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Transoral transvsetibular thyroidectomy: an initial approach and experience

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ABSTRACT

Background: The objective of the study was to record our intial experience of transoral transvestibular thyroidectomy and to ascertain the problems faced, their possible solutions and further suggestions.
Methods: Inclusion criteria were unilateral thyroid swelling, patients who had a neck ultrasound (US) with a estimated thyroid diameter not larger than 8 cm; (b), USG estimated gland volume ≤40 ml, nodule size ≤50 mm, A benign tumor, such as a thyroid cyst, single-nodular goitre, or multinodular goitre. The procedure is carried out through a three-port technique placed at the oral vestibule, one 10-mm port for 30° endoscope and two 5-mm ports for dissecting and coagulating instruments. CO2 insufflation pressure is set at 6 mmHg. An anterior cervical subplatysmal space is created from the oral vestibule down to the sternal notch, laterally to the sternocleidomastoid muscle. Thyroidectomy is done fully endoscopically using conventional endoscopic instruments and Harmonic.
Results: All transoral transvestibular thyroidectomy procedures were performed successfully with no conversions. The mean operative time was 112.5 (90-180) min. We observed one case of transient postoperative hypocalcemia. There was no recurrent laryngeal nerve palsy. The cosmetic result was excellent in all patients.
Conclusions: Transoral transvestibular thyroidectomy may provide a method for ideal cosmetic results. It also provides a wide and enhanced endoscopic view. Though more study and further instrumental development is required to fully embrace this procedure a preliminary experience show encouraging results.

Keywords: Transoral, Transvestibular, Endoscopic, Thyroidectomy

INTRODUCTION

Minimally invasive thyroid surgery entailing endoscopic thyroidectomy has in recent years become the new method of giving a cosmetically pleasing result with least trauma acceptable.

Since the time of Billroth when the mortality associated with thyroidectomy was nearly 40% more and more studies are designed to reduce the mortality and morbidity associated with thyroidectomy. Though Kocher by 1895 had reduced the morbidity to 0.2%, morbidity associated with the scar is still a concern for the patients.[1-3]

Transoral transvestibular thyroidectomy is a newer approach still in phase of its development. Though a newer approach it is one of the most promising approaches for surgical management of thyroid diseases with no scar and also with further advent an enhanced microscopic view with lesser hospital stay and better patient compliance.

METHODS

This study is a preliminary experience constituting of 6 cases done entirely with transvestibular route at RUHS College of Medical Sciences, Jaipur from January 2017 to December 2017.

Inclusion criteria

Inclusion criteria were unilateral thyroid swelling; patients who had a neck ultrasound (US) with a estimated thyroid diameter not larger than 8 cm; (b); USG estimated gland volume ≤40 ml; nodule size ≤50 mm; a benign tumor, such as a thyroid cyst, single-nodular goitre, or multinodular goitre.

Figure 1: The initial setup, the operating surgeon and the assistant surgeons stand on the head end whereas the camera setup lies on the caudal side.

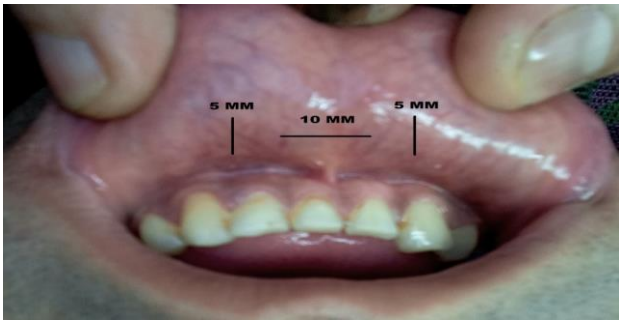

Figure 2: The 3 incisions marked, the lateral incisions of 5 mm carry the dissecting and coagulating instruments whereas the midline 10 mm incision caries the endoscope.

Figure 3: The placement of endoscope and instruments into the ports inserted, the operating surgeon handles the instruments in the lateral ports whereas the assistant helps in handling he endoscope.

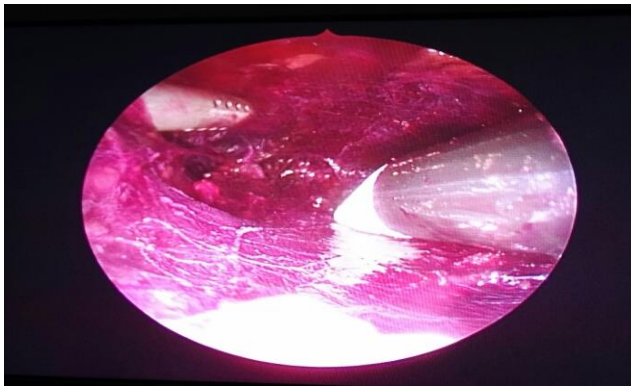

Figure 4: The creation of subplatysmal plane after insufflations of $C0^2$ gas between a pressure of 4-6 mm.

