Head & Neck Surgical Group, PLLC
SINUS CARE CENTER

Isthmusectomy – The Un-Thyroidectomy

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INTRODUCTION

Thyroid isthmusectomy is perhaps an underutilized procedure excising only the thyroid isthmus. It is a safe alternative to thyroid lobectomy and isthmusectomy when the pathology is limited to the thyroid isthmus or pyramidal lobe of the thyroid gland. It preserves thyroid function and has a low complication rate. There are many articles in the literature extolling the virtues of lobectomy and isthmusectomy or total thyroidectomy, but very few regarding isthmusectomy.

METHODS

Prospective observational case series in patients with lesions confined to the thyroid isthmus undergoing isthmusectomy.

Inclusion criteria were those of dominant nodule involving the thyroid isthmus area with the maximum size of less than 30 mm and appropriate preoperative evaluation. The study group comprised a total of 233 patients over the past 4.5 years. Of this number there were seven patients who underwent isthmusectomy as their surgical procedure for thyroid pathology.

The procedures were all performed by a single surgeon A small transverse incision, < 4 cm, in the neck was used.[2] the skin incision was carried down through the soft tissues and platysma muscle. The strap musculature was identified and retracted laterally, it is not divided. The thyroid isthmus is then identified. The isthmus is dissected away from the thyroid lobe at its junction with the isthmus on each side using a right angle hemostat and separated from the underlying trachea (Figure 1). The thyroid isthmus is then divided with the harmonic scalpel. (Figure 2) Use of the harmonic scalpel precludes the use for sutures in this area.(Figure 3) As these are elective procedures and the patient is generally discharged home the same day or following morning. Use of a surgical drain is optional.

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DISCUSSION

Thyroid lobectomy and isthmusectomy is the accepted surgical management for a procedure for thyroid pathology. However, thyroid lobectomy and isthmusectomy sacrifices greater than 50% of the thyroid gland and may result in hypothyroidism.[3] For dominant nodules limited to the isthmus performing an isthmusectomy preserves the thyroid parenchyma and lessens the likelihood of postoperative hypothyroidism.

The perimeter of the cartilaginous trachea measures approximately 50 mm. Allowing for a 10 mm cuff of tissue on each side, a 30 mm isthmus nodule can be safely excised.[4] During the dissection, the tracheo-esophageal groove is not exposed and thus the incidence of recurrent laryngeal nerve injury should be quite low. Additionally, the parathyroid gland is not exposed, lessening the chances of postoperative hypoparathyroidism. Patients who are subsequently found by permanent histologic analysis found to have a well differentiated thyroid cancer can undergo a completion thyroidectomy without fear of jeopardizing RLN function or parathyroid function by dissecting in a scarred previously operated field.4

Based on the observations of the patients in this series and literature review the indications for isthmusectomy may be summarized as: a) dominant nodule in the thyroid isthmus measuring 30 mm or less with appropriate fine needle aspiration findings – i.e., indeterminate or potentially malignant, b) cosmetic deformity, c) incidental findings of thyroid isthmus pathology as part of another procedure, for example tracheostomy, d) acute airway obstruction in a patient with thyroid cancer, and finally e) a somewhat controversial consideration of isthmusectomy alone in patients with thyroid cancer localized to the isthmus.

Patient	Age	Sex	Nodule Size	FNA	U/S	Pathology	Synthroid Tx
1	55	M	1.2 cm	n/a	n/a	Follicular adenoma	N
2	47	F	3 cm	goiter	Complex nodules	goiter	N
3	47	F	1.25 cm	Follicular neoplasm	1.6 cm nodule	goiter	N
4 4	49	F	6 mm	Papillary cancer	9 mm nodule	Papillary cancer	Y
5	63	M	2.5 cm	cyst	cysts	goiter	N
6	71	F	n/a	n/a	n/a	goiter	N
7	59	F	2 cm	Suspicious , papillary cancer	2.2 cm	goiter	N

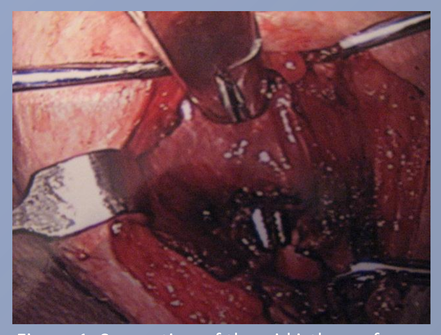

Figure 1. Separation of thyroid isthmus from trachea using right angle clamp.

