

Day Case Thyroidectomy under Local/Regional Block in a Tropical Sub-Urban Teaching Hospital in a Developing Country-Preliminary Report

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Abstract: Thyroidectomy is routinely performed under general anaesthesia and patient is often admitted for a few days. This has been found unnecessary because complications following thyroidectomy are very rare. Day case surgery is an ideal way of utilizing health resources to maximum, cheap and conserves hospital beds. A prospective study performing thyroidectomy under regional anaesthesia as day cases. Department of Surgery, Endocrine Unit, Olabisi Onabanjo University Teaching Hospital, Sagamu, Nigeria. In a 36 month period, April 2007 to March 2010, about 150 patients with simple nodular/multinodular goiter were strictly selected for the study. Patients selected for the surgery were 135 females and 15 males with age range of 27-55 years and a mean age of 40.5 years±9.3 SD. Three had nodular goiter, seven with isthmus enlargement and 140 had simple multinodular goiter (two as recurrent). Three had lobectomy, seven had isthmusectomy with bilateral partial lobectomies; the remaining had near total thyroidectomy including the patients with recurrent goiter. There were no complications, all were discharged between 6-8 h post operative except one of the patients with recurrent goiter who had two pints of blood and was discharged at 20 h, post surgery. She also had transient hypocalcaemia. Thirty five patients had headache which responded to simple analgesic. About 95% of the patients were satisfied with procedure and would recommend it to others, 3% were satisfied but would not recommend it while 2% were indifferent. Day case thyroidectomy is safe and feasible even in rural and sub-urban centres. The earlier part of this study was partly presented at the 43rd Scientific Conference of the International College of Surgeons Annual Conference, Nigerian section in July, 2008.

Key words: Day case surgery, thyroidectomy, Nigeria

INTRODUCTION

Over the years, hospital admission post thyroidectomy has been decreasing gradually (Lo Gerfo, 1998). This is partly due to improved surgical technique and more understanding of anatomy of the neck and thyroid gland (Theompson *et al.*, 1973). In addition, re-visitation and revival of local/regional anaesthesia for thyroidectomy in recent times as used in the 1800s and improvement in anaesthetic techniques contribute immensely to these achievements (Vella, 1999; Hisham and Aina 2002; Ajao, 1979; Spanknebel *et al.*, 2006). Insertion of drains in thyroidectomy wounds is now optional and it is becoming gradually only of historical significance (Lo Gerfo, 1998; Suslu *et al.*, 2006; Musa *et al.*, 2010).

As most researchers concentrate on circumventing, the major and dreaded complications of thyroidectomy mainly laryngeal nerve injury, bleeding, pain and

hypoparathyroidism, complications post-thyroidectomy are very rare. It makes day case thyroidectomy a possibility (Lo Gerfo, 1998; Spanknebel *et al.*, 2006; Snrder *et al.*, 2006). Furthermore with introduction of various health insurance schemes, the need to cut cost to reduce hospital admission has to be taken into consideration (Terris *et al.*, 2007; Morgan and Beech, 1990). The aim of this study is to publish, the experience in out-patient thyroidectomy of 150 selected patients performed in a semi-urban centre with surrounding villages in a developing country. To the best of the knowledge, this might be the 1st research on out-patient thyroidectomy in Nigeria.

Geographical history: The teaching hospital is located in Sagamu, on latitude 6°49'N, longitude 3°40'E (Nigeria). It is part of Ijebu zone of Ogun state of Nigeria but serves as the headquarters of the Remo division in the Ijebu zone (Fig. 1). It is sub-urban in location, some 105 km



Fig. 1: Part of the world map showing geographical location of Sagamu and surrounding towns

