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CASE STUDY

BRANCHIAL CLEFT CYST – A RARE PRESENTATION AND REVIEW OF LITERATURE

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ABSTRACT

Branchial cleft cyst is one of the common congenital anomaly and a cystic lesion of neck. It arises from branchial arch remnants, mainly from second branchial cleft. It commonly presents as a slow growing, solitary, painless swelling in the anterior triangle of the neck. Brachial cleft cyst can be misdiagnosed as other cysts of neck or as other swellings of oral and paraoral region. It is imperative to make correct diagnosis in order to design an accurate treatment plan. Clinical examination, FNAC, ultrasonography and CT scan are the diagnostic aids that provide findings suggestive of branchial cleft cyst and the diagnosis can be confirmed by biopsy. Once the diagnosis is established, the treatment of choice is surgical excision. Recurrence of this lesion is rare. Here, we present a rare case of classic clinical presentation of branchial cleft cyst.

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INTRODUCTION

Swellings of neck are routinely encountered problems in a day to day practice and are of developmental, inflammatory or neoplastic origin or caused by pathological conditions associated with structures lying therein. (Bhattacharya, 2003) In a survey of congenital neck masses it was observed that, 70% of the cases are of thyroglossal duct origin, 25% of the cases are of branchial apparatus origin and 5% are cystic hygromas. (Panchbhai *et al*., 2012) Branchial cleft anomalies are second most prevalent cause of developmental neck swellings and in this second branchial cleft cysts represent 67% to 93% of all branchial anomalies. (Russel and Smith, 2009) Branchial cleft cyst, also known as cervical lympho-epithelial cyst is a unilateral, slow growing lateral neck swelling. It has a tendency to cluster in the families. (Glosser *et al*., 2003) Bailey and Proctor (Mallikarjunappa *et al*., 2014) have classified it according to its location. Here, we are presenting the case report of Type II branchial cleft cyst.

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Case Report

A 32 year male reported to the department with a chief complain of painless swelling on the left side of neck since 10 years. But since 7-8 months the swelling have increased rapidly in size attaining the present state and has caused difficulty in movements, speech and deglutition. Onextraoral examination, single, well-defined, oval, non-tender, movable swelling with a diameter of four centimeters, was present on the left side of the neck, which was soft to firm in consistency and the overlying skin was pinchable. The swelling did not move on deglutition. Intraorally, there was no significant finding. The orthopantomogram did not reveal any significant finding. The ultrasonography showed a homogenous hypoechoic lesion. The computed tomography demonstrated a hypodense cystic lesion in left submandibular region lying between mandible and hyoid bone with smooth margins with no postcontrast enhancement. There was no evidence of solid component within the lesion. The FNAC was performed which revealed 10 ml of straw colored fluid. The microscopic analysis of this fluid revealed presence of inflammatory cells. By this, a clinico-radiographic diagnosis of second branchial cleft cyst was given and patient

was referred to Dept. of oral and maxillofacial surgery where enucleation of the cyst was performed. The specimen was sent for histo-pathological examination which was also suggestive of branchial cleft cyst. The 1 month and 6 month follow up was uneventful.

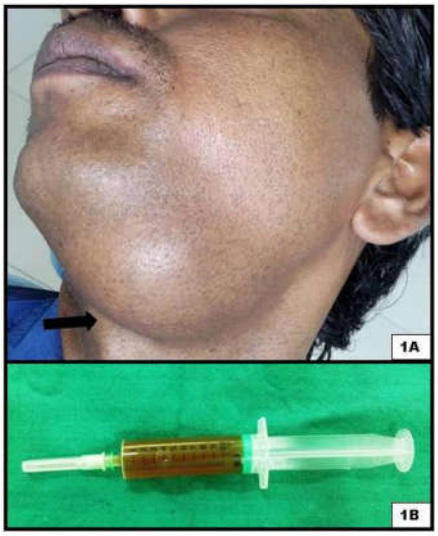

Fig. 1A – Extraoral swelling on left side of neck (black arrow).Fig. 1B - FNAC revealing straw colored fluid

