EFFICACY OF SUBMUCOSAL DELIVERY THROUGH A PARAPHARYNGEAL APPROACH IN THE TREATMENT OF LIMITED CRICOID CHONDROMA

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Abstract- Cartilaginous tumors comprise 1% of all laryngeal masses. Since they grow slowly and metastasis is rare, long term survival is expected in cases of chondroma and chondrosarcoma. Thus, based on these facts and the fact that total salvage surgery after recurrence of previous tumor does not influence treatment outcomes, "Quality of Life" must be taken into great consideration. Based on 3 cases of limited condrosarcoma that we have successfully operated on using submucosal delivery through a parapharyngeal approach, after several years of recurrence free follow ups, authors determine this technique as an efficient method of approach to these tumors. Since this technique takes less time and there is no need for glottic incision and the patient is discharged in 2 days without insertion of endolaryngeal stent, we believe this method is superior to laryngofissure or total laryngectomy.

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INTRODUCTION

Cartilaginous tumors comprise less than 10% of all laryngeal tumors. Few otolaryngologists, even with extensive experience, will come across cartilaginous laryngeal tumors in a career time (1).

Base on the slow growth pattern and rarity of metastasis, chondroma and low grade chondrosarcoma, are known to have a good prognosis. Long term survival is expected in these cases, regardless of partial or total laryngectomy.

Therefore, to choose the best surgical option, quality of life must be considered greatly. Nowadays partial laryngectomy is proven to be the ideal treatment for these tumors (1-3).

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Based on 3 cases we have successfully treated by "submucosal delivery through a parapharyngeal approach" we believe this technique is not only sufficient but superior to laryngofissure, which is advised in references.

CASE REPORT

A 55 non smoker male teacher was referred to Amir-Alam Hospital with a laryngeal mass. He had developed hoarseness for the previous six months and had gradually experienced dyspnea. Direct laryngeal biopsy performed in another center had showed "normal laryngeal mucosa". At the time of admission at our center, general appearance of the patient was normal, he was not cachectic. His voice was not harsh, but it was weak and breathy. Neck palpation was entirely normal. Indirect laryngoscopy revealed a 5x5 cm submucosal mass inferior to the arytenoid cartilage. The overlying mucosa was reported normal. CT scan showed a hypodense mass

with distinct borders in the larynx. Areas of calcification were visible within the tumor.
Tumor bulk had displaced the right arytenoid laterally and superiorly (Fig 1: CT scan done prior to the surgery, showing the mass dislocating the arytenoid).
With a probable diagnosis of cartilaginous tumor, based on these findings, the patient underwent surgery.

In the beginning of the operation, tracheotomy was performed, followed by direct laryngoscopy. On the right side of the larynx, a round firm mass with smooth borders was seen. It had pushed the right arytenoid laterally and superiorly. The overlying mucosa was normal looking. A 5 cm transverse incision was performed on the right side of the neck, at the same level as inferior thyroid ala. Right sternocleidomastoid muscle was pulled laterally and the strap muscles medially. Then the larynx was exposed. An incision was performed on middle and inferior constrictor muscles. Posterior surface of the larynx was exposed by rotating the thyroid cartilage. By then a 5x5 cm mass was visible. The tumor was easily dissected from surrounding tissues without disturbing the laryngeal mucosa. In order to access a safe margin and keeping the mucosa intact we used a microscope.

A day after surgery the patient was allowed to eat. On the following day, the tracheotomy tube was removed. The patient was discharged with no further complications.
Histopathology report confirmed "chondroma", with no evidence of sarcoma.

