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Case Report

Transoral Endoscopic Excision of Second Branchial Cleft Cyst-A Case Report

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INTRODUCTION

Branchial cleft cysts are congenital anomalies arising from the first through fourth pharyngeal clefts. Defects of the branchial apparatus manifest as cysts, sinuses, fistulas, and ectopic glands[1]. Anomalies arise most commonly from the second branchial cleft followed by first, third and fourth arches[2]. The occurrence of a branchial cleft cyst in the parapharyngeal space is rare and accounts for 1% of parapharyngeal tumors. Though there are various surgical approaches to the parapharyngeal space, the risk of complications leading to loss of quality of life remains high due to the presence of anatomically important vascular and neural structures in the vicinity.[3,4] We hereby report the successful surgical treatment of a branchial cleft cyst in a young woman's parapharyngeal space, with control of infection, through combined transoral and endoscopic marsupialization.

CASE REPORT

18-year old female patient came to our outpatient department with complaints of dysphagia and foreign body sensation in the throat for a duration of 2 months. On examination of oropharynx a firm, nontender swelling was noted behind right posterior pillar of the tonsil (Fig 1). On further evaluation with diagnostic nasal endoscopy and video laryngoscopy, the mass was seen extending into the right lateral wall of nasopharynx. No mass was palpated in the clinical examination of neck. Routine blood investigations were normal. Radiological assessment included both computerised tomography (CT) and magnetic resonance imaging (MRI) of the neck.

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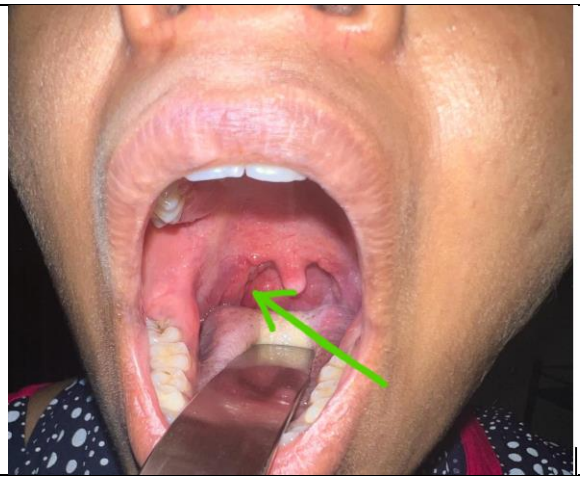

Figure 1: A firm, non-tender swelling behind right posterior pillar of the tonsil.

MRI NECK showed a well-defined septate T1Wt hypointense, T2 hyperintense cystic lesion measuring 2.2x3.4x3.5 cm noted in the right parapharyngeal and carotid space causing luminal narrowing of nasopharynx and oropharynx. Posteriorly lesion is noted closely abutting the right internal carotid artery and longus colli muscle. On post contrast imaging lesion shows minimal peripheral septal enhancement (Fig 2,3,4).

