



## Otorhinolaryngology

## A CASE OF TRIPLE VESSEL DISEASE WITH INCIDENTAL FINDING OF RETROSTERNAL GOITRE DURING CABG (CORONARY ARTERY BYPASS GRAFTING)

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**ABSTRACT** A unique case of an incidental finding of retrosternal goitre while doing a coronary artery bypass grafting for which the patient was posted for total thyroidectomy during the same sitting foreseeing the further complications that can arise due to enlargement of the present thyroid gland and how it would affect the outcome of coronary artery bypass grafting.

**KEYWORDS :** retrosternal goitre, coronary artery bypass grafting, total thyroidectomy

### INTRODUCTION

Goitre is the enlargement of thyroid gland irrespective of its pathology. It constitutes for about 60% of neck swellings.

Sometimes there is enlargement of thyroid tissue into thoracic cavity called as sub sternal goitre. Although a rare entity it constitutes about 20% of all patients undergoing thyroidectomies. It is more commonly seen in female population and is generally asymptomatic. While in a neck confined large goitre is identified due to its presentation as neck swelling, a sub sternal goitre may just be an aberrant lobe attached to normal sized thyroid.[1]

Where a neck confined large goitre could give the symptoms of difficulty in breathing, hoarseness of voice, difficulty in swallowing over a period of time, a retrosternal goitre could also have additional symptoms due to compression caused by the sub sternal part over various mediastinal structures. Therefore it becomes important to identify the retrosternal part and manage it appropriately.[2]

Here we present an interesting case of an intraoperative incidental finding of a retrosternal goitre and how we managed it during coronary artery bypass grafting in a patient of triple vessel disease presenting with no apparent neck swelling.

A very few cases of this sort have been reported till now which makes it even more unique, interesting and one of its kind.

### CASE HISTORY

A 67yr old female presented to cardiology department of MGM medical college and Hospital with complaints of chest pain since 8 days which did not relieve on medications and aggravated on exertion. The patient did not complain of any midline neck swelling, hoarseness of voice, difficulty in swallowing. Upon thorough investigation the patient was diagnosed with triple vessel disease for which the cardiothoracic surgeon decided to perform a coronary artery bypass grafting.

The patient was taken for coronary artery bypass grafting under GA and upon performing sternotomy the cardiac surgeon noticed a retrosternal thyroid which was in close proximity to innominate vessels. Foreseen the chances of future compression due to the growing retrosternal part the cardiothoracic surgeon decided to give an intraoperative call to ENT surgeon.



**Fig 1:** Retrosternal part of thyroid **Fig 2:** cervical thyroid with retrosternal part

Upon assessing and evaluating the retrosternal mass, a decision of total thyroidectomy taken. Total thyroidectomy was performed in the same sitting as coronary artery bypass grafting taking a Kocher's incision (as shown in fig1). It was found the retrosternal part was an aberrant lobe measuring about 6x4cm attached to the left lobe of thyroid (as shown in fig 2).

The thyroid was removed in toto and was sent for histopathology which revealed to be multinodular goitre. Both the operations were successfully performed and the incision sites were closed in layers.



**Fig 3:** After total thyroidectomy

The patient had an uneventful postoperative period and discharged after 7 days. The patient came back for a 1 month follow up with a healthy scar and no surgical complications whatsoever (as shown in fig 4).



**Fig 4:** Follow up after 1 month- suture site healthy

### DISCUSSION

Robert graves and Carl van Besodo were the earliest people to have given accurate description of goitre to be an abnormality of thyroid gland.[3] Goitre refers to the abnormal swelling of thyroid gland irrespective of

its pathology though confined to the neck these swellings sometimes grow into the mediastinum. Such thyroid swellings have been classified under the term sub sternal goitre. These type of thyroid swelling constitute about 20% of all the goitres that have been resected till now. Because of their growth in the sternum the possibility of sternotomy becomes an essential consideration while surgically treating these swellings.

Sternotomy is a type of surgical procedure which gives an access to the heart. It essentially involves a midline incision over the sternum and opening of sternum using sternal saw. The need for sternotomy is based on the size of the retrosternal part, which is assessed by a CT scan. Based on this a CSI(CT crosssectional imaging) classification system for sub sternal goitre was coined.

It defined the sub sternal goitre in cranio-caudal dimension antero-posterior dimension and latero-lateral dimension. The cranio-caudal dimension include: grade 1- goitre above the aortic arch, grade-2 goitre at the level of aortic arch, grade 3- below the level of aortic arch. The antero posterior dimensions include: type a- goitre that is prevascular, type b- goitre that is retrovascular and paratracheal and type c- goitre that is retrotracheal. The latero-lateral dimensions include monolateral or bilateral[4]. In our case the substernal goitre was grade 1, type A, monolateral type of size 6x4cm, which could not be addressed without doing a sternotomy.

The natural history of retrosternal goitre is of a slow relentless increase in size, often presenting as an incidental finding on a chest X-ray in the fifth or sixth decade of life. However after a significant increase in size these swellings often present with compression symptoms that arise due to its pressure upon airway and great vessels.[5]

Among these great vessels is an innominate vessel which is also called as brachiocephalic vein. These carries the blood from head and neck region and both the arms. The right and left brachiocephalic veins joins to form superior venacava which directly empties the blood into right atrium. The pressure over these innominate vein would lead to decrease in preload to the heart and over a period of time could manifest into cardiac complications. On the other hand the injury to these veins would lead to mediastinal hematoma, excessive bleeding, chylothorax.[6]

In the above case the innominate vein was found to be around 1cm away from the retrosternal part. The growing retrosternal part would have compressed the left innominate vein leading to the above complication. Considering the patient was already undergoing coronary artery bypass grafting these complications could not be risked for. Therefore managing the thyroid swelling became one of the most important concerns for operating surgeon.

A question could always be posed about necessity of undertaking two major operations in the same sitting. The answer of which lies in the healing process of a sternotomy.

Sternotomy leads to successive formation of adhesions securing cardiac structures to mediastinal structures, including the sternum and increases the potential for injury during sternal re-entry and dissection leading to subsequent high morbidity and mortality rate in operating room or during the recovery[7]. According to the literature available, usually the noted mortality and morbidity of sternal re-entry is about 6.5% among those without injury and 25% among those with injury, when injury occurred during sternal division.[8]

In the above case the slow growing nature of the retrosternal goitre along with its proximity to the innominate vessel with its increased chances of compression and the risks of doing a redo sternotomy compelled us to undertake two major operations in one sitting.

Thyroidectomies are of various types viz hemi thyroidectomy, subtotal thyroidectomy, near total hemi thyroidectomy, Hartley-danhill operation and total thyroidectomy. The decision of which type of thyroidectomy to be done becomes much more clearer after ultrasound and fine needle aspiration cytology from the thyroid swelling.

In this case none of the above investigations were done and therefore the nature of the thyroid swelling was not clear. One could debate about knowing the nature of thyroid viewing it intraoperatively but there have been multiple cases reported and observed in person at times the gross image of the swelling could be different from its

histopathological presentation. All the endeavours here were aimed towards the holistic management of the condition which made it our prime concern to avoid a second exposure of general anaesthesia and hence the decision of total thyroidectomy was taken.

## CONCLUSION

Therefore we say a vigilant and informed decision at right time can save patient's exposure to general anaesthesia a second time. It prevents the complications caused by the compression of innominate veins. Reduces the risk of mortality, morbidity and injury to innominate veins caused by a redosternotomy and improves the outcome and prognosis of coronary artery bypass graft surgery.

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