Fig. 1. Preoperative CT scanning

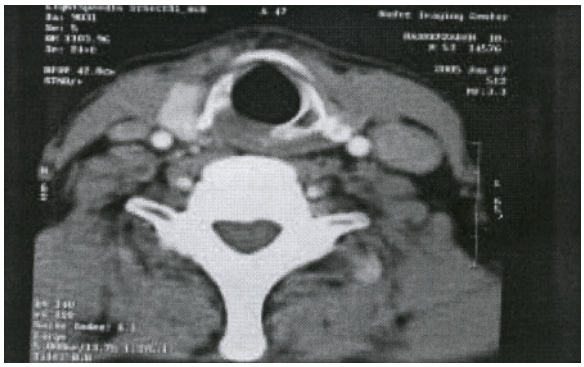

Fig. 2. Postoperative CT scanning

A month after the surgery he returned for followup. He was able to eat and speak easily. Dyspnea was completely cured. He had restarted his job as a teacher without any problem.

Indirect laryngoscopy was performed, laryngeal mucosa was normal; a slight edema, due to prior surgery was observed. No evidence of recurrence was found.
New CT scan was done. It showed no tumor residue (Fig 2: CT scan done a month after the surgery, no evidence of tumor residue is observed).

The patient was advised for annual checkups for the next 10 years.

DISCUSSION

Cartilaginous laryngeal tumors are rare. From 1861 to 2001, only 250 cases of these tumors were reported. Tumors developing from elastic cartilage such as epiglottis and vocal process of arytenoids are made of small, homogeneous and normal chondrocytes. Therefore it is more accurate to call them metaplastic instead of neoplastic. (3)

True cartilaginous tumors, in fact, arise from hyaline cartilages. The origin of the tumor is known to be the cricoid cartilage in approximately 70% of the cases, the thyroid cartilage in 20% and arytenoid cartilage body in 10%. (1)

These tumors originate mainly from the posterolateral wall of the cricoid cartilage ,as in our case, or the inferolateral wall of the thyroid cartilage.

The sources of these tumors are probably pluripotential mesenchymal stem cells.

These cells are seen during hyaline cartilage ossification process, in the third decade. (1) This age pattern is similar to our case as well.

CT scan revealed a hypodense and well circumscribed tumor, with mottled and calcified areas. Imaging alone cannot differentiate benign from malignant tumors. However, the presence of calcification is a sign of probable benignity, although it is not diagnostic. (4)

Probably the most controversial aspect in diagnosing these tumors is between benign and low grade malignant tumors. Direct laryngoscopy and biopsy is known to be difficult in such cases, since the patient does not easily accept this procedure. Even though criteria for differentiating benignity from malignancy in such cases are well defined, a tumor diagnosed as chondroma, on small tissue samples, must be suspected until total resection of the tumor and pathologic confirmation. (1)

Surgery is the appropriate treatment modality for primary or recurrent tumors. (1-3)

Conservative surgery assuring resection of the entire tumor should include a normal margin of the cartilage. Afterwards, if the cricoids cartilage does not collapse, further manipulation is not required. Patient survival is determined by the final diagnosis based on histopathology, regardless of surgical methods.

Since the surgical approach does not influence survival, gaining a better quality of life is considered a goal in the management of these tumors. (1)

Total laryngectomy is mainly used for large primary or recurrent tumors. Nowadays patients with cricoid chondroma are treated by the laryngofissure technique. Endolaryngeal stent is used for 4 weeks after the surgery. Removing this stent can result in collapse of the cricoid cartilage. An alternative method in managing cartilaginous laryngeal tumors is total cricoidectomy with thyrotracheal anastomosis.

We believe that "Quality of Life" must be considered greatly while choosing a surgical technique in these cases.

Our experience suggests that "Submucosal delivery through the Parapharyngeal Approach" is not only an efficient method in managing these patients, but also it is superior to the other techniques in preserving laryngeal function.

Operation by this method takes less than an hour in expert hands. It avoids thyroid or tracheal cartilage incision. This method does not require an endolaryngeal stent and patient can easily go back to their normal life style within 2 days after surgery , without any further problems.

In our three cases managed by “Sub mucosal delivery through a Para pharyngeal Approach” the patients remained tumor-free in several years of followup.

The above facts in themselves are evidence of superiority of this surgical approach in such cases.

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