
RETROSTERNAL GOITRE

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Summary

Sixteen patients with retrosternal goitre were operated upon in one surgical unit during the last 10 years. The chief presentation was difficulty in breathing and dyspnoea during sleep mainly. Thyroidectomy was done using different approaches, but the cervical approach was suitable in most of cases. Tracheostomy was considered as a complication and needed in one case with bilateral vocal cord pulsy pre-operatively.

Introduction

Retrosternal goitre is defined as any goitre in which at least 50% of thyroid reside below the level of thoracic inlet¹. The incidence of this type of goitre is 3-20% with respect to thyroidectomy patient¹.

The true retrosrenal goitres are either 1.Substernal 2.Sub-clavicular 3. Anterior mediastinal prolongations of discrete adenoma from lower pole. 4. Posterior mediastinal prolongation of nodular tissue. 5.Crossed sub-sternal goitre (there is extensions from left side gland to the right mediastinum). These retrosternal types of goitre are different form true intrathoracic or aberrant goitre^{2,3}.

The usual presentation of this type of goitre is pressure symptoms, such

dyspnoea, dysphagia, superior vena cava obstruction and hoarseness of voice¹. But on examination there is tracheal deviation and positive Pemberton sign⁴.

From 891 cases of thyroidectomy done during the last 10 years, there are 16 cases of retrosternal goitre. In this paper we discuss the presentation, operative treatment and complication following the surgery for these cases of retrosternal goitre.

Patients and Methods

Sixteen patients with retrosternal goitre admitted to one surgical unit complaining from the following symptoms, airway compression (15), dysphagia (3), superior vena cava obstruction symptoms (3), hoarseness of voice (5), stridor(1).

On examination the Pemberton sign was positive in (15), tracheal deviation in (13), vocal cord pulsy was found unilateral (4) and bilateral (1) and this

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patient was considered for urgent surgery.

All these patients were investigated by plain X-ray of neck with chest X-ray, one patient had barium swallow. Ultrasound to the neck was done for those patients with cervical goitre with retrosternal extension. C-T scan was done for few cases. Fine needle aspiration cytology was done to the cervical part of goitre. There was one case of recurrent retrosternal goitre. All patients were subjected to thyroidectomy.

The incision was used in these thyroidectomy either cervical collar or cervical T-shaped incision. In thyroidectomy for retrosternal goitre there is cutting both strap muscles, ligation and cutting the superior thyroid vessels with freeing the superior thyroid pole and imparts their mobility. Then ligation and cutting the middle thyroid veins and all lateral attachments to cervical part of the gland. Then delivery of retrosternal part or extension can be achieved by different approaches. These approaches will be discussed in details in the discussion.

Results

Sixteen patients, 10 female, and 6 male. Their age ranged between 23-70 years with mean age 42 years. Thyroidectomy was done to them after admission and assessment. The type of thyroidectomy is shown in table II.

Table I Clinical presentation

Air way compression	15
Dysphagia	3
Superior vena-cava obstruction	3
Hoarseness of voice	5
Stridor	1
Pemberton sign	15
Tracheal deviation	13
Vocal cord palsy unilateral	4
bilateral	1

Table II. Types of thyroidectomy

Subtotal thyroidectomy	9
Hemi thyroidectomy	5
Debulking of malignancy	1
Excision of retrosternal nodule	1

The histopathology of resected specimen is shown in table III. The used incision in thyroidectomy is shown in table IV. Different approaches for delivery of retrosternal part of goitre is shown in table V.

Table III. Histopathology

Multinodular colloid	8
Unilateral colloid or follicular adenoma	6
Thyrotoxicosis	1
Undifferentiated carcinoma	1

Table IV The incision type

Cervical collar incision	10
T-shaped extension of Cervical collar incision	6

Table V. The procedure used for delivery retrosternal part

Gentle upward traction	6
Excision of normal cervical lobe to get more room to deliver the retrosternal lobe by traction	3
Toboggan technique	2
Sterile soup spoon usage	1
Intracapsular fragmentation	2
One side claviclectomy	1
Partial sternotomy	1

Only one patient with stridor due to undifferentiated thyroid cancer required tracheostomy that was considered as complication. The complications resulted from thyroidectomy to those retrosternal goitre are shown in table VI. There was no mortality.

Table VI The complications

Wound haematoma.	2
Wound infection	2
Recurrent laryngeal nerve palsy	1
Tracheostomy	1
Injury to Left brachio-cephalic vein with repair	1

Discussion

Most retrosternal goitres can be delivered and safely resected through a standard cervical approach, but sometime forms a dilemma to the surgeon.^{2,3,5}

The usual presentation of this type of goitre is airway compression and dyspnoea especially on sleeping, dysphagia, hoarseness of voice, stridor, thyrotoxicosis, and superior vena cava obstruction with dilated veins in the chest wall and neck. On examination there is positive Pemberton sign, tracheal deviation to one side, vocal cord pulsy usually unilateral^{1,4,6,7}. These clinical features are correlated with our patient presentation as in table I. All patients are subjected to thyroidectomy and the type of thyroidectomy is seen in table II. All the resected specimens are subjected to the histopathological examination; the results shown in table III, and go with other study⁶.

The incision we used was cervical collar incision and sometimes with T-shaped extension as shown in table III. After cervical or T-shape incision, we deliver the retrosternal extension of goitre by gentle upward traction or by forefinger insertion into mediastinum and delivery of the retrosternal lobe upward after freeing it^{2,3}. This was done in six of our patients. Sometimes there is difficulty in delivering the retrosternal part due to narrow retrosternal space. In these circumstances the opposite thyroid lobe, which may be normal in size should be excised to provide more room in the neck^{2,3} this was done in three of our patients. In two of them we used Toboggan technique which was described by Proye. This is done by the placement of heavy silk sutures into the cervical component, applying upward traction and placing more sutures in

series in order to let the retrosternal extension gradually comes into view. Obviously this technique has limited application when there is soft friable colloid goitre^{8,9}.

Sometimes insertion of forefinger retrosternally can not reach the lower pole of the gland. So sterile tablespoon can be used and is slipped down the antrolateral aspect of the thyroid reaching further down than the finger, and leading to delivery of the gland easily. We use this approach in one of our cases^{3,4}.

In two of the patients with huge retrosternal goitre, we had to use the technique of intracapsular fragmentation (morecellation). There are two risks for this technique, one of them is tumor spillage and the second is bleeding^{3,4}.

In one obese patient, we had to carry partial claviclectomy in order to get access to goitre⁵. If no progress is made even after carrying out all of the above procedures, sternotomy (partial or complete) is required. It is indicated when the thoracic inlet is too small for delivery, for tumors with significant adhesion and invasion, when there is excessive bleeding, and when there is ectopic or large intra-thoracic goitre^{2-6,8}. One of our patients needed partial sternotomy.

The complications following retrosternal goitre surgery are mentioned in table VI. Tracheostomy is done once and considered as complication. It was done for patient with stridor and bilateral vocal cord palsy before surgery and the operation is done urgently^{6,10}.

Lastly we agree with other workers that retrosternal goitre is an indication for surgery as there is a risk of progressive airway obstruction and most of it can be approached through a cervical incision.

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