Table 1: The towns and villages with their respective distances from Sagamu

Towns	Distances in km (miles)
Ikenne	10 (6.21)
Iperu	9 (5.52)
Aiyeye	12 (7.25)
Odogbolu	15 (9.25)
Odelemo	12.5 (7.53)
Makun	6 (3.49)
Ilishan	11 (7.09)
Ishara	16 (9.95)
Ipara	21 (13.13)
Ogere	14 (8.75)

away from Lagos, former capital of Nigeria. It is surrounded by ten smaller towns (semi-rural towns and villages) with respective distances as shown in Table 1. There are access roads to these places and presence of at least two telecommunication networks. It is possible therefore to either communicate on telephone with the patients or to get to their houses by road within an hour. The hospital is sandwiched between two major express highways: Lagos-Ibadan and Benin-Sagamu hence, accident victims are often brought to the centre, it is the Trauma centre for the state. However, it is sub-urban in location with villages whose source of water is mainly through well and bore-holes. Goiter is very rampant among the inhabitants and thyroidectomy constitute some 30% of the surgical procedures performed in the hospital. We see average of 5-7 patients month⁻¹. We have four General Surgeons, the researchers is interested in endocrine and goiters, others are interested in

gastrointestinal, breast and colo-rectal, respectively. Hence, almost all the cases of goiters seen in the centre are mostly directed to the researcher. Other surgeons do their occasional thyroidectomies under general anaesthesia which constitute some 5% of all the cases of goitre seen.

MATERIALS AND METHODS

In a 36 months period, April 2007 to March 2010, a total of 150 patients were recruited for the study. About 135 were females and 15 were males, aged between 27-55 years. All had simple nodular/multinodular goiter, two had recurrent multinodular and were strictly drawn from Sagamu and neighbouring towns surrounding it (geography). Included also were those, who lived far away from these towns but had relatives within the catchment area and hence had a place to stay after discharge. This was to enable us have easy access to them post-surgery within an hour, based on the criteria for day case surgery.

The social workers visited their houses before operation to confirm their clams. The hospital management was duly informed to ensure ambulances were made available whenever the need arose and to provide the necessary security and logistics. Based on the earlier research work, we were able to accommodate some fairly large goiters but mostly, we restricted ourselves to:

- Simple nodular or multinodular goiter
- Moderate size goiter (4-10 cm)
- No clinical evidence of thyrotoxicosis with normal values of Thyroid function tests. Exclusion criteria include, giant or very large goiter, clinical evidence of intra-thoracic extension with obstructive symptoms, intercurrent medical illness, evidence of malignancy, any previous reaction to anaesthetic agents especially lidocaine

All the routine investigations namely, Thyroid Function Test (TFT), Full Blood Count (FBC), Electrolytes and Urea (E and U), Electrocardiogram (ECG), Chest X-Ray (CXR) and thoracic inlet were carried out.

The results were within normal limits. Blood pressures of all the patients were normal. Calcium estimation, indirect laryngoscopy were also done before surgery and the results were essentially within normal limits.

Criteria for day case surgery: The universally accepted criteria for day case surgery were strictly followed in the selection of the patients but mainly, we concentrated on ages between 14-70 years (Royal College of Surgeons, 1992; Archampong and Darko, 1996). Body Mass Index (BMI) <30 patients. Patients were to have an adult at home on the night of surgery and also to be accompanied by another responsible adult. Availability of telephone services (at least two networks). No cardiopulmonary, Central Nervous System (CNS) diabetes and any systemic diseases. No pregnancy, haematological disease or comprehensive drug history (no history of drug reaction).

Anaesthesia and surgery: All the patients were pre-operatively assessed by the consultant anaesthetist and found to be either ASA I or II (Ansell and Montgomery, 2004). We used 30 mL of 1% lignocaine in adrenalin 1:100,000. This was injected at lateral border of the mid-portion of the scleiodomastoid muscle at the level of the cricoid cartilage and subcutaneously along the incision line-this reduced bleeding due to vasoconstriction and also provided some form of analgesia for the patients under mild sedation (Musa *et al.*, 2005; Aunac *et al.*, 2002; Dieudonne *et al.*, 2001; Gozal *et al.*, 1994). The sedation were 10 mg diazepam given intramuscularly half an hour before surgery and 10-15 mg pethidine, intravenously at the time of regional block.

