



## Transoral endoscopic thyroidectomy: A case report



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### ABSTRACT

**INTRODUCTION:** Endoscopic thyroidectomy, initially an experimental procedure, is now being performed in increasing frequency. It aims to provide patients undergoing thyroidectomy with a 'scar-free' surgery. Transoral endoscopic thyroidectomy is one such novel procedure that is based on the principles of natural orifice transluminal surgery (NOTES) and allows for a truly scar-free surgery with minimal dissection. **PRESENTATION OF CASE:** A 21-year-old female presented with a swelling over the left side of her neck. Ultrasound revealed a solitary nodule and FNAC showed features suggestive of a follicular adenoma. **DISCUSSION:** The patient underwent transoral endoscopic hemi-thyroidectomy. The procedure lasted for 2 h and is one of the few documented cases of transoral endoscopic thyroidectomy performed on live patients. **CONCLUSION:** Transoral endoscopic thyroidectomy is proving to be a feasible technique with little or no complications as compared to other endoscopic thyroid surgeries. It provides surgeons with easy access to the thyroid gland and patients with aesthetically pleasing results.

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## 1. Introduction

Endoscopic thyroidectomy has been in practice since the late '90s. The first endoscopic parathyroidectomy performed in 1996 [1] paved the way for the advent of minimally invasive neck surgery. Minimally invasive neck surgeries can be classified into direct/cervical approach and indirect/ extra-cervical approach [2]. The direct approach involves a small incision being made over the neck with thyroidectomy carried out in the conventional manner, albeit using endoscopic instruments. The extra-cervical approaches include axillary, post-auricular and areolar approaches. While endoscopic thyroidectomy might not be a novel technique, transoral endoscopic thyroidectomy (TET) is a recent advance. Studies validating the feasibility of this procedure have been performed on cadavers and porcine models [3], but very few case reports of TET being performed on live patients are available. Endoscopic thyroidectomy through other routes such as trans-axillary and through the chest wall leaves the patient with a minimal scar but involves a good amount of dissection, as the natural anatomical planes are not available. On the other hand, the transoral approach is truly scar free and involves minimal dissection, thus resulting in decreased post-operative complications.

## 2. Case report

A 21-year-old female presented with complaints of a swelling over the left side of her neck for the past 1 year. She had no complaints of pain or compressive symptoms. Examination revealed a 3 × 4 cm swelling over the left lobe of the thyroid gland that moved with deglutition. Firm in consistency. Ultrasound neck done revealed a solitary nodule over the left lobe of the thyroid. FNAC showed features suggestive of a colloid adenoma. She requested a surgery that would leave her with a minimal or no scar. In view of the patient's age and the small size of the swelling, she was scheduled to undergo transoral endoscopic thyroidectomy.

## 3. Operative technique

### 3.1. Pre-operative preparation

Pre-operatively, the patient was asked to gargle with Chlorhexidine mouth wash b.d. for 3 days.

### 3.2. Body position

She was placed in supine position with her neck extended using a sand bag placed between her shoulder blades.

### 3.3. Procedure

The oral cavity was washed with saline and Betadine. Endotracheal intubation was done through the nasal route. The approach

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Fig. 1.

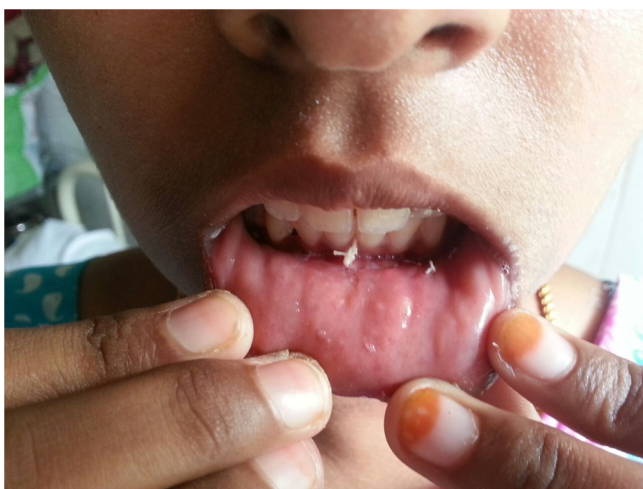


Fig. 2.

was through the inferior vestibule of the oral cavity where the ports were placed and included one midline 10 mm camera port and two lateral 5 mm working ports (Fig. 1). The operative field was insufflated with carbon dioxide which provided us with easier access. The sub-platysmal plane was entered and dissected. The deep fascia was opened in the midline and strap muscles retracted. The isthmus of the thyroid gland was identified and divided. The superior and inferior pedicles on the left side were identified and divided by ultra scission. Recurrent laryngeal nerve was identified and preserved. Hemostasis was secured. The left lobe was brought out through the oral cavity using an endobag. The deep fascia was closed using absorbable sutures and the vestibular port sites were closed in layers using absorbable sutures (Fig. 2).

#### 4. Discussion

Cosmesis today plays a pivotal role in choosing the type of surgery a patient undergoes. It has pushed surgeons to think beyond the limitations of conventional surgery. Natural orifice transluminal surgery (NOTES) was introduced with the aim of providing patients with a scar-free surgery. While abdominal surgeries such as cholecystectomies have been successfully performed using the technique of NOTES, thyroid surgery remains a relatively unexplored field.

The late '90s saw the advent of endoscopic thyroid surgeries. The various approaches such as the trans-axillary or trans-areolar approach were successful in providing patients with minimal scars that could be hidden but they involved maximal dissection due to the absence of natural anatomic planes [4]. In 2007, Witzel et al



Fig. 3.

[5] assessed the feasibility of performing thyroidectomy through the transoral approach. They conducted studies on cadavers and porcine models and found it to be a safe procedure that was easy to perform. In 2012, Nakajo et al [6] published their results of Trans-Oral Video-Assisted Neck Surgery (TOVANS) performed successfully on live patients. They achieved a gasless transoral approach through the use of Kirschner wires [6].

In our patient, we chose to insufflate the field with carbon dioxide, thus eliminating the scar produced by the introduction of the Kirschner wires. The following criteria were satisfied: (1) thyroid gland was approached using minimal dissection; (2) patient was left with no visible scar. The procedure took us two hours. Post-operatively our patient developed mild emphysema, which resolved spontaneously. This surgical emphysema was due to insufflation of the surgical field with carbon dioxide and required no intervention. Although the surgical field was clean, the port of entry, which was the inferior vestibule, is not sterile and hence she was started on oral antibiotics and antiseptic mouthwash to prevent wound infection. Oral intake was started on post-op day 1 and she was discharged within a week (Fig. 3). One month post-operatively, she is comfortable with no complications.

#### 5. Conclusion

Transoral endoscopic thyroidectomy is a feasible procedure that could be the final frontier in endoscopic thyroid surgery. While this surgery has been performed successfully in cases of thyroid carcinoma [6], we have found it to be effective in a case of solitary nodule of thyroid. The learning curve for this procedure is still in its initial stage but with more patients opting for scar-less surgeries, it has the potential to be performed with increasing frequency.

#### Conflict of interest

The authors have no conflict of interest to disclose.

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None.

#### Author contribution

Prof. Vishwanath Pai: Primary surgeon.  
Dr. Pari Muthukumar: Assistant surgeon.  
Dr. Apoorva Prathap: Writing.

Dr. Jayanth Leo: Assistant surgeon.  
Prof. Rekha A: Writing.

### Consent

Written consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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