

# The Role of Infiltrative Local Anaesthesia in Thyroidectomy

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## Abstract

**Background:** General anaesthesia is the anaesthetic agent of choice during thyroidectomy, however, recent reports there is a role for local anaesthesia. This study reports on the experience of thyroidectomy performed under infiltrative local anaesthesia in a rural surgical setting.

**Methods:** This was a review of patients who underwent thyroidectomy during a surgical camp. We included the bio data of the patients, anaesthesia used, duration of surgery, immediate complications and duration of stay. Patients underwent either general or infiltrative local anaesthesia.

**Results:** Out of seven patients undergoing surgery, three were performed under infiltrative local anaesthesia. The average age for all the patients was 37.43 +/- 5.3 years and there was no statistical difference in the mean age between patients who underwent infiltrative anaesthesia and those who underwent general anaesthesia. We noted one immediate transient difficulty in breathing in a patient who underwent general anaesthesia. The average length of stay was 2 days for local anaesthesia group and 2.25 days for general anaesthesia.

**Conclusions:** There was no difference between the two groups either on biodata or outcome measures. Local anaesthesia is a safe alternative to general anaesthesia for patients undergoing thyroid surgery.

## Introduction

Thyroid surgery is usually performed under general anaesthesia in current surgical practice (1). Historically, thyroid surgery had been performed under regional anaesthesia for many years. As early as 1907, TP Dunhill reported seven consecutive thyroidectomies for thyrotoxicosis under regional anaesthesia. These patients were plagued with massive oedema and atrial fibrillation, and would have otherwise died under the general anaesthetic of choice at that time, chloroform (2). By 1932, GW Crile had performed more than 20,000 thyroidectomies under regional anaesthesia (3). As general anaesthetics improved, the number of thyroidectomies performed under general anaesthesia increased and ultimately became the preferred modality (2). Over the last two decades there has been resurgence in the number of thyroid operations performed under regional anaesthesia (4-8). The principal advantage of local or regional anaesthesia is avoidance of the side effects of general anaesthesia, particularly nausea, vomiting, and postoperative disorientation (3, 4). Local or regional anaesthesia also provides analgesia well into the postoperative period, modifying the stress response to surgery (4). Finally, regional

anaesthesia may facilitate "same day" or outpatient thyroid surgery (9, 10).

This study documents the experience with the use of local anaesthesia compared to general anaesthesia for thyroidectomies in a surgical outreach camp.

## Methods

This was a cross sectional review of surgical outreach camp patients who underwent thyroidectomy under similar settings. The health facility where the procedures were carried out had only one operating table and one general anaesthetic machine. The team comprised two surgeons, two anaesthetists, four medical students and four nursing staff. There were 17 patients scheduled for surgery under general anaesthesia in two days. Since it was not possible to perform 8 surgeries per day under general anaesthesia under the prevailing circumstances, it was decided that some patients would be operated under regional anaesthesia if we were to offer services to all the scheduled patients. We included all patients who had class 2 goitre and gave informed consent. We excluded patients with class 4 goitres due to the fact that they would have required a volume of local

anaesthetic that would have exceeded the maximum allowable dosages.

For patients undergoing infiltrative local anaesthesia, the anaesthetic used was lidocaine 1% with adrenaline in the ratio 1:200,000. This was diluted with normal saline in the ratio of 1:2. The patients were positioned supine with a sandbag in the interscapular area and the head resting on a head ring. The anaesthetist infiltrated 10cc of the local anaesthesia prior to cleaning and draping the surgical field. After draping, a collar crease incision was performed and a sub-platysmal flap raised, after which 20cc was injected under the strap muscles and then dissection proceeded in the midline. Further infiltration of lignocaine 10cc was done under the capsule of the thyroid gland. The patient was engaged and encouraged throughout the procedure. After successful exposure of the gland, the lobe was retracted medially followed by infiltration of further 5-10 cc. The inferior thyroid artery was clamped with haemostats and cut after identification of the recurrent laryngeal nerve. The opposite lobe was dealt with in a similar manner with addition of further 5cc-10cc. The detachment from the trachea required an additional 5-10cc. A drain was used in all the patients.

