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ISOLATED POSTERIOR TRACHEAL WALL DEFECT RECONSTRUCTION USING NOVEL TECHNIQUE

Oncology

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ABSTRACT

Tracheal tumors are rare, with more than 90% of tumors being malignant in nature. The most common types of primary malignant tracheal malignancies are squamous cell carcinoma and adenoid cystic carcinoma. The mainstay of treatment, when possible, is surgical resection. Unresectable tumors generally have a poor prognosis. Here we are providing case report of posterior tracheal wall adenoid cystic carcinoma resection and defect reconstruction.

KEYWORDS

Malignant tracheal tumor tracheal resection and defect reconstruction, Horizontal Infrahyoid flap

INTRODUCTION

Tracheal tumors are classified as primary - arise de novo or secondary from either metastatic disease or local invasion. Primary tumors per se classified histologically as either epithelial or mesenchymal tumors which may be benign or malignant. Majority [-90%] of primary tracheal tumors are malignant in adults but majority are benign in children.[1]

Most common site for primary tracheal tumor is proximal and distal thirds, as it is the membranous wall and the most common tumor type being squamous cell carcinoma -SCC (44.8%), followed by Adeno cystic carcinoma ACC (16.3%) and Neuroendocrine tumors (9.7%). Primary tracheal tumors are most often treated with surgical resection and radiation.[1] However, at the time of diagnosis, more than one-third of patients may had locally advanced disease, defined as extension into adjacent tissues. [2]

This is a case report of primary adenoid cystic carcinoma of posterior membranous tracheal wall treated with wide local excision and reconstruction with novel technique using horizontal infrahyoid flap.

Case Report

A 48 years old housewife having history of cough [no blood in sputum] and breathing difficulty for 6 month was evaluated first by Pulmonary Physician. Initially office based fibre optic bronchoscopy tried and there was tracheal mass probably arising from posterior tracheal wall and obscuring lumen with normal vocal cord mobility. PET CT scan was done and was suggestive of polypoid lesion of posterior tracheal wall with broad base of size- 1.2X1.5X1.4 cm at level of C6-C7 vertebral body, 8mm inferior to level of vocal cords, extension of 2 cm inferiorly in trachea and left side level ll/lll metastatic cervical lymphnode without any other significant lesion elsewhere[Figure1]. After detailed preoperative evaluation Patient was posted for rigid bronchoscopic evaluation under general anesthesia and with help of snare electrocautery, cryoprobe gross debulking of tracheal mass done and 16X30 mm SEMS-self expandable metallic stent deployed under Fluro guidance and patency of trachea ensured by pulmonary physician.

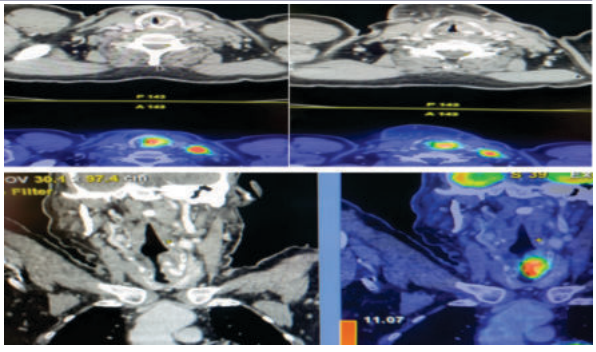

Figure 1: PET CT showing tumor.

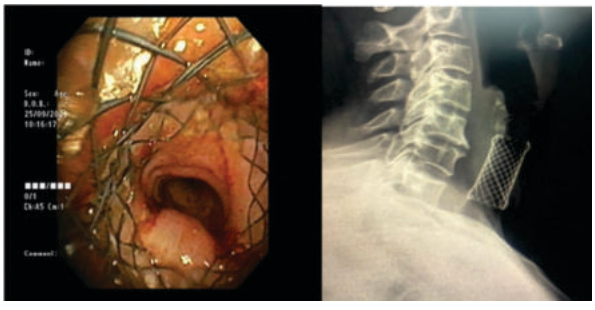

FIGURE 2- SEMS stent in situ.

At 1 month followup , there was complaint of cough so, CT scan was done- showing metallic SEMS in situ and mild circumferential wall thickening in infra-glottic region. [Figure 2]. On check rigid bronchoscopy, there was pseudomembrane and granulation development just above SEMS stent leading to airway compromise, which was excised with cryoprobe. However, patient was having recurrent cough and developing breathing difficulty, So SEMS

removal was done by pulmonary physician and low tracheotomy was done before referring patient for further management.

