Multinodular goiter with retrosternal extension causing airway obstruction: Management in intensive care unit and operating room

Sir,

Airway compromise and difficult intubation may be anticipated in huge thyroid with gross tracheal deviation. Retrosternal extension can present with compression of structures below it and may mimic a medical condition or as emergency respiratory obstruction. Benign goiters affect 5% of the general population in nonendemic areas and 15% in endemic areas, and of these 1-15% of all patients undergoing thyroidectomy have a retrosternal goiter.[1,2]

A 58-year-old female, with thyroid swelling presented with sudden onset of dyspnea, noisy breathing, and cough with expectoration for 5 days. She was provisionally diagnosed and treated for chronic obstructive pulmonary diseases. She had expiratory wheeze with respiratory distress, bilateral crepitations, rhonchi, with saturation of 85 with oxygen by the mask of 5 L/min, pulse rate of 150 beats/min. She required immediate intubation and respiratory support, Intubated with injection propofol and injection suxamethonium without difficulty. The lobes of the thyroid gland were diffusely palpable and nodular. Lower pole of thyroid swelling was not palpable. Investigations showed hematocrit 27; white blood cells of 17.700/mm^3, thyroid function tests-free T3 0.59 ng/ml, free T4 2.13 mcg/ml, thyroid stimulating hormone 1.25 IU/ml. Lateral view of neck X-ray showed compression of the trachea [Figure 1] and anteroposteior view showed deviation of the trachea to left.

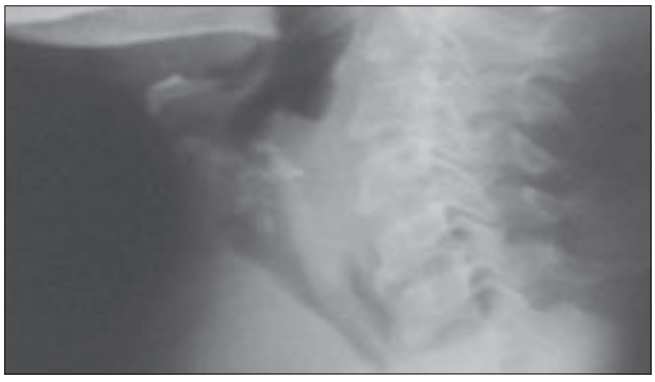

Figure 1: Lateral view X-ray showing compression of trachea

Fiberoptic flexible bronchoscope passed through the endotracheal tube (ETT) showed edema and congestion of luminal wall, side-to-side narrowing and intraluminal bulge at the level of thyroid. On computed tomography scan severely narrowed trachea from C6 to D2 with narrowest part at D2 measuring 6 mm and extension of left thyroid gland retrosternally just above the arch of aorta [Figure 2].

She was planned for elective thyroid surgery, after obtaining informed consent, injection glycopyrollate as premedication, induced with propofol, maintained with fentanyl, oxygen, nitrous oxide, isoflurane. ETT was changed to reinforced tube threaded over bougie, during this process patient was breathing spontaneously and had inspiratory stridor as we were exchanging the tube. Intra operative period was uneventful and thyroid gland extending up to arch of aorta. Muscle relaxation maintained with vecuronium and vitals monitored. Post procedure she returned to intensive care for observation for 5 days, flexible intubating fiberoptic scope was introduced into the trachea through ETT, tracheal rings were inspected after withdrawal of ETT up to cricoids cartilage. The integrity

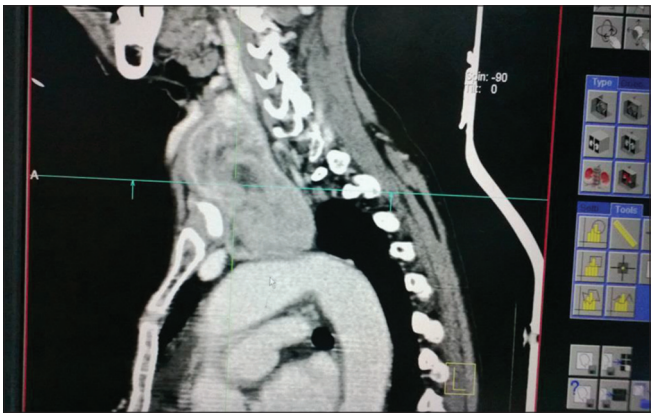

Figure 2: Computed tomography showing thyroid gland just above on the arch of aorta

of the cartilages checked by mechanical compression of tracheal rings by the surgeon and observing through the fiber optic scope for the recoil to the original shape. Extubation done confirming there was no collapse of lumen, no stridor or respiratory distress.

Upper airway obstruction due to thyroid gland has been reported up to 31% and difficulty in intubation has been reported 11%.[3,4] Central airway obstruction produces symptoms of dyspnea, stridor, or obstructive pneumonia and is often misdiagnosed as asthma.

Meticulous planning for managing difficult airway and perioperative care in planned extubation after confirming the absence of airway compromise is of prime importance. Difficult airway algorithms and experience of the anesthesiologist plays a major role in management and outcome of the procedure. The early identification of all probable outcomes and prompt mobilization of resources allowed a favorable outcome in this case.

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