The technique of anaesthesia was performed by the same consultant anaesthetist. Three patients had unilateral lobectomy, seven had isthmusectomy with bilateral partial lobectomies and the rest had near total

thyroidectomy. All the surgeries were performed by the same consultant surgeon. During the closure, only the middle 2 cm portion of the investing fascia of the neck was closed with sutures placed 0.5 cm apart. This was to allow for decongestion of blood into the subcutaneous layer in case bleeding occurred (to serve as an escape route), though adequate haemostasis was ensured. The specimens collected were sent for histopathological analysis. The procedures were explained to the patients extensively and consents were freely given. Post-operative questionnaire were given to all the patients to assess their satisfaction. The 95% were satisfied with the method of anaesthesia and outpatient discharge on the day of surgery and would recommend it to other patients in future. Three were satisfied with the method of anaesthesia and surgery but would not recommend it while the remaining 2% were indifferent (Aunac *et al.*, 2002; Dieudonne *et al.*, 2001).

The Ethical committee of the hospital also gave approval for the study. Surgery was commenced at 7.30 am to allow for 8 h observation postoperative. The researcher, routinely do all the thyroidectomies under cervical block unless the patient does not meet the criteria. Patients are routinely observed in the Intensive Care Unit (ICU)/Recovery Unit (RU) for at least 5 h post operation with all the necessary resuscitative facilities in case, this is necessary. If after 5-6 h, there are no features of respiratory distress, bleeding or hyperparathyroidism and oral feeding is fully established without vomiting with normal and stable vital signs, the patients are discharged home.

Nurses in the endocrine unit as well as the theatre nurses and those in the endocrine sub-unit in the ICU/RU have been specifically trained to look after thyroidectomy patients. These in addition to many years of experience can effectively detect, clinical signs and symptoms of complication when they develop. A doctor at the registrar/senior registrar level is always in ICU/RU for at least 8 h post operation.

Part of the methodology adopted was that the team that visited these patients at home post surgery included nurse in the endocrine unit, theatre nurse, registrar/senior registrar and social workers to do vital signs and look for evidence of swollen neck or bleeding every 4 h for three visits (this obviously lasts till the following day). The 4 hourly calcium estimation and repeated the following day. Phosphate estimation every 6 and 12 h post operation as well as serum albumin, monitoring, indirect laryngoscopy was also done in the immediate post operation.

Patients were advised to phone in case, they experienced any pain or difficulty with breathing during the

period the team was not with them. The results were analysed using Student t-test, ANOVA, 95% confident interval and SPSS Version 15. The $p < 0.05$ was taken as significant.

RESULTS

The 150 patients recruited for this study were made up 135 females and 15 males with a male female ratio 1:9. The age range was 27-55 years. The mean age was 40.5 ± 9.3 SD years. Presentation varied from simple nodular to multinodular goiter. Three patients had unilateral lobectomy, seven had isthmusectomy with bilateral lobectomies and the rest had near total thyroidectomy. There was no haemorrhagic or haematoma complication. None of them had drains insertion except one of the women with recurrent huge goitre. The drain, however was removed on the 1st day post-operative. She was admitted overnight on this account.

She also had 2 pints of blood transfused. Her Packed Cell Volume (PCV) pre-operative was 30% and she lost an estimate of 550 mL intra-operative. The operating time ranged between 64-125 min with a mean average time of 74.3 ± 13.7 min.

All the patients were discharged at various times between 6-8 h post surgery, except one of the patients with recurrent goiter that was admitted overnight. She was discharged 20 h after surgery. The result of calcium estimation post-operative for all the patients were normal except the woman with recurrent goiter that developed transient hypocalcaemia. This lasted 5 days postoperative. It was corrected by oral calcium gluconate tablet. Serum calcium estimation continued for another 5 days (i.e., till the 10th day post-operative) until she had three consistent normal values. Results of other investigations were within normal limits post-operative. None of these patients had problems at home and we kept in contact every 2 h.

There was no wound infection and all had their sutures removed on the 5th day post-operative. The only morbidity was headache in 35 patients and this was relieved by simple analgesic-oral paracetamol (Archampong and Darko, 1996; Ansell and Montgomery, 2004). Two patients vomited once about half an hour after surgery but got better and started taking orally after 4 h post-operative. All the patients tolerated oral fluid intake and diet before discharge.