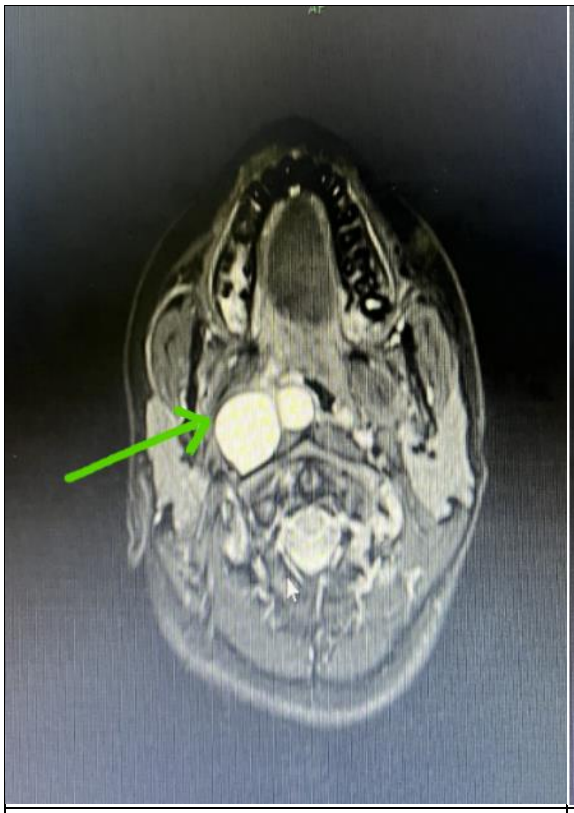

Figure 2

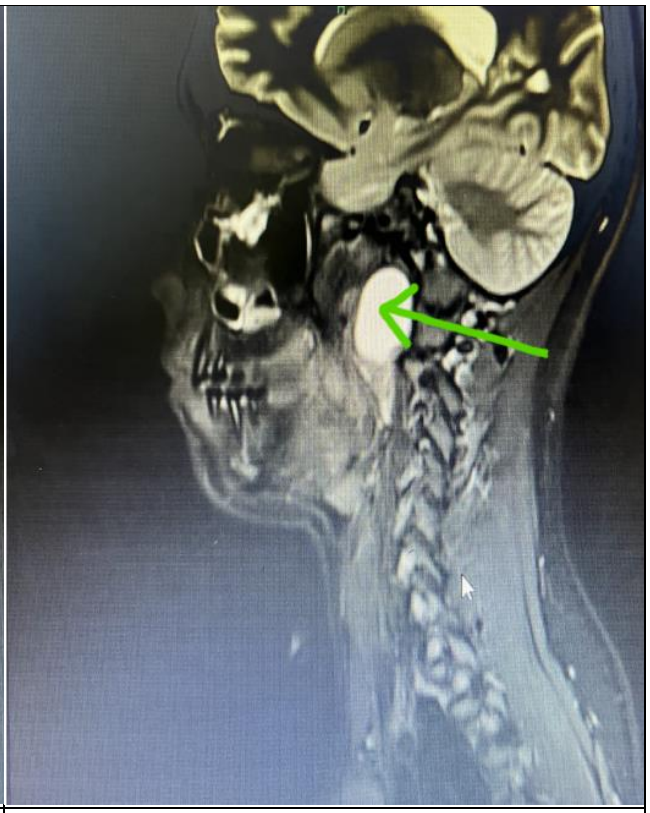

Figure 3

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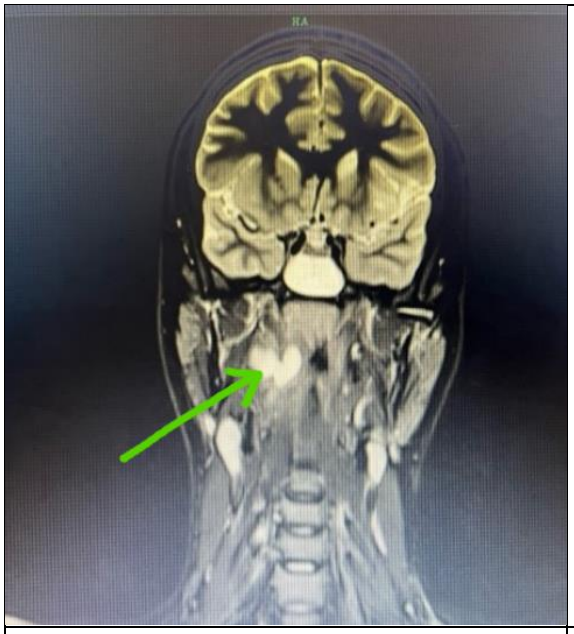

Figure 2,3,4: MRI images showing the cyst in axial, sagittal and coronal cuts

Figure 4

CT NECK showed a non-enhancing bilobed curvilinear cystic lesion measuring 2.3cmx1.3cmx2.9cm extending postero-laterally from the right pharyngeal mucosal space/ retropharyngeal space 2mm deep to the mucosal surface, almost at the level of hard plate which is closely abutting the anterior surface of longus colli muscle and lies immediately anterior to the right lateral mass of atlas vertebra(C1). Lateral margin is abutting the medial border of internal carotid artery, superior margin is reaching 1.2cm proximal to the base of skull, inferior margin is noted 1.9cm superior to the level of carotid bifurcation, medially causing a fullness and bulge of the pharyngeal mucosa just below the nasopharyngeal landmark and anteriorly displacing the parapharyngeal fat (Fig 5,6.7)

