

Coronary Artery Bypass Grafting and Subtotal Thyroidectomy; as a Combined Procedure does not Effect on Outcome Significantly – A Case Report

Khalid Maudood Siddiqui and Muhammad Asghar Ali*

Department of Anaesthesia, Aga Khan University, Pakistan

*Corresponding author: Muhammad Asghar Ali, MCPS, FCPS (Pakistan), Assistant Professor, Department of Anaesthesia, Aga Khan University, P O Box 3500, Stadium Road, Karachi 74800 – Pakistan, Tel: +92-21-3486-4639; Fax: +92-21-3493-4294; E-mail: asghar.ashraf@aku.edu

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Case Report

We are presenting anaesthetic management of a 70 year old female (weight 53 kg, height 155 cm), known case of hypertension, type-II diabetes, ischemic heart disease, angina single episode two months ago, exertional dyspnea grade I-II, large multinodular goiter since more than 30 years although clinically and biochemically patient was euthyroid. Pre-operative chest radiograph showing lateral compression of trachea at C5-C6 level, slight increase soft tissue density at the level of C5 and there was no retroperitoneal extension (Figure 1).



Figure 1: Preoperative chest radiograph (lateral view) showed compression of trachea at C5-6 level.

Pre-operative chest radiograph of thorax and neck showed tracheal deviation toward right at thoracic inlet by enlarged thyroid gland (Figure 2).

All other investigations were in normal limits. Bilateral thyroid lobes biopsy showed nodular hyperplasia. Goiter was not causing any dyspnea, dysphagia or stridor. Angiography done showed triple vessel disease with EF of 60%. Pre-operative heart rate was 80-90 b/m and there were no flapping tremors and patient thyroid profile was within normal range. Indirect laryngoscopy showed bilateral mobile vocal cords. Coronary artery bypass grafting and subtotal thyroidectomy was planned as a combined procedure.



Figure 2: Preoperative chest radiograph (AP view) of thorax and neck showed tracheal deviation towards right by enlarged thyroid gland.

Operating Room Course

Two 14G peripheral intravenous lines taken in operating room after application of routine monitors (ECG, Noninvasive blood pressure and pulse oximeter) an arterial-line passed in left radial artery. All specialized equipment to deal with airway compromise was ready and patient induced with midazolam 3 mg, etomidate 4 mg, rocuronium 60 mg. After ensuring the proper depth of anesthesia, direct laryngoscopy was performed which showed intubation grade-I, patient intubated with 7.0 mmID OETT without bougie or stylet assistance, chest air entry bilateral equal on auscultation and tube fixed on 20 cm at angle of mouth. CVP passed in right subclavian vein after all aseptic measures. Monitoring during anesthesia included; all standard monitoring along with invasive monitoring (invasive blood pressure and central venous pressure monitoring). Procedure started by ENT surgeon first for subtotal thyroidectomy. ENT surgeon secured hemostasis and kept left open surgical wound. Coronary artery bypass grafting started later on pump and three vessels grafting done. One packed cell on pump and one packed cell transfused after off bypass. Pump time was two hours and fifteen minutes. Patient was hemodynamically stable and her labs report was within normal limits. Patient managed successfully and extubated on second day in CICU and shifted to step-down unit on fourth day of CICU.

1st day CICU

Patient remained intubated, on minimal pressure support, with adequate urine output. Due to drop in hemoglobin to 6.8 on first day and two pack cells transfused.

2nd day CICU

Patient was on minimal pressure support. Patient was extubated successfully and shifted to step-down intensive care unit on fourth day of after surgery. After two days stay in step-down unit shifted to special care. She was discharged from the hospital on the eighth day with perfect respiratory and hemodynamic parameters on routine cardiac medications (thyroxin and calcium).

Discussion

Thyroid disease in patients with cardiac disease, either coronary or valvular, is a common finding, reaching 11% [1]. Thyroid dysfunction affects cardiovascular physiology by different means, including myocardial inotropy, heart rate, cardiac output and peripheral arteries reactivity [2]. It would be prohibitive, in terms of cardiac risk, to propose thyroid surgery prior to cardiac surgery. On the other hand, performing thyroidectomy weeks or months after initial CABG/valvular surgery exposes patients to the cumulative risk of two independent interventions. Thus, managing both thyroid and cardiac problems in the same-staged operation seems rational and tempting [3,4]. Signs and symptoms of large airway obstruction depend on several factors, the location of lesion, degree of obstruction, and the presence of co morbid and cardiopulmonary disease. Usually adults are symptomatic when the cross-sectional diameter of the airway is reduced to roughly 50% of normal (5–6 mm) [5]. Stridor at rest is the indicator of severe narrowing of the airway to a value of 3 mm or less [6]. Hoarseness indicates pathology of the recurrent laryngeal nerve or vocal cords.

In our patient, the trachea accepted a 7.0mm OETT. Definitive diagnosis depends on obtaining an accurate history combined with preoperative endoscopic evaluation. Radiographic studies are useful to show the extent and location of pathology involving the trachea [7]. In cases of critical narrowing, it is prudent to perform the diagnostic bronchoscopy in the operating room where an assortment of rigid bronchoscopes, dilators, biopsy forceps, and instruments to perform emergency tracheostomy are available. Rigid bronchoscopy serves several purposes. It allows visualization, the nature and extent of the airway lesion. The type, size, and the potential difficulty in endotracheal tube placement can be judged, provides opportunity for tracheal dilation to provide an airway of adequate size, and enables accurate measurements of diseased and normal trachea to judge resection ability if required. The use of this technique in emergency situations allows thorough examination of the patient and planning of the elective operation. Tracheal collapse may be seen in a variety of lesions. Segmental collapse is seen in a number of patients who have had pressure injury to the trachea after intubation. Fluoroscopy shows a segment that collapses on coughing or forced respiration. Resection is the usual treatment.

Chronic compressive lesions may lead to collapse of the trachea. A large goiter, cystic thymus, an aneurysm, or congenital vascular malformation (vascular ring) or anomalous innominate artery can cause compression of the trachea. When this compressive lesion is excised/displaced so that pressure is no longer exerted, tracheomalacia may appear because the tracheal rings thin out. In this patient, the authors had the following plan. Thyroidectomy after heparinization would cause substantial bleeding. Since the authors could pass an appropriate-sized tube, thyroidectomy was performed first, followed by on-pump CAB. In this case, thyroidectomy was performed with the coronary artery disease in mind (i.e., all due precautions were taken to prevent any further ischemic damage to the myocardium).

The need for thyroid therapy must be balanced against the risk of aggravation of anginal symptoms (can add β -blockers if needed). Thyroid hormone replacement may precipitate myocardial ischemia, myocardial infarction, or adrenal insufficiency [8]. In the presence of hypothyroidism, respiratory control mechanisms do not function normally. However, the response to hypoxia, hypercarbia, and clearance of free water become normal with thyroid replacement therapy. Retrosternal extension can cause superior vena caval obstruction. This manifests as airway edema, hemodynamic instability, and dependence on spontaneous respiration for venous return. This patient did not have any of these symptoms.

Conclusion

Cases of successful combined cardiac procedures and thyroidectomy have been reported and appear to be safe and surgically feasible given the anatomic vicinity of the two sites. Furthermore, one combined procedure may reduce the operative risk of two separate interventions and may provide the added advantage of reduced costs and reduced duration of inpatient stay.

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