DISCUSSION

Day case surgery is defined as admission of selected group of patients to hospital for a planned surgical

procedure and returning home on the same day (Royal College of Surgeons, 1992; Archampong and Darko, 1996). These patients require full operating facilities and/or a general anaesthetic or any other forms of anaesthesia (Gozal *et al.*, 1994; Materazzi *et al.*, 2007). Day case surgery list continues to mount daily and it is now practiced in virtually all the specialties of surgery (Gozal *et al.*, 1994; Materazzi *et al.*, 2007). At present in United Kingdom, 60% of all elective cases are performed as day cases while in North America, its >70 and 40% in Finland (Baraza, 2007; Yarbrough *et al.*, 2004). Thyroid surgery has undergone a lot of advances and reformations in recent times and these continue to make thyroidectomy less cumbersome with a lot of advantages to patients and health providers (Lo Gerfo, 1998; Theompson *et al.*, 1973; Vella, 1999; Hisham and Aina, 2002).

In this study, carried out in a sub-urban teaching hospital, the result compared favourably well with results of earlier researchers in advanced centres (Lo Gerfo, 1998; Ajao, 1979; Spanknebel *et al.*, 2006). The major complications feared by surgeons post thyroidectomy are recurrent laryngeal nerve injury, haemorrhage, hypoparathyroidism and pain. These have different times and peculiar ways of manifestation (Lo Gerfo, 1998; Spanknebel *et al.*, 2006).

Laryngeal nerve palsy/injury manifests almost immediately after surgery and this can be checked through, direct laryngoscopy at the end of surgery or manifest by respiratory distress almost immediately after surgery. Haemorrhage and haematoma collection take some time to manifest (Lo Gerfo, 1998; Spanknebel *et al.*, 2006). Lo Gerfo in his 20 years, retrospective review of 21 cases established that most bleeding occurred within 4 h post surgery (Lo Gerfo, 1998; Spanknebel *et al.*, 2006).

Furthermore, he noted that the extent of closure of the strap muscles was a direct function of development of respiratory distress (Lo Gerfo, 1998). These occur within the 1st 4 h post-operative and most often manifest by respiratory distress and stridor with swollen neck. Hence, clinical manifestation was expected to have manifested before the patients were discharged though, elsewhere some bleeding occurring 5 days post surgery had been reported (Lo Gerfo, 1998; Spanknebel *et al.*, 2006).

Most of the patients in this series were discharged between 6-8 h after operation, only one patient was discharged the following day (20 h post-surgery). Pain control post thyroid surgery is often not difficult. However, based on the previous experience the effect of the regional anaesthesia took some 5 h before it wore off (Ansell and Montgomery, 2004; Musa *et al.*, 2005;

Aunac *et al.*, 2002). Nonetheless, the pain of the thyroidectomy is not a serious pain where, it is often described as the pain one experiences following a visit to a dentist for tooth extraction (Lo Gerfo, 1998). Notwithstanding, the patients were placed on oral morphine tablets 10 mg to be taken 6 h for the 1st 24 h and later paracetamol tablets 1000 mg thrice daily for 2 days post-operative. This regime had been very effective and described as satisfactory by the patients.

Experience over the years showed that the pain would have subsided by the 3rd day post-operative. However, it is to be noted that the method of wound infiltration with xylocaine and regional anaesthesia had been used in the 1800s by Dunhill, Kocher and Theodor. In addition to the previous in recent times, Lo Gerfo (1998) employed aspirin or Motrin-type drugs as well as Toradol with satisfactory results.

The features of hypoparathyroidism takes up to 72 h to manifest (Lo Gerfo, 1998; Spanknebel *et al.*, 2006; Snrder *et al.*, 2006). Even then, it is not in the practice to routinely check for serum calcium post-operative in the previous patients as surgeries are not done in such a way to put the parathyroid glands in danger or at risk, we often spare the posterior curvature of the gland while resecting. This also protects, the recurrent laryngeal nerves too except in patients with recurrent goiter where the anatomy might have been distorted, thereby exposing the parathyroids to danger of resection.