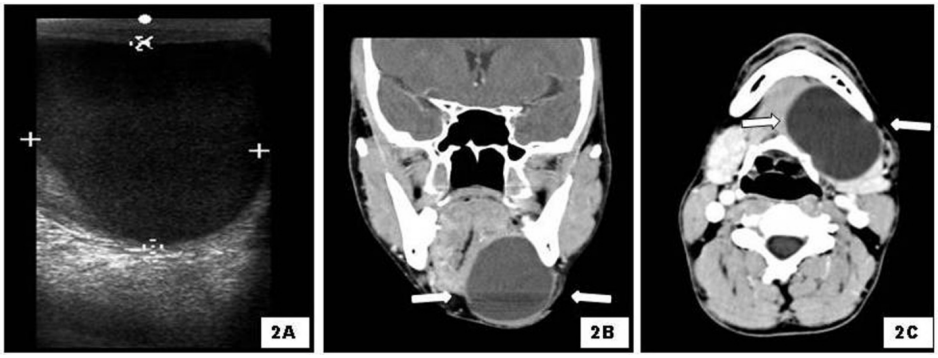

Fig. 2A - Ultrasonography showing a hypoechoic lesion. Fig. 2B - CT scan (coronal view) showing a hypodense lesion (white arrow). Fig. 2C - CT scan (axial view) showing a hypodense lesion (white arrow)

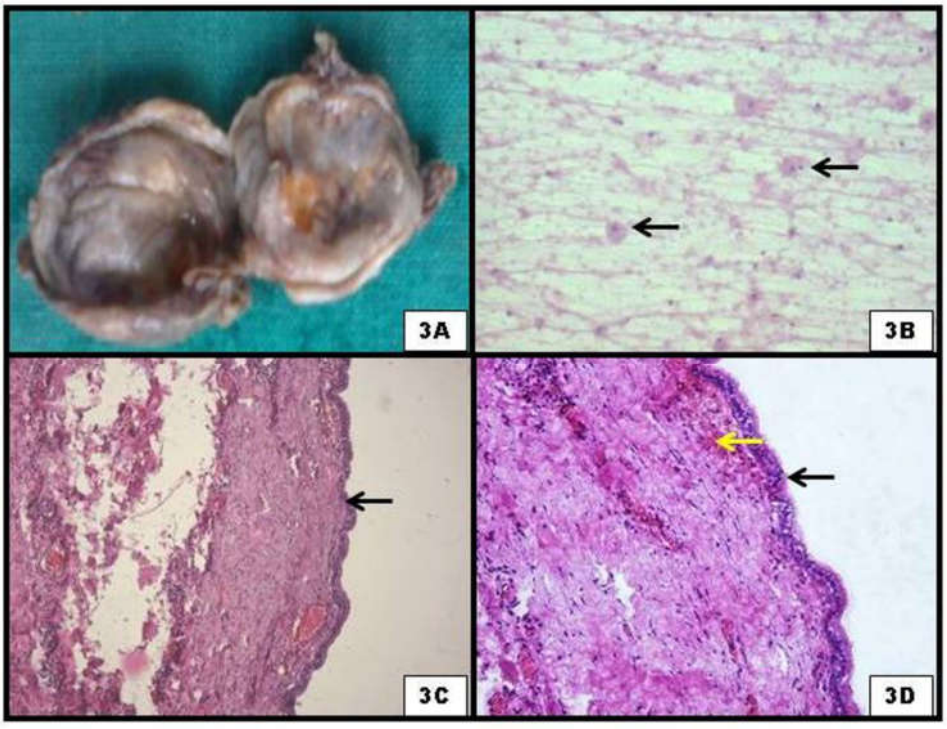

Fig. 3A - Gross Specimen. Fig. 3B - FNAC photomicrograph (10X) showing inflammatory cells (black arrow). Fig. 3C (H & E stain 10X) & Fig. 3D (H & E stain 20X) - Biopsy photomicrograph showing pseudo-stratified ciliated columnar epithelium (black arrow) and inflammatory cell infiltrate (yellow arrow)

