION

Thyroid gland is an endocrine gland. The abnormalities include endocrine, neoplastic and inflammatory diseases. In USA 11% of the population are affected and 80,000 surgical procedures per year are performed in related to thyroid. In thyroid malignancies total thyroidectomy is advisable with preservation of parathyroid gland. In subtotal thyroidectomy whole of the involved side and part of isthmus and part of other lobe is removed. In Hemi thyroidectomy one lobe along with isthmus is removed and is indicated in benign condition. Surgeons of various specialities like general surgeons, Thoracic, Endocrine, ENT, Oncological and Head and Neck surgeons can perform thyroid surgery. Now it became safe and accepted operation due to advances in general anesthesia, excellent antisepic and haemostatic techniques. Due to excellent work done by Theodor Kocher of Bene, Switzerland regarding thyroid surgery, there is reduction in mortality from 50% to less than 4.5%. In early part of last century, haematoma and post operative infection were common complications. Common complications are laryngeal nerve damage leading to vocal cord palsy and hypocalcaemia are. Death due to thyroid surgery is rare.

Discrete thyroid swellings are 3-4 times more common in women than men, but a discrete swelling in a male is much more likely to be malignant than in female. They can be detected in 4%-8% of adults by palpation and in 13%-67% by ultrasound. As the age increases the prevalence of thyroid nodule also increases. Presentation of nodules in children and young adults should induce caution, the malignancy rate for nodules in adolescence is 2-fold higher than in adult populations. The incidence of malignancy is 10% to 20%, usually the thyroid carcinoma presents in patients as asymptomatic thyroid nodule.

The management for bilateral multinodular goiter may need surgical treatment to reduce the risk of complications and recurrence. In recent decades, total thyroidectomy has become a preferred surgical operation for bilateral nodular goiter for the majority of surgeons because it reduces the risk of recurrence and there is no need of re-operation or re-exploration for differentiated thyroid cancer. However, this radical procedure may increase the risk of iatrogenic injury. Some authors also studied whether postoperative thyroid stimulating hormone (TSH) suppression can prevent thyroid recurrence, but the conclusion was not certain. The objective of this study was to determine the frequency of post thyroidectomy complications in tertiary care hospital.

COMPLICATIONS OF DIFFERENT TYPES OF THYROID SURGERY

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ABSTRACT

Objective: To find out the incidence of complications in Thyroid surgery in a tertiary care Hospital.

Material and Methods: It was a retrospective study done in the Department of ENT and Head and Neck Surgery, Khyber Teaching Hospital, Peshawar, Pakistan. The study was conducted from January 2006 to December, 2015.

Results: Post operative complications were studied in 230 patients undergone thyroid surgery. Female to male ratio was 6.6:1. Mean age was 42 years. Unilateral Recurrent Laryngeal Nerve (RLN) damage 6 (2.6%), Bilateral Recurrent Laryngeal Nerve (RLN) damage 02 (0.86%), Haematoma 02 (0.86%) and Tracheostomy needed 02 (0.86%).

Conclusion: Recurrent laryngeal Nerve damage and haematoma formation are common complications in thyroid surgery.

Key Words: Thyroid, Recurrent laryngeal nerve, Hematoma.

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Complications of different types of thyroid surgery

MATERIAL AND METHODS

This descriptive study was conducted in Otorhinolaryngology Department of Khyber Teaching Hospital, Pakistan from January 2006 to December 2015. All patients with goiter, who underwent any type of thyroid surgery (e.g., subtotal thyroidectomy, lobectomy, isthmusectomy, near total or total thyroidectomy) were included in this study. All those patients having cardiopulmonary and general anaesthesia complications, were excluded from the study. All patients were admitted through OPD. Specific preoperative tests were performed e.g ultrasound, thyroid function tests, serum calcium, thyroid scan and FNAC. All patients were undergone indirect laryngoscopy by ENT specialist in opd to see for any vocal cord abnormality preoperatively.

