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## Endoscopic thyroid surgery in the Caribbean: A case report of the first clinical experience

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## ABSTRACT

Minimally invasive surgery is rapidly expanding its role in almost all of the surgical sub-specialties. There is also a growing demand of this service as patients became more and more concerned about cosmesis in addition to their original surgery. Although its role in thyroid surgery has already been proven earlier; but it is not yet accepted as a routine approach amongst many thyroid surgeons. There is no reported case of laparoscopic thyroid surgery in the English literature from the Caribbean. We are reporting our first clinical experience in performing laparoscopic thyroid surgery in the Caribbean with a successful outcome.

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## 1. Introduction

This case report documents a new technique, Endoscopic Thyroid Surgery in the Caribbean and its results. It is compliant with the process criteria [1].

The application of minimally invasive and endoscopic techniques as an approach to neck surgery and specifically thyroid surgery has been an innovative method of eliminating the most common complaint postoperatively- the unsightly scar.

Hüscher et al. first described endoscopic thyroidectomy in 1997 [2]. The goals are to limit external scarring and improve cosmesis, decrease postoperative pain and recovery time and to meet these criteria without compromise to the efficacy of treatment. Other advantages of endoscopic approach include better magnification of the anatomy, improved illumination of the operative field [3,4].

In this article we present our first clinical experience of minimally invasive endoscopic thyroidectomy, performed as a joint endeavor between local surgeons and visiting members of the Chinese Medical Brigade.

## 2. Case presentation

A 42 year old female patient presented to the Surgical out patients department of San Fernando Teaching Hospital with a 3 year history of an enlarging right solitary thyroid nodule. She additionally complained of dysphagia to solids for the past 4 months. Thyroid function tests were normal.

Ultrasound evaluation of the nodule indicted a well-defined complex nodule with dimensions of 32 mm × 14 mm (Fig. 1). Fine needle aspiration findings were in keeping with a benign lesion. CT scan findings were consistent (Figs. 2 and 3).

The patient was preoperatively concerned about cosmetic results due to her profession in the cosmetology industry and with her otherwise satisfactory health was considered for minimally invasive thyroidectomy procedure. Informed written consent was obtained from the patient.

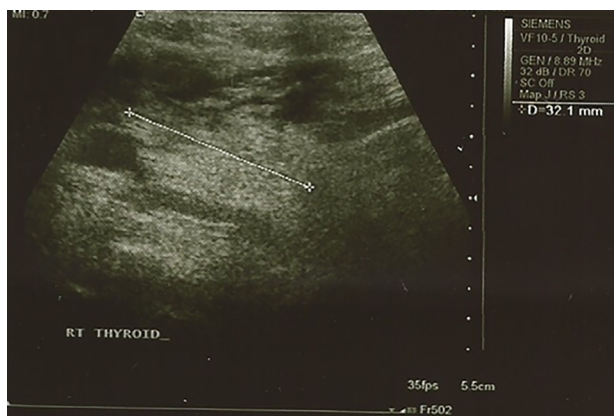
The axillary-breast approach was used to perform endoscopic right lobectomy in our index case.

## 3. Operative technique

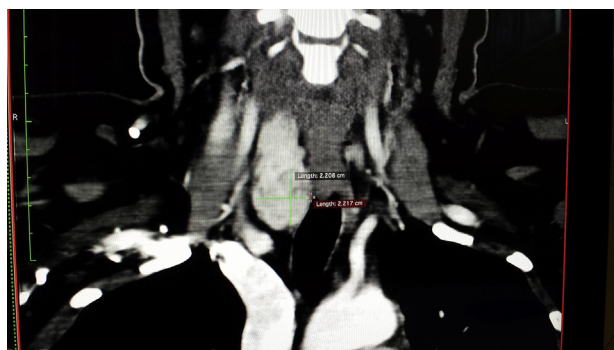
Under general anesthesia the patient was placed in the supine position with a roll placed between scapulae to extend the neck. The right arm was additionally extended slightly above the patient's head. The port sites were identified and marked as well as the location of the sternal notch, thyroid cartilage, thyroid lobe and the routes from the axilla and breast towards the thyroid (Fig. 4). The port sites and routes were infiltrated with a 1:10000 adrenaline

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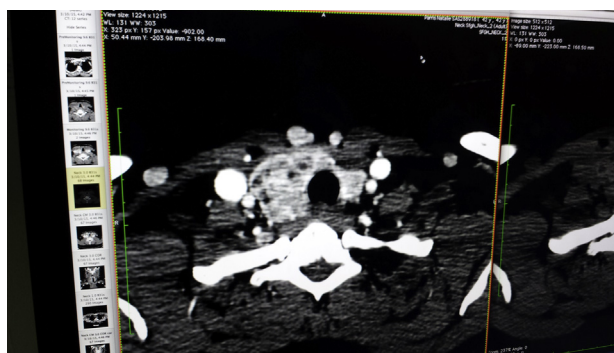
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**Fig. 1.** Thyroid Ultrasound showing a well-defined complex nodule (32 mm × 14 mm) in the right lobe of thyroid gland.



**Fig. 2.** CT scan of neck with intravenous contrast (coronal view) showing a 2.21 cm × 2.20 cm complex nodule in right thyroid lobe.



