

## Case Report

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# Thyroid Surgery When General Anesthesia is Not Feasible

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### Abstract

*Historically, thyroid and parathyroid surgery was done initially under local anesthesia. With the advent of safer general anesthetic techniques, the need for local anesthesia fell dramatically. Recently the use of local anesthesia combined with monitored anesthesia care (MAC) has been reintroduced as an alternative to general anesthesia for some particular thyroidectomy. Newer intravenous anesthetic agents allow for the establishment of effective sedation and analgesia with adjusted level and duration of action. This allows for monitoring of the effectiveness of the anesthesia during the surgical procedure that meet the patient's comfortable needs and the surgeon's technical needs. This approach allows for rapid recovery of alertness and early assessment of the patient's initial postoperative recovery. Additionally, it optimizes the potential for outpatient surgical care. We report a 25 year old male, diagnosed as a case of follicular adenoma of thyroid with emphysematous bullae; who had undergone thyroidectomy under local anaesthesia. Surgery was uneventful and resulted in a decreased length of stay, cost and operating time.*

**Key words:** Local anaesthesia, thyroid surgery, general anaesthesia.

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### Introduction

Thyroid surgery is most commonly performed under general anaesthesia now-a-days<sup>1</sup>. Historically, surgery in patients with thyroid disease especially thyrotoxicosis was performed using local anaesthesia<sup>2</sup>. As medical therapy evolved to provide reliable means of maintaining euthyroid state and as general anaesthesia became safer, many procedures including thyroid surgery are being done exclusively under general anaesthesia. However, over the last three decades, there has been resurgence in numbers of thyroid operations under local anaesthesia. All known thyroid surgeries under local anaesthesia were done for multinodular goiter. Local anaesthesia can provide good analgesia and avoid major side effects of general anaesthesia<sup>3</sup>. In addition, the analgesia continues in the post operative period, thus modifying the autonomic and endocrine stress of surgery leading to rapid recovery<sup>3</sup>. In this case report a malignant thyroid case is

described where general anaesthesia was not feasible and hemithyroidectomy followed by completion thyroidectomy was done under local anaesthesia.

### Case Report

A 25 year old male presented with swelling in the right side of front of the neck for 5 months and shortness of breath for 3 months.

There was no complaint of palpitation, cold or heat intolerance. His bowel and bladder habit was normal. He was non-diabetic and normotensive.

He is a smoker and takes 20 sticks of cigarettes daily for the last 10 years. He is non alcoholic and not drug abuser. There is no history of significant disease such as TB or malignancy in his family.

General examination revealed normal study except clubbing and raised respiratory rate (20 breath/min).

Loco-regional examination revealed a swelling in the right side of front of the neck, measuring about 3x3 cm, ovoid in shape, firm in consistency, well-defined margin, nontender, free from overlying or surrounding structure. The swelling moved on deglutition. No scar mark, engorged vein or sinus was seen. Trachea was central in position. There was no retro-sternal extension. Berry's sign and cocher's sign was negative. There was no bruit over the swelling. There was no cervical lymphadenopathy.

There was no sign of toxicity. Indirect laryngoscopy revealed normal vocal cord movement with no lesion elsewhere.

Respiratory system examination showed ronchi in both lung fields. Other systems appeared normal.

His hematological and bio-chemical investigations were within normal limits. Chest X-ray showed multiple thin walled lobulated radiolucent areas seen in both lung fields.



**Figure 1:** Chest X-ray(P/A view)

Thyroid hormone level was within normal limit. Ultrasonography of thyroid gland showed enlarged right lobe of thyroid occupied by a hypoechoic nodule filled with thick content measuring 35x27mm. Left lobe was mildly enlarged in size. Isthmus appeared normal.

FNAC of thyroid gland shows follicular neoplasm.

So, a diagnosis of Follicular adenoma of thyroid with bilateral emphysematous bullae was made.

Standard treatment plan for such a case is hemithyroidectomy under general anesthesia with per-operative frozen section facilities. If it becomes positive for malignancy then total thyroidectomy is done in same sitting. But, unfortunately per-operative frozen section facilities was not available. So, decision to do hemithyroidectomy of the involved site under general anaesthesia at first and then

sending specimen for histopathology was taken.

But, both the dept. of anaesthesia and dept. of respiratory medicine declared the patient unfit for general anesthesia.

