

CERVICAL PLEXUS BLOCK FOR THYROIDECTOMY: EXPERIENCE WITH A GIANT GOITRE: CASE REPORT.

*G.A Rahman, **I.K Kolawole

*Departments of *Surgery and **Anaesthesia University of Ilorin Teaching Hospital, Ilorin, Nigeria*

ABSTRACT

Local or regional anaesthesia has long been recognised as a useful anaesthetic option for thyroidectomy. A few authors have reported the successful use of local infiltration anaesthesia for thyroidectomy in our environment. The technique is said to be particularly suitable for simple giant goitres. Cervical plexus block has also been found useful for this operation in other parts of the world. However, we are unaware of any report on the use of cervical plexus block for thyroidectomy in our environment. We used bilateral superficial cervical plexus block for thyroidectomy in a 20-year old girl with a simple multinodular goitre. Surgery was performed with the patient in the classical thyroidectomy position. Though the patient was lightly sedated during the operation, the anaesthetist maintained communication with her throughout the procedure. Anaesthesia was generally effective, except for minor complaints of pressure symptoms during mobilization of the gland and postural aches. These, the patient described as tolerable. Surgery, which lasted 2 hours 45 minutes, was uneventful. The patient was allowed oral fluid intake within 2 hours postoperatively.

Superficial cervical plexus block is simple, safe, effective and cheap for thyroidectomy for Simple Giant Goitre.

Key Words: Cervical Plexus block, anaesthesia, Giant Goitre thyroidectomy, cheap (Accepted 18 April 2007)

INTRODUCTION

Thyroidectomy is traditionally performed under general anaesthesia with endotracheal intubation. However, for selected patients and in certain circumstances, local or regional anaesthesia may be preferred^{1, 2}. The indications for use of regional anaesthesia for thyroidectomy in our environment have in most cases been lack of anaesthetic facilities/or personnel, and surgeon's preference, though with the consent of the patient. Other indications elsewhere in the world are patients' preference and associated cardiac or pulmonary disease³. However, drawing from the advantage of regional anaesthesia, that is ease of administration and cost effectiveness, this technique of anaesthesia may also play a unique role in a developing country like Nigeria. The rising cost of health care services has virtually removed this facility from the reach of most average Nigerians. The result is that most people now go about with their health problems as long as it does not pose any immediate threat to their life. However, provision of a cost-effective anaesthetic option, which at the same time provides safety and effectiveness would be appreciated by most surgical patients. This was the situation with the

patient in this case report. Superficial cervical block was done in this patient as previously described⁴.

CASE REPORT

M. R. a 20- year old female hairdresser presented at the surgical outpatient department of the University of Ilorin Teaching Hospital with a 10-year history of an anterior neck swelling. The swelling was not painful but had progressively increased in size. Her reason for seeking treatment was cosmetic. She had presented in the hospital with the same swelling about 3-years earlier, when she was diagnosed to have simple goitre. She was then offered surgery, which she accepted. However, she later absconded from hospital due to lack of enough fund to proceed with the surgery. Physical examination revealed a young lady in no apparent distress, pulse 84bpm, regular and blood pressure 120/70mmHg. She had a simple giant goitre involving mainly the left lobe of the thyroid gland with the trachea slightly deviated to the right. There was no demonstrable retrosternal extension. Examination of the other systems revealed no abnormalities. Haematological and serum biochemistry results were essentially normal. Ultrasound scan of the neck showed a simple multinodular goitre involving mainly the left lobe and isthmus of the thyroid gland. Neck x-ray showed soft tissue swelling with tacheal deviation to the right.

Correspondence: Dr G.A Rahman
E-mail: garahman1@yahoo.com

She had indirect laryngoscopy, which showed normal movement and appearance of the vocal cords. A diagnosis of giant multinodular goitre was made. Patient was offered surgery, which she accepted. However, she later absconded for financial reason.

To reduce cost she was offered the option of having the surgery done under a regional anaesthetic technique. This, she accepted, and gave a written consent.