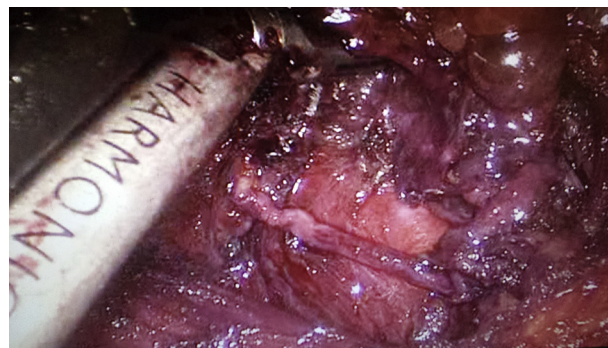
**Fig. 3.** CT scan of neck with intravenous contrast (cross sectional view) showing a 2.21 cm × 2.20 cm complex nodule in right thyroid lobe.

solution. The first 10 mm longitudinal incision was made in the anterior axillary region and another in the circumareolar position. Then a 5 mm incision posterior to lateral border of pectoralis major muscle was made.

A 10 mm optical port was placed subcutaneously and operating field was maintained with a CO<sub>2</sub> gas insufflation pressure of 8 mmHg. The other operating ports were paced under guidance of the optical port. The lateral border of Sternocleidomastoid muscle was dissected and strap muscles were elevated to reveal the inferior pole of the right thyroid lobe. The inferior and superior pedicles were divided with the harmonic scalpel and the middle thyroid vein was clipped and divided. The right inferior parathyroid gland and recurrent laryngeal nerve were identified and preserved. The gland was dissected with harmonic scalpel and isthmus was divided (Fig. 5). The specimen was removed using the endo-bag.



**Fig. 4.** Surface marking for the axillary-breast approach.



**Fig. 5.** Laparoscopic view of mobilization of right thyroid lobe.

Hemostasis was confirmed, pneumatic field was decompressed and a 10 French active Jackson-Pratt drain as inserted before skin closure.

**4. Results**

The operative time was approximately 268 min with an estimated blood loss of 100mls. Post operatively pain was controlled with low dose intramuscular opioids for 24 h and then switched to oral analgesia. Day 1 post op patient complained of mild shoulder discomfort which resolved with mobilization and mild analgesic. There was minimal drainage form the Jackson-Pratt device and this was removed on second day postop. There was no postoperative seroma, hematoma, hypocalcaemia or recurrent laryngeal nerve paralysis. The patient was discharged on 3rd postoperative day. At one year followup, the patient is very happy with her cosmetic outcome and has no further complaints (Fig. 6).

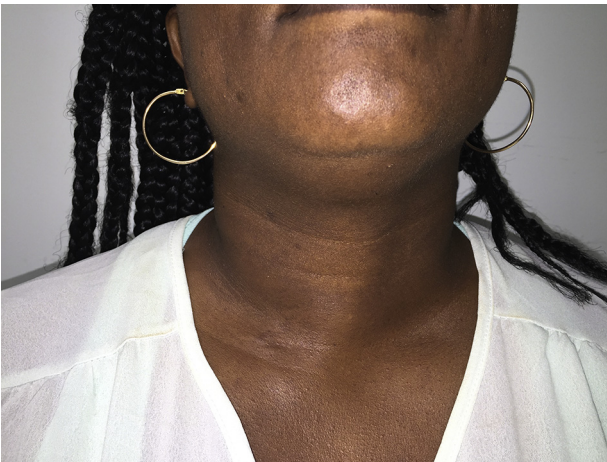


Fig. 6. Post-operative image with no visible scar on the neck.

## 5. Discussion

The history of thyroid surgery dates back to ancient times and is still amongst the most commonly performed surgical neck procedures. The Kocher incision on the neck has remained the standard approach, but for the last few decades there has been a shift towards minimally invasive and endoscopic techniques with a view to improve cosmetic outcomes of thyroidectomy patients. The innovative work of Gagner et al., described cervical endoscopic parathyroidectomy, which was subsequently adapted by Miccoli for thyroid surgery.

A variety of approaches have been devised including the cervical [5], anterior chest approach [6], axillary [7,8], axillo-breast [9,10] and breast [11,12] approaches but ultimately the method used appears to be dependent on surgeon experience and preference with no consensus by evidence to promote any particular approach over another.

The common goal of these approaches is better cosmetic results, decreased postoperative pain and shortened inpatient period with out increase in postoperative complications. It is advised that the strict indications should be adhered to in patient selection for this procedure in order to maintain these goals.

For Minimally Invasive Video-assisted Thyroidectomy as stated by Miccoli et al., these were (1) thyroid nodule smaller than 30 mm in largest diameter; (2) thyroid glands with a volume less than 25 ml (3) absence of thyroid gland fixation – thyroiditis, history of neck irradiation or previous neck surgery and extra-thyroid cancer spread (4) follicular tumor or low risk papillary carcinoma and (5) RET gene mutation carriers for elective thyroidectomy.

A review of the literature has overall shown that endoscopic approaches on the whole, with appropriate patient selection, are safe and generally meet the goals intended. The surgeon learning curve however, seems to be slow and it is accepted, as experienced in this case, that the procedure will initially take longer than open surgery and requires more surgeon experience for instrument handling in order to see any significant decrease in operative time. Feling et al. found only after 25 cases [13] was there any appreciable decrease in procedure time.

## 6. Conclusion

Laparoscopic thyroid surgery is increasing become popular among many patients all over the world. The patient described in our case had an uncomplicated postoperative course with excellent cosmetic results. It is therefore reasonable to deduce that endoscopic thyroid surgery is a feasible alternative to traditional open

approach in the Caribbean setting. Advanced training in this subspecialty is off paramount importance, before its application for each and every case of thyroid surgery.

## Conflicts of interest

The authors declare no conflicts of interest.

## Funding

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## Ethical approval

No ethical approval is required to publish this case report.

## Consent

Patient consent was obtained.

## Author contribution

All authors have contributed significantly in designing and organizing to write manuscript, collecting data as well help in critical analysing the manuscript. All authors have approved the final version of this manuscript.

## Guarantor

The corresponding author will accept the full responsibility for the work.

## Disclosure

The authors have nothing to disclose.

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