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Postauricular-Submental Approach Endoscopic Thyroidectomy

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Introduction

There was a concern on the cosmetic perspective of conventional thyroidectomy that usually left a transcervical incision scar. To solve this problem, the endoscopic thyroidectomy approaches were developed. However, there was no generally accepted recommendations exist for which approach is the best choice. The choice for a particular case depended mainly on the surgeon's experience and preference.

The authors attempted to develop a new technique called postauricular-submental approach (PSA) endoscopic thyroidectomy. The advantages of this method are as follows: Firstly, it can avoid the paresthesia around the nipple, chest wall, and chin. Secondly, the midline endoscopic view can provides the better orientation of surgical landmarks. And lastly, the scars are hidden in the natural neck position.

Technical description

Patient selection

The eligibility criteria including benign thyroid mass less than 4 cm in its largest diameter, papillary thyroid carcinoma not greater than 1 cm with low risk, follicular neoplasm less than 3 cm, and parathyroid adenoma localized preoperatively.

Patient position and operating room setting

The patient was placed in supine position on the operating table with the pillow underneath the shoulders. Extend the patient's neck to expose the operative field. The arms were placed naturally on the operating table. The patient was put under general anesthesia using nasal intubation. The surgeon stood at the head of the patient. The camera holder and the scrub nurse stood around the head and neck of the patient.

Operative technique

The first mini-incision (10 mm) was made in the submental area between the chin and the hyoid bone. At least two fingerbreadths below mental prominent were recommended to avoid the injury to the submental nerve. The Veress needle was used to infiltrate subplatysmal space with a diluted epinephrine solution (0.1 ml of epinephrine [1:1000] in 200 ml of normal saline) in a fan-shaped manner. (Figure 1)

The blunt dissection of subplatysmal space using Kelly clamps, and vascular tunneler was started at midline until reaching the sternal notch. The tunnel then extended laterally to the anterior border of the sternocleidomastoid muscle and mastoid tip both sides. Bilateral postauricular incisions were then made, and the 5-mm short trocars were inserted. The 10-mm trocars with CO₂ insufflation was inserted in the submental incision then a 10-mm 30-degree endoscope was used to visualize the operating space. The remaining fibrous bands in subplatysmal space were incised. The midline of the neck was identified. The monopolar dissector (5-mm hook) was used to make the midline incision. The bilateral strap muscle can be retracted laterally by temporary suture (optional). The isthmus of the thyroid gland was identified and divided using the 5-mm ultrasonic shears (Harmonic Scalpel; Ethicon Endosurgery). The superior and lateral side of the thyroid gland was dissected. The superior thyroid artery was coagulated with the ultrasonic shears. The inferolateral aspect of the thyroid gland was approached followed by recurrent laryngeal nerve and parathyroid glands identification. The specimen was transferred to a plastic bag and pulled through the camera port. Meticulous hemostasis was attained and the midline was repaired with endosutures. No drain was left in place. The skin was sutured cosmetically. (Figure 2)

Discussion

Various approaches have been proposed for endoscopic thyroid surgery. However, there was the controversy on the best endoscopic approach. The mini midline cervical incision called minimally invasive, video-assisted thyroidectomy (MIVAT) is characterized by a unique central access and external retraction. The surgical results and safety were comparable with conventional thyroidectomy.¹ However, this technique still left a small scar on the anterior neck which is very noticeable.

Bilateral axillo-breast approach (BABA) is the modification of axillo-bilateral breast approach (ABBA). BABA endoscopic thyroidectomy has complication rates similar to those of open thyroidectomy and can be used to treat early-stage well-differentiated thyroid cancer safely. However, some patients may still find scarring of the breast area unacceptable, despite the cosmetic benefits relative to scarring in the neck area.²

The postauricular and axillary approach (PAA) endoscopic thyroidectomy was developed to save the breast from scarring. It permits the medial approach to thyroidectomy that is the advantage of open thyroid surgery.³ However, the camera needs to be introduced through the axillary port, and the dissection has to start from the axilla which is unfamiliar for most of head and neck surgeons.

The totally transoral video-assisted thyroidectomy (TOVAT)⁴ or trans-oral video-assisted neck surgery (TOVANS) was the alternative method for the scar-less approach.

However, some of the patients in these groups of approach experience the sensory disorder around the chin persisted more than six months after surgery. Furthermore, this method changes the clean surgical wound to a contaminated wound which increases the risk of infection.