Thyroidectomy was performed by collar incision given about two finger breadths above the sternal notch. Subplatysmal flaps were elevated superiorly and inferiorly from thyroid cartilage to sternal notch. The strap muscles were divided for huge goiters only. After delivery of the thyroid gland the middle thyroid veins were ligated and divided during surgery. The external branch of superior laryngeal nerve was identified in majority of the cases. The superior thyroid pedicle was ligated and divided individually. The recurrent laryngeal nerve (RLN) was always identified near the inferior thyroid artery or its branches. Inferior thyroid artery was always ligated after it gives branch to inferior parathyroid gland. Operation was completed according to the extent of surgery and suction drains were placed in the wound. Postoperatively all patients were usually discharged by 2-3 days. At the time of extubation vocal cords of all patients were assessed under direct vision. Serum calcium levels of all patients were checked postoperatively for 2 days.

If RLN palsy could not resolve within 6 months, it will be considered as permanent. Postoperatively temporary hypocalcaemia was observed where serum calcium level was less than 7 mg/dl, requiring calcium and vitamin D supplementation and it was recovered within 6 months of surgery. However despite regular oral therapy of calcium and vitamin D, if hypocalcaemia persists for more than 6 months, permanent hypoparathyroidism was considered. All patients were seen in their followed up visit in opd monthly for the first 3 months and then every 3 months for 1 year after surgery.

RESULTS

In this study total 230 patients underwent different thyroid surgeries ranging from unilateral lobectomy to total thyroidectomy. In 98 (42.6%) patients Subtotal thyroidectomy was performed followed by hemithyroidectomy in 84 (36.5%) patients Table 1.

Of the 230 patients the female to male ratio was 6.6:1 with mean age of 42 years and range of 15-70 years. The overall postoperative complication rate was 5.6%. Unilateral injury to Recurrent Laryngeal Nerve was seen in 2.6% of patients. However it was temporary neuropraxia which recovered within 6-10 month after surgery. Injury to both the Recurrent Laryngeal nerves was 0.86% for which tracheostomy was needed. Haematoma occurred in two patients (0.86%); in one case it was because no drain was put into the wound while in other case the drain was blocked by tissue debris. No transitory or permanent hypocalcemia was found in any case of this study meaning that there was no case with injury to parathyroid glands. Only one person died in this study because of cardiac arrest Table 2.

<table>
<thead>
<tr>
<th>Complications</th>
<th>No. of patients and percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unilateral RLN damage</td>
<td>06(2.6%)</td>
</tr>
<tr>
<td>Bilateral RLN damage</td>
<td>02(0.86%)</td>
</tr>
<tr>
<td>Haematoma formation</td>
<td>02(0.86%)</td>
</tr>
<tr>
<td>Tracheostomy needed</td>
<td>02(0.86%)</td>
</tr>
<tr>
<td>Death (cardiac arrest)</td>
<td>01(0.43%)</td>
</tr>
</tbody>
</table>

DISCUSSION

Risk of complications are always present in every surgery performed under general or local anesthesia. Complications due to thyroid surgery are comparatively reduced now a days. This is due to safe anaesthesia, better antisepctic and haemostatic technique. Common complications are haematoma, recurrent laryngeal nerve damage and hypoparathyroidism. Damage to other anatomical structures are minimum due to good haemostasis and doing meticulous anatomical dissection. In a study performed on solitary thyroid nodules, 34% were neoplastic and 66% were non-neoplastic. Among the neoplasms cases, 13% were benign and 21% were malignant. Thyroid nodules could be adenomas or neoplasms on histopathology. Most thyroid nodules are benign hyperplasic lesions, but of these 5% to 20% are true neoplasms in nature.
Complications of different types of thyroid surgery

The overall rate of complications in this study was 5.6% which is smaller than that found by Khanzada (10.7%), NA Ansari (46%). The mortality rate of this study was 0.43% while no mortality was reported by Khanzada and NA Ansari, it could be due to more specialized facilities in other centres. Not a single case of thyroid crisis was recorded in our study as in all recent studies. The prevalence of Recurrent Laryngeal Nerve (RLN), varied from 0-14% in different studies\[21-23\]. This difference is due to variation in surgical expertise, type of thyroidectomy, number of thyroidectomies performed at that particular centre. In our study a 3.47% of RLN injury was observed in which 2.6% was unilateral while 0.86% was bilateral. It is a bit higher than reported by other researchers\[24-26\] in a range of 0.3-1.7%. Identification of RLN during surgery is the key step to avoid its damage and if any nerve damage occurs, it is most likely to be a transient neuropraxia and recovery will be smooth, usually after a period of few weeks or some months. The anatomical relationship of inferior thyroid artery and RLN is highly variable and so the operating surgeon should be vigilant during surgery. Ligation in continuity of inferior thyroid artery reduces the risks of RLN injury. However this injury is relatively common in surgery of malignant thyroid as observed in a recent international study 27, RLN is more susceptible to injury during revision surgery for recurrent goiters where rates of RLN palsy range between 3 to 18%\[27,28\].