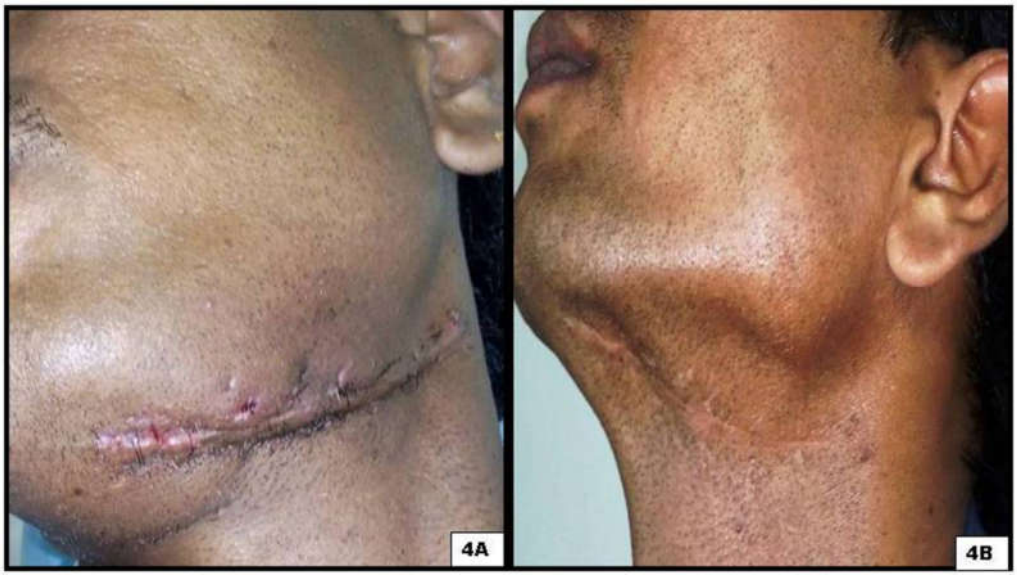

Fig. 4A – Followup of the patient after 15 days, Fig. 4B - Follow up of the patient after 6 months

DISCUSSION

Branchial cleft anomalies present as cyst, sinus and fistulas, in which, second branchial cleft cyst is the most common occurrence. Several theories have been proposed for its origin but the most accepted theory is incomplete evolution of branchial apparatus. (Choi and Zalzal, 1995) Branchial cleft cyst has equal gender prevalence and its average age at diagnosis is between second to fourth decade of life. (Ciuni *et al*., 2012) Similar to literature, our case demonstrated branchial cleft cyst in a 32 years old male patient. Second branchial cleft cyst usually presents as a solitary unilateral neck swelling. Only 2-3% of the cases are bilateral and rarely multiple. (Fernández *et al*., 2011) Similarly, our case reports a branchial cleft cyst presenting as a single swelling on the left side of the neck. The cyst usually presents as a soft, fluctuant mass ranging from 1-10 cm in diameter or even more. The common symptoms associated with it are dyspnea, dysphagia and dysphonia. (Lee *et al*., 2006) Our case demonstrated similar clinical features but there were no symptoms associated with it. The diagnosis of branchial cleft cyst is based on history, clinical examination and is aided by the diagnostic modalities such as ultrasonography, plain and/or contrast enhanced computed tomography and fine needle aspiration cytology. Ultrasonography is an easy, cheaper, non-invasive and repeatable diagnostic modality for head and neck swellings. Although, the extent of the lesion cannot be determined accurately, it provides a clear idea about the contents of the swelling. CT scan not only provides the picture of the internal structure, but also gives the detail account of the extent of the lesion and its relationship with adjacent structures. Preoperative computed tomographic evaluation is mandatory to design the accurate and reproducible treatment plan. (Panchbhai *et al*., 2012; White and Pharoah, 2009) In our case also, these imaging modalities showed characteristic findings suggestive of a cystic lesion and determination of its location and extent aided the diagnosis of branchial cleft cyst. Fine needle aspiration cytology of the branchial cleft cyst reveals a straw colored or brownish colored fluid which microscopically exhibits presence of squamous cells, inflammatory cells and cholesterol crystals. (Glosser *et al*., 2003) Our case also demonstrated a straw colored aspirate but presence of cholesterol crystals was not observed. The diagnosis of the branchial cleft cyst was confirmed by histo-pathological examination. The treatment of choice for branchial cleft cyst is surgical removal. Alternative treatment modality suggested is percutaneous sclerotherapy but the success rate of the same is unproven. (Glosser *et al*., 2003; Howard and Lund, 2008) Our case was treated by surgical excision. The complications of surgery include formation of persistent fistula, damage to vital structures and recurrence. The recurrence rate of the branchial cleft cyst is reported to be 3-20%. (Aboud *et al*, 2003) In our case uneventful postoperative period was noted after 6 months of follow up.

Conclusion

The differential diagnosis of branchial cleft cyst should be kept in mind in the case of paramedian neck swelling. Various imaging modalities and FNAC play an important role in the diagnosis. The gold standard is biopsy, though. A through clinical examination aided by these diagnostic modalities plays a vital role in designing the effective treatment plan and in achieving complete cure of the lesion without any postoperative complications.

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