Patient was sedated overnight with oral diazepam 10mg and premedicated with another 10mg diazepam orally just before being transferred to the theatre on the morning of operation.

Technique of Surgery

In the pre-operative room, after establishing a peripheral intravenous line, the patient was sedated with intravenous midazolam 2mg and pentazocine 20mg (calculated analgesic dose). This was followed by bilateral superficial cervical plexus blocks performed by the anaesthetist as follows:

The midpoint of the posterior border of the sternomastoid muscle was identified. From this point 15ml of 1% lignocaine with 1:200,000 adrenaline was infiltrated along the posterior border of the muscle, (3cm cephalad and caudad Figure 1a and 1b), to block the superficial branches of the cervical plexus. A further 3ml of the solution was also infiltrated superficially above the muscle to block the transverse cervical nerves (Figure 1c). The block was performed on both sides of the neck using a size 21-gauge hypodermic needle. The patient was then transferred into the operating room where a Nellcor Bernet multiparameter monitor was attached to monitor the pulse rate, arterial oxygen saturation and blood pressure. Using a 25-gauge needle, a transtracheal injection of 4ml plain lignocaine 2% was performed through the crico-thyroid membrane, to decrease airway reactivity during surgical manipulations. The patient was positioned supine with a shoulder pad to extend the neck and the head was supported on a head ring. During surgery, the patient was sedated with intermittent intravenous administration of midazolam and pentazocine as required. However, the anaesthetist maintained communication with the patient throughout the period of surgery. The surgery, which lasted about 2hours, 45 minutes, was uneventful. The patient's weight was 49kg and the thyroid gland removed was 500g. Anaesthesia was generally effective for the procedure, except for minor complaints of pressure symptoms, during mobilization of the gland, and postural aches. These, the patient described as tolerable. The patient was observed in the recovery

room for 1 hour before being transferred to the ward. She was allowed oral fluid intake within 2 hours postoperatively. Stitches were removed on the 4th postoperative day and discharged home thereafter. Patient has been doing well since then (4 years postoperatively.).

Figure 1: Needle Placement(a,b,c) for Administration of Local Anaesthetic to Block Superficial Cervical Plexus

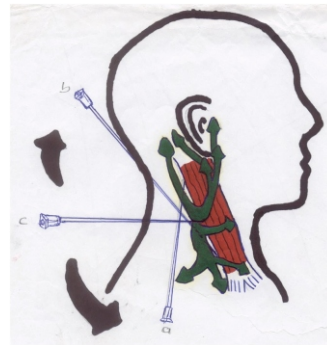
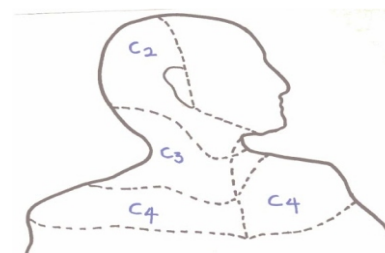


Figure. 2: Cutaneous Distribution of the Superficial Cervical Plexus



DISCUSSION

Goitre is an endemic thyroid disease in Nigeria^{5,6,7}. Most cases of asymptomatic goitre present for thyroidectomy for cosmetic reasons. Simple Goitre constitutes about 84.5% of all cases of Goitre in Ibadan⁶, while it constitute about 73.4% of cases in Ilorin, Nigeria⁸. As far back as 1959, Thomas⁹ published the first report from Ibadan on The large Goitres. Over 60% of his 100 cases had massive goitres. It was much later however, that Olurin in a prospective study showed that simple goitre weighing not less than 10gm/kilogram body weight were attended by certain clinico-pathophysiological phenomena grouped together to form a Simple Giant Goitre syndrome (SGGS)¹⁰. This is a simple goitre weighing not less than 10mg/kilogram body weight, with a history usually of not less than 10 years duration and predominantly in a peasant woman of about 41-50 years of age who live in rural goitre endemic area¹⁰.

Thyroidectomy typifies more than any other operation the supreme triumph of the surgeon's art.