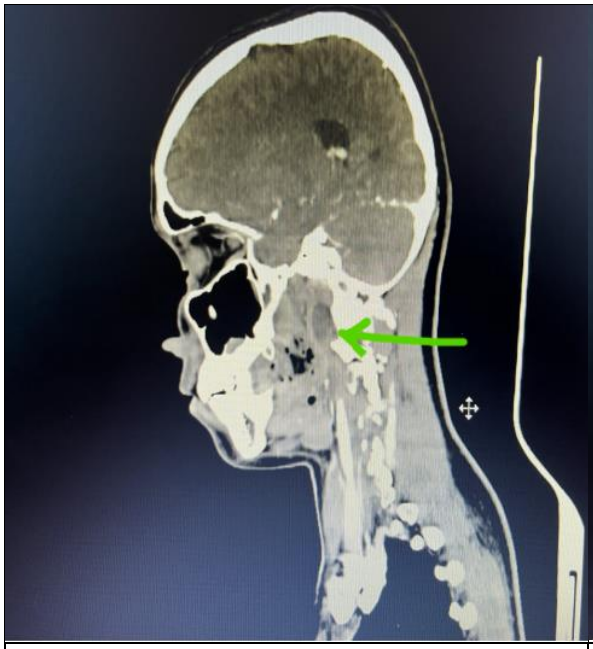

Figure 5

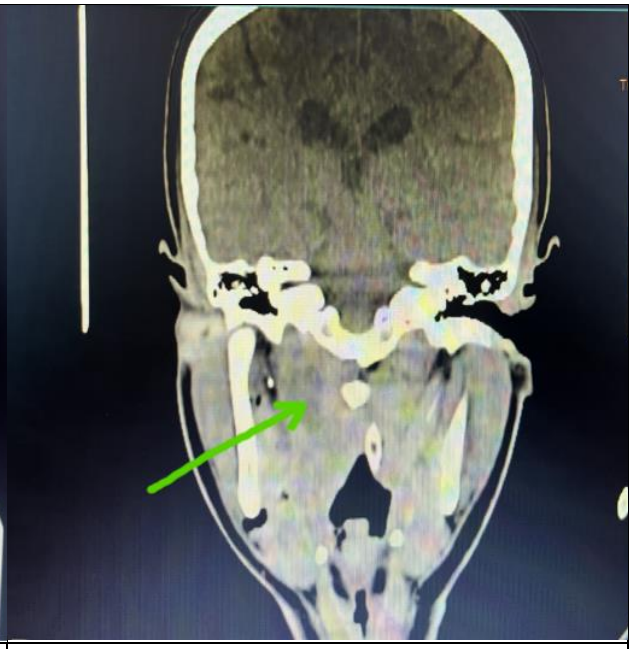

Figure 6

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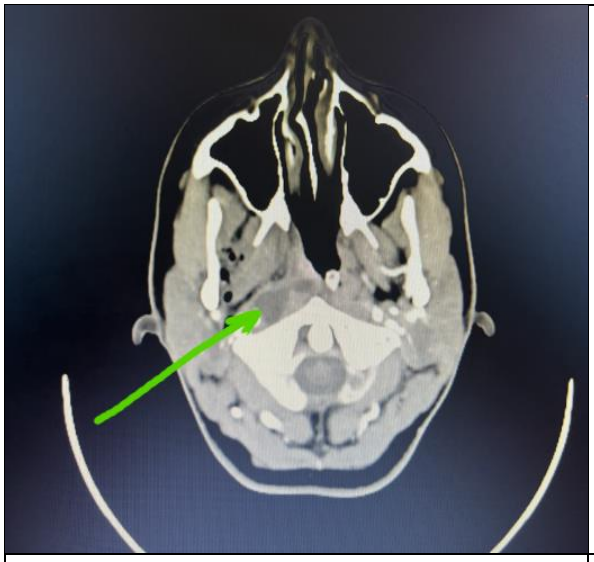

Figure 5,6,7: CT NECK showing the cyst in sagittal, coronal and axial views

Figure 7

Patient was prepared for cyst excision under general anaesthesia. After pacing patient in roses position, Boyle Davis mouth gag was inserted, fixed and soft palate elevated using infant feeding tube. Right tonsillectomy was first done with coblation. Following which zero-degree endoscope passed trans orally and an incision was made over nasopharynx using coblation. Cyst was noted extending from the right parapharyngeal space to the retropharyngeal space and was completely excised (Fig 8). Fluid drained out from the cyst was collected and send for AFB Stain, Gram stain, Fungal stain, TB PCR, fungal and bacterial culture. Biopsy taken from wall of the cyst was send for histopathological examination. Feeding tube No. 14 feeding tube was inserted into the cyst cavity through left nostril and fixed. Haemostasis achieved with coblation and Ryles tube was inserted. Post-operatively metronidazole wash was given through feeding tube into the cyst cavity for 2 days and drain removed on post OP Day 3. Ryles tube removed on day 5 and oral feeding started. Postoperative period was uneventful. Histopathologic examination was suggestive of branchial cyst.

