



Rare Large Colloidal Nodular Goitre with Retrosternal and Retro tracheal Extension:

A Case Report

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Citation of this Article: Dr. Nancy Gokhale, “Rare Large Colloidal Nodular Goitre with Retrosternal and Retro tracheal Extension: A Case Report,” IJMSAR – January – 2023, Vol. – 6, Issue - 1, Page No. 93-100.

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Type of Publication: A Case Report

Conflicts of Interest: Nil

ABSTRACT

Retrosternal goitre (RSG) is a very rare medical condition that constitutes 5 to 20% of the reasons for thyroidectomy. It is defined as when 50% of the thyroid is below the thoracic inlet. Though rare, it can be managed effectively by surgery. In this case report, we report a rare case of a 55-year-old patient who presented with hoarseness of voice for 1 month and swelling in the neck for 15 years. Past history revealed diabetes for 14 years, chronic kidney disease for 3 years and hypertension for 5 years. She was using Tab. Metformin 250mg once a day, Tab. Cilnidipine 10mg and Tab. Metoprolol 25mg once a day. Neck veins were enlarged and there is stridor with exertion. X-

ray of neck revealed deviated trachea to the right side. Computed Tomography (CT) chest confirmed the presence of a large colloidal goitre with retrosternal and retrotracheal extension. Currently, she is in a Euthyroid state. Most of the goitres can be safely removed by the traditional cervical approach. Our patient had around 12cm mass which was impossible to remove through the traditional approach and hence total thyroidectomy was done by tracheostomy, sternotomy approach. Metformin was stopped on the day of surgery but other medications were continued. The patient was discharged in stable condition within

5 days of admission. Patients with huge retrosternal and retro tracheal goitre which causes obstruction in the oesophagus should be treated immediately. They may present a unique set of challenges to the anaesthetist. Careful consideration of the detailed history, examination, and relevant investigation is essential. Thyroidectomy remains the most effective and enduring treatment option.

Keywords

Colloid goitre, Nodular goitre, Retrosternal extension, Swelling in the neck, Thyroidectomy.

INTRODUCTION

Retrosternal goitre (RSG) is defined as when 50% of the thyroid is below the thoracic inlet. It is also called Intra thoracic goitre. It is a rare condition that constitutes 5 to 20% of thyroidectomy patients.^[1] Extension into mediastinum is common in huge goitres. The peak incidence is seen in the 5th to 6th decade. If the patient had associated hypothyroidism or hyperthyroidism, it may increase the risk of complications. The incidence of goitres with thyroid cancer is around 3 to 17%.^[2] RSG occurs if the thyroid enlarges downwards into the chest. They are most likely to be left-sided. A large goitre can cause dysphagia and dyspnoea as the trachea and/or oesophagus are compressed. But, 5%–50% of patients remain asymptomatic.^[3] Huge goitres can be removed

by the traditional cervical approach, but less than 2% of patients may need a sternotomy approach, which increases the risk of pneumothorax and haemorrhage. Huge goitres show dramatic appearance but commonly present fewer problems compared to small retrosternal goitres.^[4] RSG can be classified based on location. Grade 1 goitre is above the aortic arch; grade 2 goitre is located between the aortic arch and pericardium; and grade 3 goitre is below the right atrium. RSGs cause compression of mediastinal structures and can lead to cerebral hypoperfusion and axillo-subclavian vein thrombosis.^[5] In this report, we described a case for the anaesthetic management of a huge RSG with intrathoracic tracheal narrowing scheduled for total thyroidectomy.

CASE PRESENTATION

A 55-year-old female presented to our tertiary care centre named NRI institute of medical sciences, Mangalagiri, Andhra Pradesh, India during November 2022 with a complaint of swelling in the neck. On history, she revealed that she had swelling for 15 years, which was slowly increasing in size and dyspnoea for the last 2 years. There is no associated dysphagia. She is having hoarseness of voice for 1 month. There is no history of tremors, palpitations, or changes in weight or bowel movements. Past history revealed that she had hypothyroidism for the last 10

years and she took Tab Thyronorm(thyroid hormone replacement therapy) 100mcg since then. She said she stopped this medication 4 years back and since then, the swelling enlarged more rapidly. She had diabetes for 14 years, chronic kidney disease for 3 years and hypertension for 5 years. She was using Tab Metformin 250mg once a day, Tab. Cilnidipine 10mg

and tab. Metoprolol 25mg once a day. Surgical history revealed that she underwent a hysterectomy 20 years back. Her appetite and sleep are normal. She had no allergies or addictions. On examination, a diffuse swelling was noted 3cm lateral to the left anterior border of the sternocleidomastoid muscle.

Figure 1 shows swelling of the neck:



The swelling was firm in consistency with retrosternal extension. The lower border was not palpable. Veins were enlarged and tortuous in the lower border. Stridor was present and the trachea deviated to the right side. S1 and S2 sounds were heard. She had normal vesicular breath sounds; her abdomen is soft and non-tender. She is conscious and alert, the central nervous system is normal. Renal and liver function tests were normal, and non-reactive for HIV and hepatitis B tests. Platelet count, and serum electrolytes

(serum sodium, potassium, magnesium, calcium) were normal.