Trans-submental single-port endoscopic thyroidectomy (TSSPET) was studied in a porcine model. The major advantages are the avoidance of both extensive dissection in the extracervical area and a conspicuous scar in the natural neck position.⁵ However, there was no human study for this approach.

Retroauricular approach (RA)⁶ endoscopic thyroidectomy was recently proposed.

The dissection area is smaller than that in the transaxillary approach (TA), and surgical anatomy is familiar to the head and neck surgeons. However, this method needs to rotate the head of the patient and can only dissect on the ipsilateral side.

In our series, this year (2016) we conducted one MIVAT, six axillo-breast endoscopic thyroidectomy, 15 TOVAT and two PSA endoscopic thyroid lobectomy. There was zero intra-operative conversion rate to open surgery. The strict patient selection is the pearl. No completion or total thyroidectomy was done in our series. One patient was diagnosed as papillary thyroid carcinoma from the pathology section after TOVAT. We decided to conduct the open completion thyroidectomy for this patient, although, endoscopic completion thyroidectomy might be possible. The mean operative time was 3 hours. Although the thyroid lobectomy can be done as day surgery, endoscopic thyroidectomy requires more days to observe the complications. The mean length of stay in our hospital for endoscopic thyroidectomy was four days. There was no evidence of recurrent laryngeal nerve injury in this series.

The possible complications for PSA endoscopic thyroidectomy, like other retroauricular approaches (RA and PAA), are a marginal mandibular branch of the facial nerve and great auricular nerve involvement. This problem can be avoided by dissecting the plane from the midline to the postauricular area. The postauricular incision will be made only after saline with an adrenaline injection and subplatysmal tunneling. To date, there is no report on facial nerve palsy or great auricular nerve injury from the postauricular approaches.^{3, 6}

Keypoints

- There was no consensus on the best endoscopic thyroidectomy approach.
- The postauricular-submental approach (PSA) endoscopic thyroidectomy can avoid paresthesia around the nipple, chest wall, and chin with the acceptable cosmetic result.
- To date, there is no report on facial nerve palsy or great auricular nerve injury from the postauricular approaches.

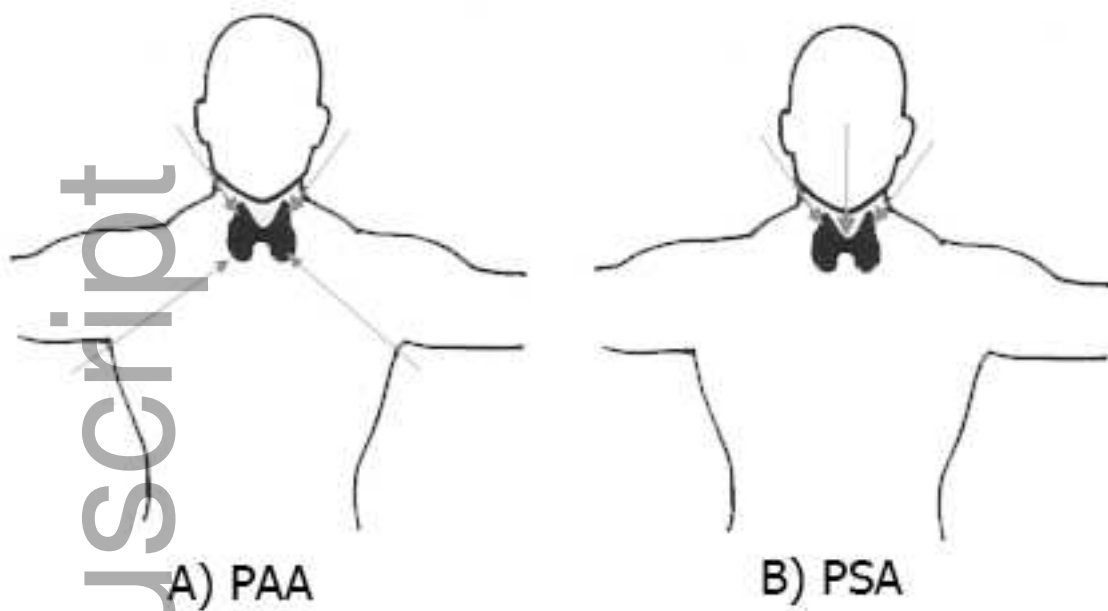
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Figure Legends

Figure 1. Comparison of the postauricular and axillary approach (PAA) to postauricular-submental approach (PSA)

Figure 2 Overview of the operating room setting, submental and bilateral postauricular ports. The tumour was shown on the monitor.



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