This is traditionally performed under General anaesthesia with endotracheal intubation. Attempts have been made by surgeons in developing countries to solve the problem of availability of Anaesthetist and other facilities including cost reduction, by doing thyroidectomy under Local Anaesthesia, and also use of ketamine anaesthesia without intubation^{1,2,11}.

Experienced surgeons believe that operating the larger goitres under local infiltration anaesthesia, is better than smaller ones. However, there is problem of repeated injections of local anaesthetic, its attendant inconveniences to the surgeon and the patient, and the possible risk of giving overdose of the anaesthetic agent. We have in the last few years tried the use of superficial cervical plexus block in the University of Ilorin Teaching Hospital, Ilorin Nigeria. The procedure is simple, safe, cost-effective and acceptable to the patients. This communication is to highlight our experience with a Simple Giant Goitre in a patient who had to withdraw from school for social reasons and couldn't afford the cost of surgical operation with other anaesthetic technique.

The use of regional anaesthesia such as cervical plexus block for thyroid surgery is an alternative anaesthetic option^{3, 12}. It provides complete sensory anaesthesia of C2-C4 dermatomes with a minimum of local anaesthetic¹³. This innervation supplies the skin over the neck from the mandible to the clavicle anteriorly and laterally¹³ (Figure 2). It offers several advantages to conventional techniques. Such as ease of performance, few complications patients are conscious and able to speak at the end of surgery and reduction of postoperative analgesia¹⁴. Superficial cervical plexus block serves the purpose in this patient because when the need for laryngoscopy and endotracheal intubation are removed, the two greatest stimuli in thyroidectomy are skin incision and manipulation of the gland around the larynx and trachea. And superficial cervical plexus blockade blocks the sensory superficial branches hence adequate for thyroidectomy.

Careful tissue dissection and retraction, combined with transtracheal injection of lignocaine to obtund the airway sensitivity, were employed to minimise the airway irritation and discomfort that may result from surgical manipulation of the thyroid gland. Transtracheal injection was possible in this patient despite the size of the gland, as the massive enlargement involved mainly the left lobe the cricothyroid area was therefore easily accessible. An alternative method for producing anaesthesia of the upper airway is to nebulize lignocaine 4% through an oxygen face mask¹⁵. Although this takes a longer time to work, it may be the only option when the

cricothyroid area is not readily accessible due to a huge median lobe thyroid enlargement. Deep cervical plexus block was specifically avoided because often, this may be accompanied by partial phrenic nerve block which if bilateral may be dangerous. The duration of the surgical procedure in this patient clearly exceeded the expected duration of action of lignocaine with adrenaline (90 minutes) used for the block. We had planned to supplement anaesthesia with local anaesthetic infiltration if the patient complained of intolerable pain, but surprisingly she did not complain of pain throughout the procedure. Although, one would not expect pentazocine, used mainly to sedate and relief postural aches and pain, to provide enough analgesia for operative surgery, it may have augmented the residual effect of the local anaesthetic to ensure pain relief to the end of the procedure. Although by calculation the maximum safe dose of lignocaine in our patient should be 350mg (7mg/kg x 50kg), a total of 440mg was used. This was to ensure a complete block. Clinical experiences have shown that the recommended maximum dose of lignocaine does not always give complete block¹⁵. Hence, clinicians have often exceeded these doses without adverse consequences, as seen in this case¹⁶. Whereas toxicity depends on plasma concentrations, it has been observed that the often quoted recommended dose does not take into account the variations in local anaesthetic absorption at different body sites, which determines the plasma concentration¹⁷.

The lower cost of regional anaesthesia compare to general anaesthesia, offers a considerable advantage in a poor economy like ours, where the cost of anaesthesia forms a significant burden to surgical patients. The cost of regional anaesthesia for this procedure, was about 20% of what it should have been if general anaesthesia was used. This is by no means significant to this patient and her family. Superficial cervical plexus block for thyroidectomy is not only safe and simple but also cheap and effective even in Giant Goitres.

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