Coblation assisted excision of lingual thyroid

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Abstract Lingual thyroid (LT) tissue is the most frequent ectopic location of the thyroid gland. We report 5 cases of symptomatic LT and discuss the new surgical approach. Transoral approach and coblation assisted excision of LT was performed. Postoperative follow-up for all patients was like as tonsillectomy management without tracheotomy. It's seem that this approach is much better than other such as tongue-splitting, transcervical transhyoid, pharyngotomy, with an infrahyoid approach, combined cervical and intra-oral approach, Mandibular midline osteotomy.

Keywords Lingual thyroid · Coblation · Transoral excision

Introduction

An ectopic thyroid is the finding the thyroid tissue that not located in normal position and it may be found anywhere between the foramen cecum and normal pretracheal location position. Lingual thyroid (LT) is a rare embryological aberration with incidence of 1:100000 and it is the result of failure of the thyroid to descend [1]. It appears as a mass on the base of the tongue causing mostly local symptoms [2]. For symptomatic patient treatment indicated. Treatment options includes: Surgical excision [3], transposition [4], radioiodine-131 therapy [5] and thyroid hormone replacement [6]. Surgical options for treatment of LT include tongue-splitting for trans-oral excision [7], preoral approach via a mandibular midline osteotomy [8], suprahyoid pharyngotomy [8], combined approach (Transoral and Transcervical approach) [9]. All of these approaches need tracheotomy and intensive care for airway. We describe a new surgical approach for surgical removal of LT which there is no need for external incision and tracheotomy. This approach is coblation assisted excision of LT by transoral.

Case report

Five patients presenting to the Imam hospital of Kermanshah Between 2002–2006 with symptomatic LT. preoperative evaluation by I-131 thyroid scanning revealed the LT to be the only functional thyroid tissue present in all patients. Subsequent CT scanning and ultrasonography demonstrated the size and exact location of ectopic thyroids. For all cases scintigraphy with an iodine isotope confirmed that the abnormal mass was an ectopic thyroid. After the diagnosis of LT, all patients evaluated by an endocrinologist and the hormonal state established. For the patient without thyroid gland in normal position, L-thyroxin replacement started. Coblation-assisted resection of LT was performed with either the EVACT and A or EVAC 70 hand pieces Arthrocare Sunnyvale, CA, by transoral approach. The mean volume of bleeding during this procedure was 54.8 cc.

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Fig. 1

Surgical technique: After induction of general anesthesia and placement of a nasotracheal tube, the patient is placed in Rose's position and a Crowe-Davis mouth gag is placed for exposure of the oropharynx (like tonsillectomy). Alternative method for more exposure is pulling off the tongue by a silk suture in front of the tongue. A throat pack used to prevent blood and secretions from entering the esophagus. At this point, the resection of LT is performed with coblation. The LT is grasped with a tenaculum then retracted posterior, and the anterior border of tumor is dissected with coblation. The LT is carefully dissected down to its inferior extent then the tumor retracted to sides and again dissected thoughtfully finally amputated. At this stage bleeding occurs that controlled by bipolar electrocautery. After the removal of tumor, meticulous homeostasis was performed. As noted, the procedure is similar to the standard tonsillectomy consequently postoperative care was like as standard tonsillectomy but with pay more attention to airway and bleeding. All of patient discharged after two days of operation and there wasn't major complication even the pain at surgical place and referral earache. L-thyroxin replacement started for patients and planned regular evaluation by an internist.

Case 1: Nineteen years old female with dyspnea and dysphagia and referred for more evaluation. The symptoms of obstructive sleep apnea were prominent and there was long past medical history of using antiallergic drugs and one admission for airway problem after the upper respiratory tract infection (URTi). In routine examination by internist for URTi, the mass of LT discovered and referred for more evaluation. After indirect mirror examination and fibroptic evaluation, the CT scanning and I-131 scanning performed and diagnosis of a LT confirmed. The presentation of case 2 was similar to case 1 and she was 10 years female with a

chief complaint of dysphagia and chronic cough. The size of mass was $3.5 \times 3 \times 3$ cm.

Case 3: A 20-year-old female was referred with history of sever speech and swallowing problem. In examination the hot potato voice was prominent. A mass of $3 \times 2.5 \times 1.5$ cm was found by fibroptic nasopharyngoscopy. Scintigraphy with an iodine isotope confirmed that the mass was an ectopic thyroid. The surgery was performed and the main problem of patient disappeared 2 weeks after the operation.

Case 4: A 23-year-old female with a chief complaint of dysphagia and crusting over the lips. Referred by dermatologist for upper GI and airway evaluation. The patient had lump sensation in pharynx that sometime complicated by pain and burning sensation. After the full evaluation the LT with intra-lingual thyroglossal cyst discovered and patient managed by ablation and hormonal supplement.

Case 5: An 8-year-old female with massive bleeding admitted by general surgeon by the impression of upper GI Bleeding. After failure all of investigation for upper GI bleeding, consulted by otolaryngologist (corresponding author). The bleeding was severe and it thought to be from oropharynx consequently a Crowe-Davis mouth gag is placed. Suddenly the bleeding stopped therefore the base of tongue source suspected but there wasn't any visible mass in place. The bleeding was stopped by local packing. Subsequent angiography and scintigraphy with an iodine isotope study demonstrated that the mass was a small ectopic LT. Surgical resection of tumor was as like as other cases without any complication.

Discussion

LT tissue is the most frequent ectopic location of the thyroid gland, although its clinical incidence is low with 1 in 100,000 cases occurring. Main symptoms related to LT are foreign-body-feeling, swallowing difficulties [10], dyspnea and airway problem [11], articulation disorders, chronic cough [12], bleeding [13, 14], hypothyroidism and hyperthyroidism [15], but in many cases the diagnosis is accidental. There are four groups of LT; lingual, sublingual, thyroglossal and intralaryngeal [14]. LT is only functional thyroid in 70% of patient and clinical hypothyroidism is found in 33% of patient [15]. Diagnosis measures include: Careful clinical examination, mirror examination, I-125 scanning and CT scan. Treatment is indicated for the symptomatic patient and consist medical and surgical treatment. There is one report about using CO₂ Laser for LT [16] and a report about high frequency radio surgery for LT ablation [17]. Suppressive hormone therapy and radioactive iodine are the main medical treatment. Options for the surgical removal of LT include: Suprahyoid pharyngotomy to access to the posterior limits of the tumor, transoral exposure for direct

dissection of the anterior margin of the lesion, transorally using a posterior midline tongue-splitting incision, peroral approach via a mandibular midline osteotomy, transoral median glossotomy or lesions may be approached either via the neck or transorally [7, 9, 18]. All of these procedures need tracheotomy or intensive cares unit for airway problem. The main disadvantage of transoral ablation by coblation for LT is limited exposure for some patient. It is related to patient anatomy and the volume of tongue. We didn't have any exposure problem but careful preoperative evaluation is mandatory. It seem that any patient with difficult intubation doesn't good candidate for transoral approach removal of LT. Suturing of large vessel in this location is very hard consequently surgeon have to perform early homeostasis (bipolar electrocutry) during tumor dissection.

Conclusion

Coblation assisted resection of LT by is a simple, reliable and should be considered as an alternative method in the management of symptomatic patients.

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