



Management of Retrosternal goitres: A four year institutional review in a tertiary hospital.

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ABSTRACT... Objective: To account for the characteristic presentations, pathology and the post-operative complications of surgical treatment of retrosternal goitre. **Study Design:** Retrospective Descriptive study. **Setting:** Department of Otorhinolaryngology at Rehman Medical Institute, Peshawar. **Period:** July 2016 and December 2019. **Material & Methods:** All patients that underwent thyroidectomy during the study period were included in the study. The thyroid gland that did not have retrosternal extensions were excluded. Retrospective chart records of all these patients were analysed. Data obtained from the charts was recorded on Statistical package for social services version 23.0 and analysed for descriptive statistics. **Results:** 67 patients with goiters were at the tertiary care center of Peshawar, females (77.6%) and males (22.4%). 6 (8.9%) were retrosternal. The most common symptoms were neck swelling (83.3%) followed by shortness of breath (66.7%). Post-operative hypocalcaemia was the most common complication among retrosternal thyroidectomy patients (66.7%). Only one patient needed sternotomy. **Conclusion:** All patients with retrosternal goitre should be offered surgery. The post-operative complications are low and resolve uneventfully.

Key words: Hypocalcemia, Retrosternal Goiter, Thyroidectomy.

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INTRODUCTION

Goitre is defined as an enlarged thyroid gland twice the normal size. Retrosternal goiter (RG) is any goiter, which descends below the thoracic inlet.¹ It is a Latin term called tumidum gutter meaning swollen throat.² First described by Albrecht von Haller in 1749. It is present between 1-20% of thyroidectomy patients and a slowly progressive disease, commonly presenting between fifth and sixth decade of life.³

Retrosternal goiters can be differentiated from primary intra-thoracic goiters, which derive their blood supply from the aorta, and thoracic vessels and have no connection with cervical thyroid gland. Surgery is the only effective treatment for retrosternal goitres and can be easily removed through trans cervical neck incision. Sternotomy is necessary in only 1-11% of cases.⁴

The objective of this study was to account for

the characteristic presentations, pathology and the post-operative complications of surgical treatment of retrosternal goiter surgeries.

MATERIAL & METHODS

This is a retrospective descriptive study conducted at the Otorhinolaryngology department of a tertiary care hospital in Peshawar. All patients that underwent thyroidectomy between July 2016 and December 2019 were included in the study. The thyroidectomies that did not have retrosternal extensions were excluded.

Retrospective chart records of all these patients were analysed. Diagnostic criteria for retrosternal goiters were thyroid enlargement below thoracic inlet on the Computed Tomography (CT) neck and chest. Geography, age, sex, family history, previous thyroid surgery, clinical symptoms, investigations, surgical approach, complications and finally pathology results were obtained from

the patient's records. All patients had routine pre-op investigations like fibre-optic examination of larynx, ultrasound neck, CT neck and chest, Thyroid function tests, Chest x-ray, Fine needle aspiration cytology (FNAC), thyroid scintigraphy and pulmonary function tests (selected patients). All patients underwent thyroid surgery and analysis of the location, surgical procedure, peri and post op complications and histology. Most of the patients with retrosternal extension had their goiters removed by standard transverse cervical neck incision but in only one patient the thoracotomy approach was used. Data obtained from the charts was recorded on Statistical package for social services version 23.0 and analysed for descriptive statistics.

Ethical review was obtained from the institutional Ethics Committee under the reference number RMI/RMI-REC/Article Approval/51.

RESULTS

Sixty seven (67) patients with goiters underwent procedures at the tertiary care centre of Peshawar, females (77.6%) accounted for the majority. Only 6 (8.9%) were retrosternal. Table-I shows the demographics of the study.

Demographic	N (%)
Age (years)	3 to 85
Gender	
Males	16 (23.9%)
Females	52 (77.6%)
Surgical procedure	
Total thyroidectomy	30 (44.8%)
Subtotal thyroidectomy	15 (22.4%)
Hemithyroidectomy	17 (25.4%)

Table-I. All thyroidectomy patients.

Table-II shows the signs and symptoms of patients with retrosternal goitres. The most common of which is neck swelling (83.3%) followed by shortness of breath (66.7%). 33.3% can be asymptomatic while voice hoarseness and pain in the neck region are least common (16.7%).

Table-III shows the post-operative complications. Post-operative hypocalcaemia was the most

common complication among retrosternal thyroidectomy patients (66.7%), which recovered in a few weeks time. All the other complications only occurred once (16.7%).

Signs and Symptoms	n (%)
Neck swelling	5 (83.3%)
Asymptomatic	2 (33.3%)
Shortness of breath	4 (66.7%)
Pain in the neck	1 (16.7%)
Dysphagia	2 (33.3%)
Hoarseness of voice	1 (16.7%)

Table-II. Signs and symptoms in patients with Retrosternal Goitres (n=6).

Complication	N (%)
Haematoma formation	1 (16.7%)
Wound infection	1 (16.7%)
Hypocalcaemia	4 (66.7%)
Recurrent laryngeal nerve palsy	1 (16.7%)

Table-III. Post-operative Complication of patients with Retrosternal Goitres (n=6).

Figures-1 shows the gross specimens of retrosternal goiters post-operatively.