After detailed evaluation and discussion with our surgical and anesthetic team, patient was planned for resection of tumor and reconstruction [+/- tracheal resection and anastomosis]. Patient was anesthetized via tracheostomy tube. Horizontal Tracheostomy incision was extended bilaterally and subplatysmal flap elevated. Left side selective neck dissection done. After that, left side strap muscles and left lobe of thyroid retracted and Tracheal wall delineated. Airway was shifted to flexometallic tube and meanwhile tumor was assessed with help of 0-degree Hopkins rod through tracheal lumen which was involving posterior tracheal wall corresponding to upper 3 tracheal rings. Tracheal lumen entry was done laterally. Resection of posterior tracheal wall tumor along with adequate margin corresponding to upper 4 tracheal rings was done.

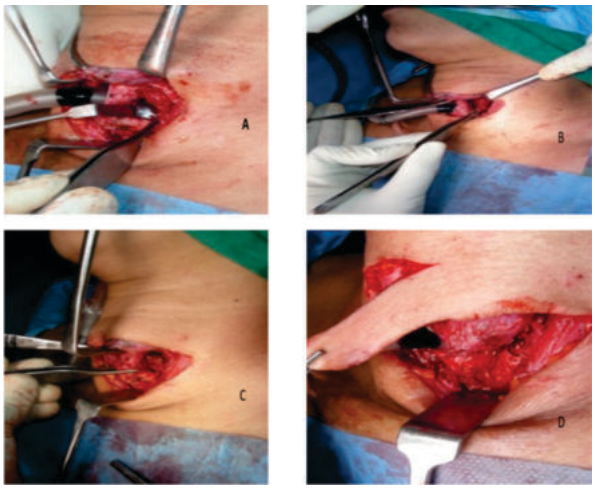

Figure 3- [A] tumor exposure via left tracheal wall. [B] tumor excision with margin. [C] posterior tracheal wall defect after excision. [D] horizontal left side infrahyoid flap harvest.

Figure 4- [E] flap tunneling via lateral wall tracheal opening. [F] flap inset. [G] remaining flap de-epithelization. [H] wound closure in layers.

After resection defect was assessed and 5X3 cm horizontal infrahyoid flap based on superior thyroid artery was harvested on left side and tunneled to defect via prior lateral tracheal wall opening. Proximal part of flap was de-epithelized and defect reconstructed with distal part of flap. Wound closure was done in layers. Airway shifted to cuffed tracheostomy tube, cuff was kept half inflated and regularly monitoring of flap was done during tube change. Post operative period was uneventful.On histopathological examination tumor was adenoid cystic carcinoma of posterior tracheal wall of 1X0.6X1 cm size with all margins free. On routine follow up patient was having left vocal cord paresis which was compensated by right vocal cord and patient was decannulated on 26 post operative day and can vocalize subjectively near normal and eat food without aspiration and distress. Patient is on adjuvant treatment without any complication.

DISCUSSION

Adenoid Cystic Carcinoma ACCs arise from bronchial glands with no sex predominance in all age groups and peak incidence occur in fourth or fifth decade. [3] In contrast to SCC, they are not associated with smoking, frequently symptomatic, involve mediastinum by pushing rather invasion, with predilection for perineural, submucosal, and distant metastatic spread but least regional nodal metastasis. Surgical resection margins are often microscopically positive well away from grossly apparent tumor. So, adjuvant treatment in form of radiotherapy often indicated which is associated with long-term overall survival.[4][5]

In a series of 270 patients with primary tracheal carcinoma, 135 patients had ACC. [4] out of which 1/4 were unresectable due to extensive airway involvement and regional spread. Unlike SCC, mean survival was 69 months for resectable and 41 months for unresectable ACC tumors. The 5-year survival rates for these two groups were 52.4% (ACC) and 33.3% (SCC) respectively.

In an epidemiologic study done by Urdaneta et al using SEER database, the 5 yr OS for ACC was 74.3%, and 12.6% for SCC.[6] ACC is known for late recurrences both locally and distally, in some cases up to 30 years after treatment.[7]

CONCLUSION

This is novel technique of posterior tracheal wall defect reconstruction using horizontal infrahyoid flap can be used where option of free flap is not possible.

Conflict Of Interest- None.

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