Serious postoperative complication of thyroidectomy is bleeding into the wound. When bleeding and haematoma occur deep to the strap muscles, it can cause airway obstruction which may lead into life threatening emergency. In our study, 2 (1.4%) patients had postoperative bleeding which were re-explored. The reported incidence of postoperative bleeding in other studies ranges from 0 to 5%\[29,30\]. Hypocalcemia caused by surgical removal of parathyroid glands is the most frequent complication after thyroidectomy but we had no case of hypocalcemia in our study. The incidence of postoperative hypocalcaemia varies widely depending on the type of thyroid operation performed and the underlying disease which is present 28% following total thyroidectomy, 23% following subtotal thyroidectomy due to thyrotoxicosis, and less than 1.5% following subtotal thyroidectomy due to other diseases\[29,30\].

According to a report of British Association of Endocrine and Thyroid Surgeons (BAETS) after total thyroidectomy 30% of the patients have temporary hypocalcemia and around 7% of the patients are using oral vitamin D and calcium therapy for a long time. In Sweden a multicentre audit of thyroid surgery showed that 7.8% of the patients were given oral calcium at 1st visit postoperatively\[21\].

The number of parathyroids to be preserved in thyroidectomy is a controversial issue. Most authors believe that even a single functioning parathyroid gland is sufficient to maintain normal serum calcium level, whereas others say that the at least three glands should be present anatomically for normal serum calcium level\[21,32\]. If the parathyroid glands are well protected in the capsule anatomically, the surgeon may preserve them easily. In contrast, if they are attached to the thyroid capsule, as is often the case, they must be separated very cautiously and pericapsular ligation of the branches of the inferior thyroid artery must be carefully executed. It will protect venous vascularization. The posterolateral branch of the superior thyroid artery must be ligated after having confirmed that it does not supply the superior parathyroid gland. If blood supply of a parathyroid is incidentally compromised during surgery, it is fragmented and reimplanted in a pouch formed in sternocleidomastoid muscle and the pouch is closed with a nonabsorbable suture to recover it. If venous congestion occurs or the gland becomes haemorrhagic, it is important to decompress it by giving incision to the parathyroid capsule.

In our study infections in thyroid surgery are rare and have a low incidence of 0.3%. No differences were seen among patients given prophylactic or therapeutic antibiotics, or not at all. Therefore the antibiotics are only justified when patients are having other co-morbidities like immunodeficiency, severe diabetes or valvular heart disease. The skin should be absolutely cleaned and disinfected. While operating on neoplastic pathology noniodated disinfectant (Ibitane) is preferred because it does not affect an eventual postsurgical scinti scan.

Inadequate position of patient on the operating table may cause some less important complications. Stretching of the brachial plexus is rare but severe complication which can be avoided if the patient is positioned with arms adducted. The patient’s elbows should be protected to prevent ulnar nerve paralysis. Moreover, eyes of the patient should be protected with an appropriate plastic mask or sticking.

CONCLUSION

RLN injury and postoperative bleeding were the two important post thyroidectomy complications observed. Complications rate was statistically high in patients with older age, male gender and in whom extensive thyroid surgery was performed.

REFERENCES

Complications of different types of thyroid surgery


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AUTHOR’S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Hussain A: Concept and design, data collection, manuscript writing.

Muhammad T: Data analysis, result interpretation Bibliography & Statistician.

Arif S: Review the article, critical analysis.

Din IU: Literature review, Statistical analysis.

Muhammad G: References collection, help in writing and typing.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.