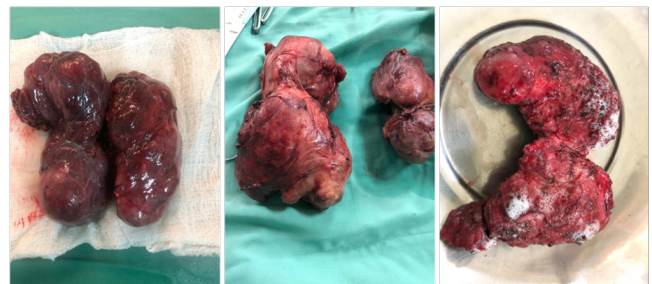


Figure-1. Post-operative gross specimens of thyroid gland.

DISCUSSION

Retrosternal goiter was first described by Albrecht Von Haller in 1749.⁵ It is a challenging surgery and many different treatment options are available for the management of goitre, but retrosternal extension is best treated with surgery. Seaweed was routinely used by the Chinese in 2400 BC for the treatment of Goitre; later it was found that iodine was present in seaweed.⁶

About 1-15% Goitres are retrosternal, most are both visible and palpable. Slow growing

enlargement occurs in most retrosternal goiters. This vertical migration into chest occurs because of gravity; traction negative intra-thoracic pressure and swallowing associated traction forces, which help in vertical migration.⁷ Most retrosternal extensions are anterior to supra-aortic vessels but posterior extension occurs in 10-15% of cases. The retrosternal part increase in size because of least resistance in the surrounding area and some time causing fatal complications like intra-cystic haemorrhage.⁸ RG can cause compression or deviation of the trachea and compression causes narrow tracheal lumen which can lead to less air intake and accumulation of viscous bronchial secretions. Compression on the chest great vessels can cause partial vena-caval syndrome.⁹ We had one case of partial vena caval syndrome. There were palpable level 4 lymph nodes in this case and the diagnosis was medullary thyroid carcinoma.

Proper detail history, examination and investigations are essential steps in treatment of patient with retrosternal goiters. Neck swelling, hoarseness of voice, dyspnoea, dysphagia, neck discomfort, prominent neck vessels are all features of retrosternal goiters. Ultrasound, CT neck and chest, FNAC, Thyroid function tests are essential investigation for thyroid lumps. In selected cases pulmonary function test can be performed to rule out compression on the trachea. FNAC is technically very difficult in RSG and may be dangerous to perform.⁹ Hyperthyroidism is a problem in pre-operative setting to be managed with endocrinologist. The incidence varies between 0-50 per cent, but suppression therapy with thyroxin has little effect on the progress of the disease. Incidental finding of retrosternal goiter in asymptomatic patient needs a policy of x-ray findings of tracheal deviation or compressive effects. Oesophagogram can add to the compressive symptoms.

The treatment of retrosternal goiter (RSG) is surgery. The indications for surgery are suspicion of malignancy, compressive symptoms, drugs failed hyperthyroidism. Majority of RSG can be easily removed through Kocher transverse collar incision but in rare cases partial or complete

median sternotomy is performed.¹⁰ In our case one patient had median sternotomy because the tumour was adherent to the surrounding structure. The predictive factors for sternotomy in RSG is not clearly known but tumour adherence and extension below the aortic arch is always considered for sternotomy.¹¹ Goiter, invasive malignancy, recurrent goitre and goitre up to 10cm needs sternotomy.¹² Four factors such as, sub sternal extension up to aortic arch, extension into posterior mediastinum, malignancy and lack of solid attachment between cervical and mediastinal also require sternotomy. Only around 2% of patients with RSG will require either sternotomy or manubriotomy. According to the recent evidence-based management of RSG the incidence of malignancy is equivalent in RSG to those in neck. Extensive surgery like neck dissection can be performed in some form of thyroid cancer like medullary thyroid carcinoma.¹³ Certain risk factors like exposure to radiation and family history of thyroid cancers can provide other rational to perform thyroidectomy.

The most common complication of surgery is post-operative hematoma formation leading to acute respiratory distress. Placing large size drains can prevent hematoma formation. Urgent drainage is required to relieve the obstruction. Another cause of respiratory distress is underlying tracheomalacia, which needs urgent stenting, re-intubation or tracheostomy.¹⁴

The risk of recurrent laryngeal nerve palsy varies between 1.5 to 14% in RSG is higher than cervical goiter.¹⁵ It varies between 2% to 10%. It is mostly higher on the right-side using extraction manipulation method for the removal. Electrophysiological monitoring of recurrent laryngeal nerve during thyroid surgery is considered as a routine tool and gold standard than visualization of the nerve.

Identification of the recurrent laryngeal nerve (RLN) minimizes the risk of injury. When the nerve is identified and dissected, the reported RLN injury rate during thyroidectomy is 0 - 2.1%. This is reportedly higher in the re-operative setting (2-12%) or if the nerve is not clearly identified (4-

6.6%).¹⁶

Injury to parathyroid gland in RSG is more because of lower position in chest and can be damaged during dissection and extraction of goiter. Sternotomy can further increase the risk of developing hypoparathyroidism up to 50% in some series.¹⁶ Transient hypocalcaemia secondary to hypoparathyroidism is a known complication, which can be corrected by giving I/V calcium gluconate. Parathyroid can start function 72 hour after the surgery.

CONCLUSION






All patients with retrosternal goiter should be offered surgery apart from those with medical and surgical co-morbidity. An experienced surgeon should perform the surgery with specific interest in thyroid surgery to minimise the complications of retrosternal thyroid surgery. The post-operative complications are low and resolve uneventfully.

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