G/A was avoided due to risk of exacerbation of COPD and chance of rupture of bullae. So, Local Infiltration and sedation with opioid analgesia with face mask ventilation were employed.

#### **Anaesthesia Technique:**

- Inj. Midazolam 15mg I/V stat.
- Inj. Dexamethasone 1 amp. I/V stat.
- 20ml Inj. Bupivacaine (2mg/kg) with 10ml diluted adrenaline in normal saline (1:100000) was infiltrated.

Simple face mask was placed over the oronasal area securing the eyes with eye pad. The mask was fixed with adhesive taps. 5litre oxygen/min was employed as an aid for a spontaneous respiration.

Reduction of respiratory rate was observed about 2min after intravenous midazolam which resolved spontaneously. Oxygen saturation was throughout 100%. Pulse initially raised up to 150 bpm after local infiltration but came back to baseline after 5 min.

Biopsy report revealed follicular carcinoma. So, a revision plan of surgery was taken.

CT scan of neck was done to see the neck status. Except the remaining lobe no involvement of neck could be detected. So, completion thyroidectomy was planned and done with previous anaesthetic technique.

#### **Discussion**

Local anesthesia is used in the surgery for minor, short lasting surgical procedures<sup>1,2</sup>. Vast majority of surgical procedures in the treatment of thyroid diseases are performed under general anesthesia. Recently there has been a growing interest in using local

anesthesia in surgical procedures involving the thyroid gland, including more extensive ones.

Outpatient management for patients who underwent thyroidectomy was first described as feasible in 1986 by Steckler<sup>12</sup> in 41 of 48 patients in his personal series. These cases included thyroid lobectomies and bilateral subtotal lobectomies. In 1991, Lo Gerfo et al<sup>4</sup> described their experience with outpatient thyroidectomy in 76 of 134 patients discharged the same day after a postoperative evaluation period of 4 to 8 hours. They included 21 patients undergoing total thyroidectomy in the outpatient group. In 1995,

Commonly 0.5% bupivacaine solution is used for local anesthesia<sup>5</sup>, usually as C2-C4 neck plexus block. This anesthetizes the whole surgical field.

Premedication is commonly used before the procedure<sup>3</sup>. But; we did not use any premedication.

The advantages of local anesthesia with MAC are faster postanesthesia recovery, no throat or vocal cord irritation and potential avoidance of some of the adverse effects of general anesthesia such as prolonged postanesthesia recovery. The disadvantages of local anesthesia with MAC to the patient are the vague awareness of being in the operating room and the sense of pulling and pressure on the surgical wound. Patients who are claustrophobic would not tolerate this approach and the anesthesiologist has to monitor the adequacy of sedation and the airway more closely, with frequent adjustments of the level of sedation for patient comfort while maintaining proper oxygenation. The cooperation of the patient is necessary at some points, so individuals with dementia or language barriers are not the best candidates for this anesthetic approach. Criteria of patient selection include confidence

with the method and operator, good cooperation, low anxiety level<sup>3</sup>. We tried to follow this selection criteria.

General anesthesia has the potential to result in subsequent nausea and vomiting afterward. Sonner et al<sup>10</sup> demonstrated an overall 54% incidence of postoperative severe nausea. Our study showed no vomiting within 24 hours of surgery.

Some intraoperative monitoring of voice function under local anesthesia with MAC is intermittently possible<sup>5</sup>. Following our surgical procedure, the voice quality was excellent. No pharyngeal or laryngeal irritation by the endotracheal tube also helped to achieve this goal.

Outpatient surgery will necessarily be less expensive care to deliver than inpatient surgery (including a hospital stay of <24 hours). The patient in this study spent less time in the operating room, less staffing and equipment resources needed. However, surgery with local anesthesia is markedly cheaper<sup>4</sup>.

Argument against outpatient thyroidectomy is the potential for the development of life-threatening neck hematoma requiring emergency bedside decompression for respiratory compromise. The greatest risk for respiratory compromise after thyroidectomy comes from inadequate hemostasis from an arterial source.

Our preference was mechanical hemostasis of all of the vessels encountered in the dissection. A thorough visual inspection of the operative field was done, looking particularly for the unligated vessel potentially in spasm and not actively bleeding..

### Conclusion

Local anesthesia in the thyroid surgery can be a safe alternative for general anesthesia

when the latter is contraindicated or unavailable. This procedure is safe, simple, acceptable and cost-effective in our experience.

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