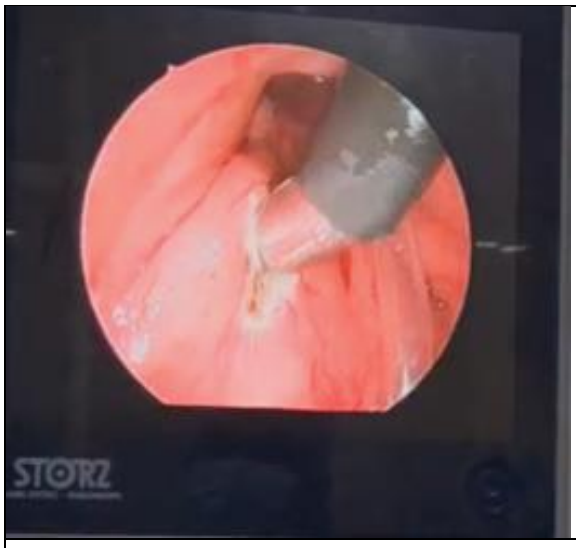

Figure 8 -Incision

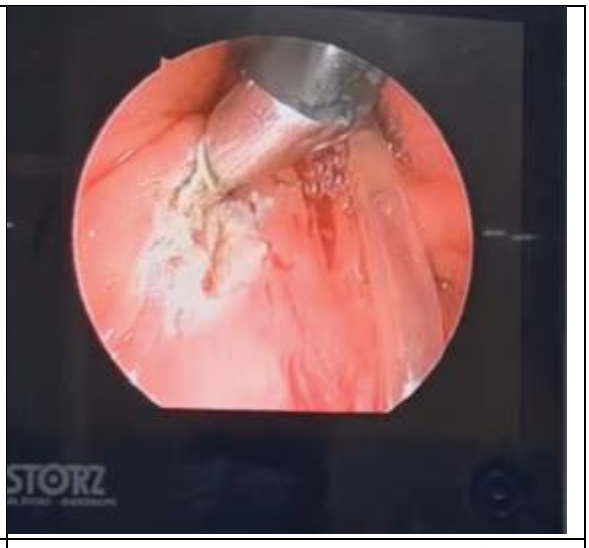

Figure 9 - Incision Deepend

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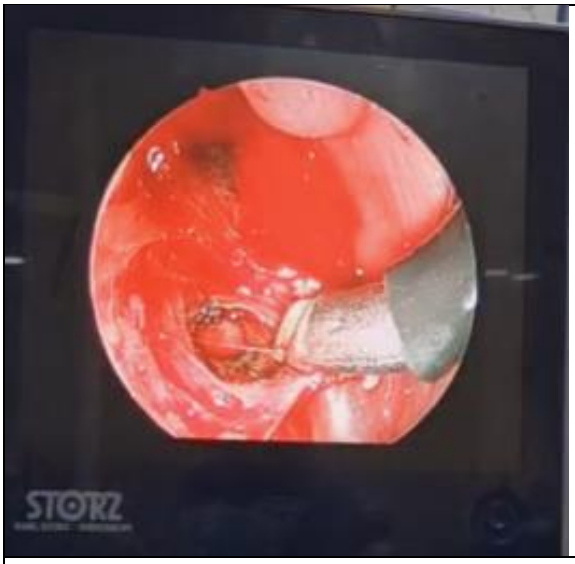


Figure 10 – Cyst exposed

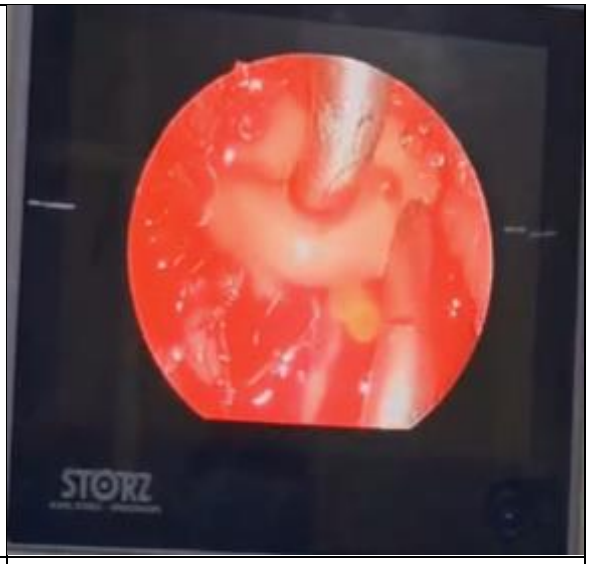
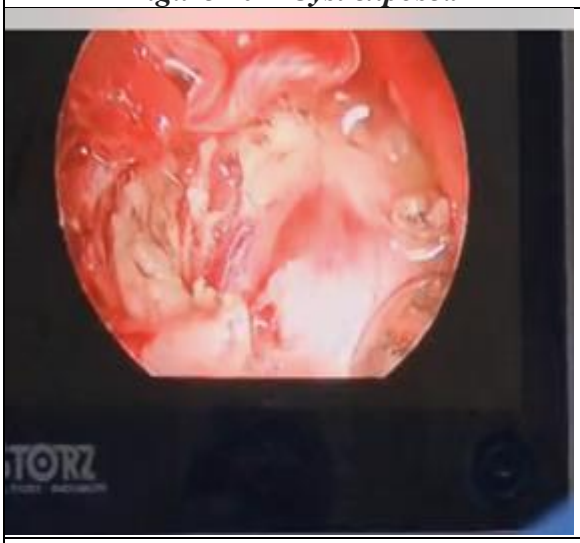