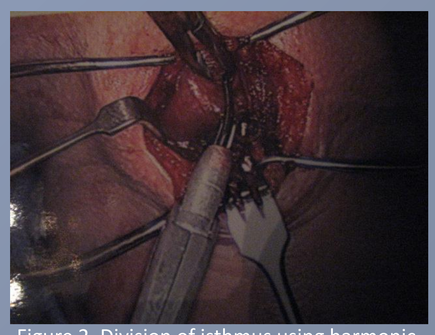

Figure 2. Division of isthmus using harmonic scalpel

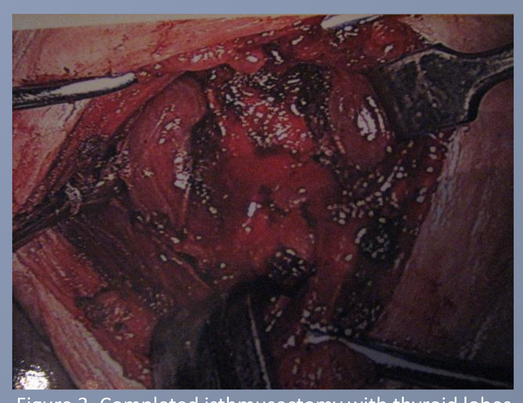

Figure 3. Completed isthmusectomy with thyroid lobes laterally and trachea exposed.

RESULTS

The patient ages ranged from 47 to 63, with an average of 53.6. (Table 1) There were two males and five females. Nodule size ranged from 1.2 cm to 3 cm. Fine needle aspiration was obtained in five patients. The FNA was benign in two patients and suspicious in two patients and positive for papillary thyroid cancer in the other. Two of the patients did not have a pre operative FNA. One of the patients, a physician, declined fine needle aspiration prior to surgery. The other patient was morbidly obese with obstructive sleep apnea. At the time of tracheostomy for her OSA, she was found to have a 2 cm nodule in the thyroid isthmus. This nodule was found to be a goiter on final pathologic examination. In the patient with papillary thyroid cancer, she underwent isthmusectomy with frozen section diagnosis to confirm the diagnosis. With findings of a papillary thyroid cancer, she underwent a total thyroidectomy at the same setting. Postoperatively all of the patients had their larynx visualized , and all had normal laryngeal function. The one patient who required a total thyroidectomy received thyroid hormone therapy , none of the other patients required thyroid replacement.

REFERENCES

1. Davies L, Oulette M, Hunter M, Welch G. The increasing Incidence of Small Thyroid Cancers: Where are the cases coming from? Laryngoscope 2010, 120(12) 2446-51.
2. Terris DJ, Bonnett A, Gourin CG et al. Minimally invasive Thyroidectomy using the Sofferman Technique. Laryngoscope 2005; 115(6), 1104-8.
3. Maser C, Donovan P, Udelsman R. Thyroid Isthmusectomy: A Rarely Used but Simple, Safe and Efficacious Technique. J Am Coll Surg 2007 204(3), 512-4.
4. Skilman C, Simo R. Thyrpoid isthmusectomy: a critical appraisal. J Laryngol 2007;121(100:986-9.
5. Nixon IJ, Whicter MM, Shaha AR, Patel SG, Ganly I. Thyroid isthmusectomy for well differentiated thyroid cancer. Ann Surg Oncol. 2011;18 (3):767-70.
6. Sugenoya A,Shingu K, Masuda H, Takahashi S, Shimizu T, Onuma H, Asanuma K, Ito N, Iida F. Surgical strategies for differentiated carcinoma of the thyroid isthmus. Head Neck. 1993;15(2):158-60.
7. Musa A, Adebayo S, Banjo A, Oyewole E, Olateju S. Emergency partial thyroidectomy under cervical block to relieve severe acuter airway obstruction from thyroid cancer. Afr Health Asci. 2008;8(3)186-9.