For those who underwent general anaesthesia, a similar technique was performed without the infiltration. Drains were only used in patients who underwent total thyroidectomy.

All patients were then taken to the surgical ward and post-operative pain management was similar (intramuscular pethidine 100mg 8 hourly for the first day and intramuscular diclofenac 75mg 8hrly for the next day). All patients were discharged on oral diclofenac for another 3 days.

## Results

Seven patients were operated on, three under infiltrative local anaesthesia and the rest under general anaesthesia. The average age for all the patients was 37.43 +/- 5.3 years. The average age for the infiltrative local anaesthesia group was 36 +/- 1.7 years while that for general anaesthesia group was 38.50 +/- 7.0 years. The average duration of surgery for all patients was 76.43 +/- 11.11 minutes (range 60 - 90 minutes). The average duration for surgery in the infiltrative local anaesthesia group was 77.67 +/- 7.54 minutes while in the general anaesthesia group this was 75.50 +/- 5.72 minutes.

The amount of lidocaine used was 55cc, 60cc and 65cc for the three cases done under local anaesthesia. The patients weighed 50kg, 55kg and 57kg respectively.

One patient who underwent total thyroidectomy under general anaesthesia for a huge goitre developed stridor that was attributed to tracheomalacia. This difficulty in breathing occurred 2 hours after the surgery and cleared within 6 hours.

None of the procedures performed under local anaesthesia required conversion to general anaesthesia. No significant voice change was noted in the other patients apart from the single patient with stridor. There were no symptoms of hypocalcaemia noted in both groups. No infection or bleeding was reported.

There was no reported mortality and the average length of stay for the infiltrative anaesthesia group was 2 days while that for general anaesthesia was 2.25 days.

## Discussion

The current surgical practice is to perform thyroidectomy under general anaesthesia(1) , however in some endocrine surgical units there have been reports of patients operated under local anaesthesia which has been reported to be safe with no significant complication profile as compared to general anaesthesia (8). In this report, we found that local anaesthesia is a safe alternative to general anaesthesia for thyroidectomy. Although there was one complication in the patients undergoing general anaesthesia, there was no complication among those who underwent the procedure under local anaesthesia. The number of patients in this study is too small to make any firm conclusions on the safety of the infiltrative local anaesthesia.

We did not note any difference between the two groups with regard to duration of surgery, complication or length of stay. Again the small number of patients in the study could have precluded a difference from being observed given the low incidence of such complications.

It has been reported that local anaesthetic should be used cautiously in the operative field. Early exposure of the nerve and changing the anaesthetic to 1% lidocaine without bupivacaine may decrease transient dysfunction of the recurrent laryngeal nerve (9). Additionally, it is theoretically plausible that dissection in the region of the recurrent laryngeal nerve can cause discomfort in a semi-awake patient that will precipitate a response from the patient (11). In our experience, we used lidocaine 1% with adrenaline 1:200,000 and we did not notice any change in voice.

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In some papers, there were reports of the use of additional diazepam and pentazocine (12). In this study, none of our patients received any sedatives. We found that communicating with the patient intra-operatively was reassuring. We did not encounter any intra-operative problem that warranted either use of sedatives or conversion to general anaesthesia due to unbearable discomfort or pain.

In a set up where there is no general anaesthesia as is the case in surgical outreach camps, it would be important therefore to develop this technique since it is feasible and safe.

This procedure should be performed by surgeons that are already conversant with thyroidectomy and facilities should be made available for general anaesthesia in high risk patients.

We conclude that thyroidectomy can safely be performed under local anaesthesia and this technique can be of particular utility in surgical outreach camps.

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