Figure 11 – mucinous discharge from cyst



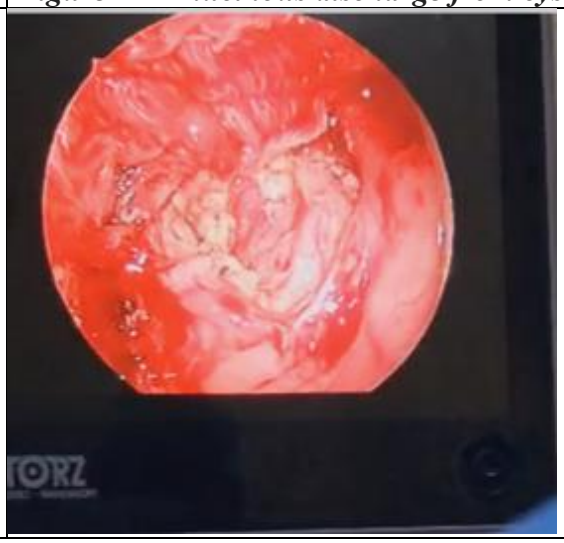


Figure 12& 13 – Cyst wall exposed

Figure 14 – Cyst Completely removed with exposed cavity

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DISCUSSION

Second branchial cleft cysts (BCCs) are developmental cyst and are the rarest type of PPS tumors. Bailey et al classified BCCs into 4 types based on location[5] Type I is located in the anterior edge of the sternocleidomastoid muscle and the deep surface of the latissimus dorsi muscle; type II is the most common type of BCC and is located behind the submandibular gland on the superficial surface of the sternocleidomastoid muscle and the lateral side of carotid space; type III BCC is located between the carotid bifurcation and the external carotid artery in the lateral wall of pharynx; and type IV is located in the interval of the pharyngeal mucosal space. The diagnosis of type IV BCC according to the Bailey classification can be very challenging due to the lack of specific clinical manifestations in the early stage of the disease; thus, this type of tumor can be easily misdiagnosed. Furthermore, considering the anatomical position of the PPS, the important neurovascular structure is complex, the operation is difficult to perform, and the associated risk of operation is high. In particular, when that tumor is very close to the skull base, it is difficult to expose the upper end, and attempting to separate the tumor without direct visualization can easily lead to the rupture of the cyst, resulting in incomplete resection and serious complications caused by the neurovascular injury.An isolated BCC in the PPS extending into the retropharyngeal space very rarely occurs.These cysts develop inward in the soft-tissue plane, eventually protruding into the oropharynx[6]. Preoperative evaluation for a differential diagnosis and surgical planning is essential. Neck CT and magnetic resonance (MR) images are available for evaluating masses in the PPS. On CT images, a parapharyngeal BCC presents as a low-density, well-demarcated cystic mass with a thin wall and without septations.[7,8] However, MR images have more advantages than CT images for delineating the soft-tissue characteristics of PPS masses. The cystic content appears hyper-intense in the T1-weighted images on MRI and no enhancement of the cyst is detected with contrast.[7] A parapharyngeal BCC requires complete surgical removal to confirm the diagnosis and proper treatment. Various approaches can be taken for PPS masses including the transoral, transcervical, transcervico-parotid, and mandibulotomy approaches. The transoral approach is generally accepted for small benign neoplasms in the pre-styloid PPS when they present as an oropharyngeal mass. With the development of endoscopic procedures, there is a better possibility to remove some tumors located in PPS via an intraoral approach.

CONCLUSION

Parapharyngeal branchial cleft cysts are rare lesions that need to be differentiated from other neck masses in adults. A comprehensive understanding of the complex anatomy and embryology is essential for proper management. Finally to confirm the diagnosis with permanent pathology and histological evaluation, this type of cystic parapharyngeal mass must be surgically resected. We attempted the intra oral dissection of lesions using endoscope and coblation. This approach has benefits in providing good surgical visualization and preserving important adjacent structures while dissecting the cyst.

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