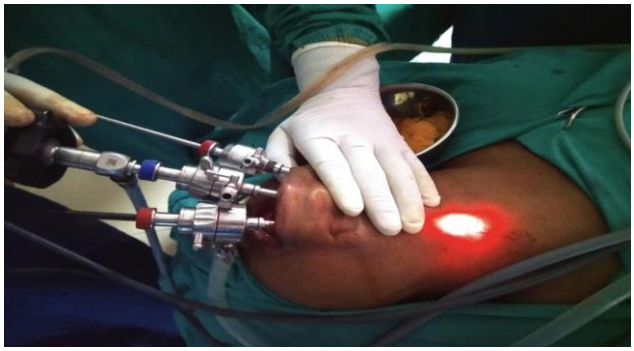

Figure 5: Plane dissected up to lateral border.

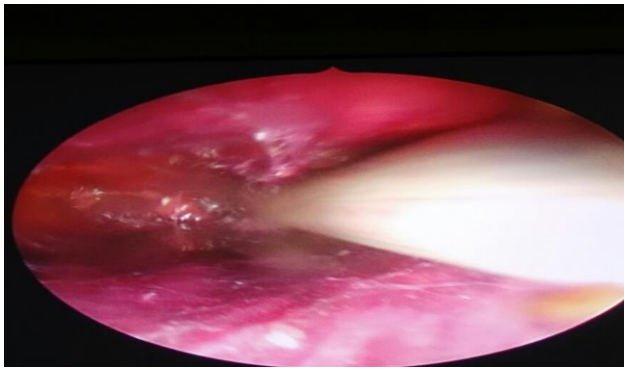

Figure 6: Dissection reaching up to suprasternal notch.

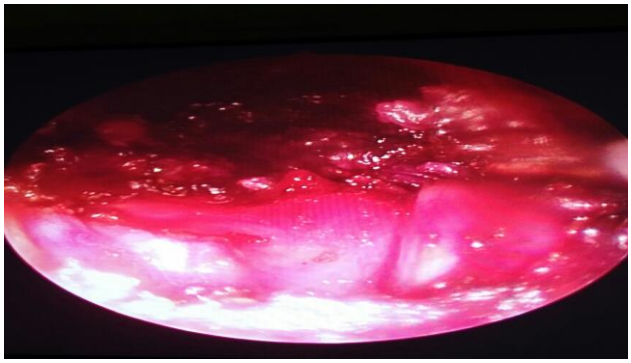

Figure 7: Shows separating the strap muscles.

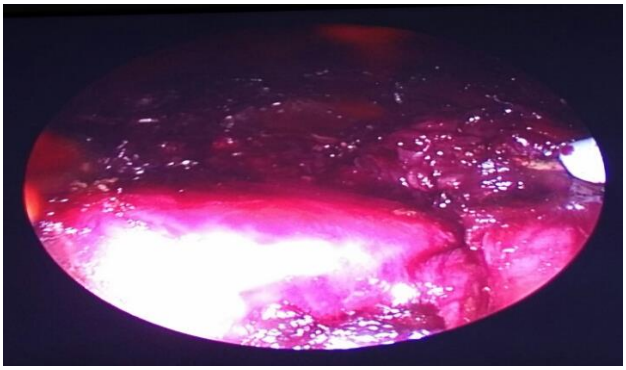

Figure 8: Strap muscles fully separated and whole of thyroid lobe exposed.

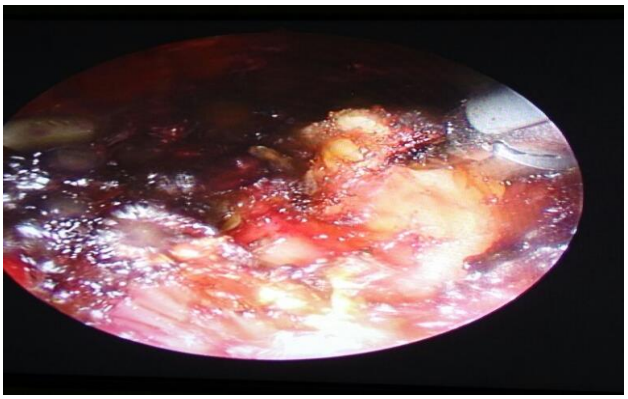

Figure 9: Dissecting the thyroid lobe from medial to lateral and using both clips and harmonic to address the incoming blood vessels.