Other blood tests:

HBA1C: 6.6% (diabetic- so slightly high)

Serum uric acid levels: 4.2 mg/dl mg/dl(normal)

Haemoglobin: 9.8 g/dl(less)

pH: 7.3(normal)

T3: 1.65 nmol/L(normal)

T4: 6.6mcg/dl. (Normal)

TSH: 0.5 mIU/L(Normal)

Bleeding time: 2 min

Clotting time: 4 min

Blood group: O+ve.

Imaging:

X ray neck: Swelling and tracheal deviation to right side.

Figure 2 shows X ray of neck:



Video laryngoscopy: Both vocal cords as normal and mobile. Plan computed tomography (CT) chest and neck revealed 12X10X5.6 cm exophytic, lobulated, dense lesion, showing calcifications and colloid degeneration. Retrosternally, it extended into the prevascular area, abutting the arch of the aorta. There is a significant mass effect over the superior vena cava resulting in luminal narrowing at the sternal notch. Retrotracheally, it is extending to the trachea-oesophageal groove by splaying trachea and oesophagus up to the level of carina. The right lobe of the thyroid and isthmus were normal. Atheromatous calcifications were noted in aorta. Ultrasound of the abdomen showed renal parenchymal changes in both

kidneys as she already had chronic kidney disease (grade 3). All other organs were normal.

FNAC showed exophytic, heterogenous soft tissue mass in the left lobe of thyroid with retrosternal and retrotracheal extensions.

Final diagnosis as per imaging, FNAC and clinical examination was colloid nodular goitre with retrosternal extension.

Surgical management:

The patient was admitted into hospital and posted for surgery next day. Surgery was done in supine position under general anaesthesia. Duration of surgery was around 4 hours. During surgery, her blood pressure, heart rate, oxygen saturation, and respiratory

rate were normal. Total thyroidectomy was done by sternotomy approach followed by tracheostomy as the traditional cervical approach is not possible. The

patient was discharged in stable condition within 5 days of admission.

Figure 3: shows the position of patient during surgery:



Figure 4: shows the lesion after removal:



DISCUSSION

Till now there are only few published reports on mediastinal goitre that pushes the main vessels postero-laterally and causes tracheal stenosis^[6-7] Treatment through thyroidectomy for a massive goitre can be challenging, especially if the mass weighs is more than 500 g.^[8] A low arc incision can be used to resect most retro substernal masses from the neck. But

at present, there are no definitive guidelines for detecting patients who will most likely need a median sternotomy. In these cases, CT is helpful in successful assessment. The incidence of challenging intubation in patients with goitres was around 2-12%.^[9-10] Major complications with huge nodular colloidal goitre include difficult intubation, mediastinal mass

syndrome, extensive blood loss, more surgery duration, sternotomy challenges, and thyroidectomy complications. Appropriate pre-surgical assessment to rule out signs and symptoms of the mediastinal mass syndrome is vital in the management of patients with large goitres. In our patient, we premedicated with anti-sialagogues and anxiolytics, pre-oxygenated in head up position and induced using an inhalational agent with 6% sevoflurane along with fentanyl (1-2 mcg/kg) and intubated with 7mm endotracheal tube. The flexible intubating scope was kept ready, which would offer rescue in case of loss of airway control as recommended by some authors.^[11] Cook et al. found that there is no consensus on the best plan to secure and maintain the airway in patients with goitre, even among international experts.^[12] Invasive haemodynamic monitoring was done by placing an arterial catheter and central catheter line. Sternotomy is a painful procedure that requires sufficient analgesia, and good muscle relaxation to spread the sternum. During sternotomy, the anaesthetist should stop the ventilation at the time of sternotomy and resume ventilation whenever required till the completion of procedure. Adequate pain relief perioperatively and our patient is able to do deep breathing exercises and spirometry after extubation, reducing the incidence of pulmonary complications

after surgery. Batori et al. found the need for a sternotomy and cervical incision if the brachiocephalic vein is located distally and if more than 70% of the mediastinal mass is located below the thoracic outlet.^[13] With few exceptions, huge goitres can be managed surgically by the cervical approach but less than 2% of patients may need a cervical approach combined with sternotomy/manubriectomy/thoracotomy.^[14]

CONCLUSION

Patients with huge retrosternal, and retrotracheal goiter which causes obstruction in the oesophagus should be treated immediately. They may present a unique set of challenges to the anaesthetist. Careful consideration of the detailed history, examination, and relevant investigation are essential. Thyroidectomy remains the most effective and enduring treatment option. Funding: Nil None.

Ethical considerations: Written informed consent was obtained from the patient to use her data for publication.

Acknowledgements: The authors would like to thank the Head of The Department, Anaesthesiology, NRI Institute of Medical Sciences, Mangalagiri, Andhra Pradesh.

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