Nonetheless as we had educated, the patients adequately before surgery, patients with paraesthesia or features of hypoparathyroidism were made to check their serum calcium if found lower than normal were placed on calcium gluconate tablets for 1 week (500 mg twice daily). This was quite effective and patients did well. No patients had permanent hypocalcaemia. In addition because of the technique of anaesthesia that we used, it was possible to converse with the patients intra-operative and hence, monitor recurrent laryngeal nerve as well external branch of superior laryngeal nerve (Yarbrough *et al.*, 2004; Beldi *et al.*, 2004; Hermann *et al.*, 2004; Musa *et al.*, 2009).

Patients could easily swallow salivary secretions intra-operative and more importantly, it enhanced early recovery and discharge post-operative. It also enabled the patients to start taking orally some 2 h post-operative. These we had established in the earlier research (and by the time we discharged them some 8 h after surgery oral intake had been satisfactorily established). The hospital ambulance services cannot be dispensed with in the management of day case thyroidectomy. Hence, the hospital management had to be carried along. This was necessary so as not to disturb ambulance services when

Table 2: Cost considerations between Day case thyroidectomy under LA/region and thyroidectomy under inhalational anaesthesia for in-patient

Regions	In-patients (₦)	Day case (₦)
Anaesthesia (cuffed, kinkable)	4,870.00	30 mL of 1% xylocaine
(non-kinkable endotracheal tube)	6,120.00	10 mg of diazepam (1 vial roche)
		100 mg pethidine 790.00
Intensive care unit (₦500 h ⁻¹ immediate post operation)	12,000.00	3,000.00
Transportation	4,500.00	2,000.00
Change of dressings, drugs (intravenous fluids, analgesics, antibiotics)	5,750.00	2,500.00
Telephone	-	1,000.00
Total	27,120.00	9,290.00
	28,370.00	

Table 3: Cost estimate of general anaesthesia for thyroidectomy

Description	₦: K
Pin index oxygen 1½ cylinder (₦660 per cylinder)	990.00
I.V. Pentazocine 3 mg ×1, ₦120 per amp (analgesic)	120.00
I. V. Propofil 200 mg ×1, ₦950 per vial (induction agent)	950.00
I.V. Suxamethonium 100 mg ×1, ₦180 per amp (short acting muscle relaxant)	180.00
I.V. Pancuronium 4 mg ×2, ₦250 per amp (long acting muscle relaxant)	500.00
Inhalational isoflourane for maintenance of anaesthesia, ₦35.00 mL ⁻¹ (20 mL)	700.00
I.V. Neostigmine 2.5 mL ×1 ₦180 per amp (reversal agent)	180.00
Disposable endotracheal tube (cuffed) or Non-kinkable (armoured) tube if available	1,250.00
	2,500.00
Total	4,870.00
	6,120.00

As at the time of this research, one US dollar was equivalent to 145 Naira (\$1 = ₦145)

needed for other emergencies. So, also the social workers who visited and located their houses to confirm their places of abode. This was necessary to assess their homes were conducive to post operative recovery and ensure easy access by road in case of any need.

The morbidity encountered in this series compared favourably well with other researchers. Though, the number was quite small and probably because of strict selection criteria but the result was quite encouraging (Lo Gerfo, 1998; Spanknebel *et al.*, 2006; Snrder *et al.*, 2006). Only 35 patients had headache which responded well to simple analgesic and one patient with transient hypocalcaemia. Emphasis, however must also be made of economic advantages of day case thyroidectomy especially under loco-regional anaesthesia as it is cheaper as compared to when the patient operated under general anaesthesia (Lo Gerfo, 1998; Spanknebel *et al.*, 2006; Terris *et al.*, 2007; Hermann *et al.*, 2004) (Table 2 and 3). It also conserves hospital bed among other advantages. In the event of health insurance schemes, it requires minimum budgeting, conserve spending and reduces the cost of treatment of the patients (Lo Gerfo, 1998; Spanknebel *et al.*, 2006; Musa *et al.*, 2009; Snyder *et al.*, 2010) (Table 2 and 3).

CONCLUSION

Conclusively, day case (out-patient) thyroidectomy under regional block is feasible, safe could be performed in minimally equipped centres where there are access to patients after discharge and adequate telecommunication networks.

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