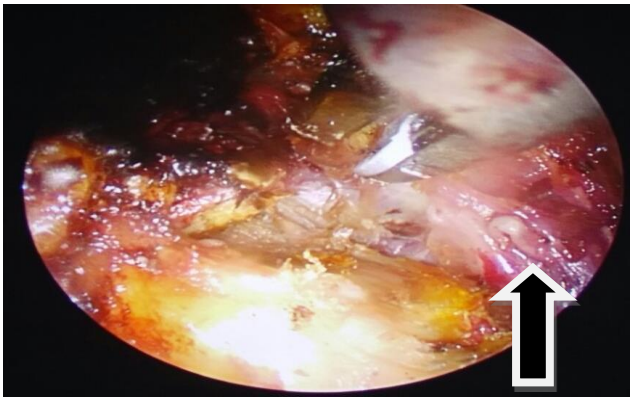

Figure 10: Thyroid lobe being separated from trachea and arrow showing Right side RLN.

The procedure is carried out through a three-port technique placed at the oral vestibule, one 10-mm port for 30° endoscope and two 5-mm ports for dissecting and coagulating instruments. CO_2 insufflation pressure is set at 6 mmHg. An anterior cervical subplatysmal space is created from the oral vestibule down to the sternal notch, laterally to the sternocleidomastoid muscle. Thyroidectomy is done fully endoscopically using conventional endoscopic instruments and harmonic.

Figure 11: Immediate post operative picture.

RESULTS

Out of 6 cases we operated all the cases were in age group of 25 to 55 and all the cases were females. The largest swelling we removed was of 5 cm and the smallest of 3cm.In no cases we had to revert to open procedure and all cases were successfully done via endoscopic procedure. In 4 cases we were able to remove the whole lesion enbloc but in 2 cases we had to remove the lesion piece meal. No case suffered from any known complication like recurrent nerve palsy, haematoma or any infection. In one case there was parasthesia of the lower lips which recovered within 4 weeks.

Table 1: The type of thyroid swelling, its size and site.

S. No.	Diagnosis	Size	Side
1.	Colloid cyst	3 cm	Right
2.	Follicular adenoma	5 cm	Right
3.	Colloid cyst	5 cm	Right
4.	Colloid cyst	4 cm	Right
5.	Colloid cyst	4 cm	Left
6.	Follicular adenoma	4 cm	Right

DISCUSSION

In recent years the paradigm of any surgical procedure not only entails the pathological outcome but also cosmetic consequences. Head and Neck Surgery is one of the most debilitating surgeries cosmetically and one of the most common reasons for patients non compliance for the procedure.

Transvestibular transoral thyroidectomy though a new and evolving procedure is a total scarless surgery in compared to other endoscopic surgeries like transaxillary or via lateral neck incision. But as of any new procedure this also has its limitations.

By the help of this article we aim to not only explain the procedure but also what were the problems faced and what can be done more in future to popularize the procedure.

Table 2: Problems faced and possible solutions.

S. no.	Problems faced	Possible solution
1.	Learning curve: As Otorhinolaryngology surgeons we are not regularly accustomed to use of Laparoscopic instruments.	Few initial cases can be done with the help of a laparoscopic surgeon who can get us accustomed to the use of instruments.
2.	Anatomy: We tend to learn our surgical anatomy via lateral view of the thyroid and endoscopic procedure requires us to see the anatomy from cranial to caudal direction	Previously operated microscopic assisted videos when seen on our smart phones from Above to down direction helps clearing the anatomy and preparing for the surgical procedure.
3.	Infection: A lot of concern for the maintaining the asepsis has been put forward as we are entering the neck via oral cavity	Proper preparation of oral cavity both a night before and in immediate preoperative period with good antibiotic coverage has in our study shown no infection
4.	Proper instrumentation: The use of laparoscopic instruments meant for abdominal surgery creates a problem mainly because of size.	We have found that Using the ENT 30 degree endoscope of 4 mm gives a better view and manuverabilty then 8 mm scope. This also allows us to use a 5mm port in midline this decreasing the trauma to the vestibule
5.	Gas leakage: While doing the procedure we faced leakage of gas in one case initially in the middle port incision.	We were able to continue the procedure by sealing the incision manually but in subsequent procedure we made point to insert only 5 mm ports an all the three incisions while using the 4mm scope.

Further suggestions

Even with all the above changes still the procedure requires further changes and advancement and with our first hand experience following are the suggestions:

- A rotatable 2.7 mm scope would not only decrease the size of the ports but also lead to better circumferential view.
- Thinner and smaller instruments can be specifically designed for transoral endoscopic procedures.
- Though we have not used it in any procedure but we believe that in initial training stages nerve monitoring will definitely ease the procedure.

CONCLUSION

Transoral transvestibulr thyroidectmy in itself still requires a lot of advancement but transoral transvestibular procedure can also find implication in other neck surgeries in future like:

- Neck dissection,
- Submandibular gland excision,
- Laryngectomies,
- Neck Trauma surgeries.

A cosmetically better and enhanced endoscopic view with better patient compliance should necessarily make this procedure more popular both for the operating surgeon and the treated patient.

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Ethical approval: Not required

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