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RARE NECK SWELLING – BRANCHIAL CYST: A CLINICOPATHOLOGICAL CASE REPORT

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ABSTRACT:
Background: Branchial cysts are benign congenital lesions arising from incomplete obliteration of the branchial apparatus, most often the second branchial cleft. They usually present as painless, slowly enlarging lateral neck swellings in children and young adults, although secondary infection can produce rapid, painful enlargement.
Case presentation: We report a 14-year-old girl who presented with a painful, rapidly enlarging swelling on the left side of the neck of six weeks' duration. Examination revealed a 5 × 4 cm cystic, fluctuant, transilluminant swelling in the upper part of the left anterior triangle. The lesion was completely excised under general anaesthesia; gross and histopathological examination confirmed a branchial cyst lined by stratified squamous epithelium with abundant subepithelial lymphoid tissue and reactive changes.
Conclusion: Branchial cyst should be considered in the differential diagnosis of a lateral cystic neck swelling in young patients. Complete surgical excision is both diagnostic and curative, and histopathology provides definitive confirmation while excluding more sinister mimics.

KEYWORDS: Branchial cyst; Second branchial cleft; Congenital neck swelling; Lateral cervical cyst; Histopathology.

INTRODUCTION

Congenital neck swellings form an important group of lesions in surgical practice, and branchial cleft anomalies are among the commonest, accounting for roughly one-fifth of paediatric congenital cervical masses.1 They result from incomplete obliteration of the branchial apparatus between the third and seventh weeks of intrauterine life, and anomalies of the second branchial cleft predominate, comprising approximately 90–95% of all branchial anomalies.2 Although they may appear at any age, branchial cysts are most frequently recognised in late childhood and early adulthood, typically as a non-tender, fluctuant mass deep to the upper third of the sternocleidomastoid muscle.3 Secondary infection may provoke rapid enlargement and pain, occasionally mimicking an abscess or a malignant node.4 Early recognition and complete surgical excision are important both to establish the diagnosis and to prevent recurrent infection and other complications.1 We present a case of a rapidly enlarging, painful branchial cyst in a 14-year-old girl, together with its clinical, operative and histopathological features and a brief review of the relevant literature.

Case Presentation

A 14-year-old girl presented to the surgical outpatient department with a swelling on the left side of the neck of one and a half months' duration. The swelling was initially small but had increased rapidly in size over the preceding week and had become painful; the pain was intermittent and aggravated on swallowing. There was no history of dysphagia, regurgitation, halitosis, trauma, fever, weight loss or loss of appetite.

On general examination she was conscious, oriented, afebrile and moderately built and nourished, with stable vital signs. Local examination revealed a single oval swelling measuring approximately 5 × 4 cm in the upper part of the left anterior triangle of the neck. The overlying skin was normal. On palpation the swelling was cystic, tender, fluctuant and transilluminant, with no pulsation or cough impulse, and became less prominent on contraction of the sternocleidomastoid muscle, suggesting a plane deep to the muscle. Ear, nose and throat and systemic examinations were unremarkable.

A clinical diagnosis of a left branchial cyst was made, with lymphatic cyst and cystic schwannoma considered in the differential diagnosis. The patient underwent complete surgical excision of the cyst under general anaesthesia. Through a transverse cervical incision the cyst was carefully dissected from the surrounding tissues of the anterior triangle, with particular care taken to preserve the adjacent neurovascular structures, especially the hypoglossal and glossopharyngeal nerves and the great vessels (Figures 1 and 2). The cyst was excised intact (Figure 3). The postoperative period was uneventful and the patient was discharged in good condition.

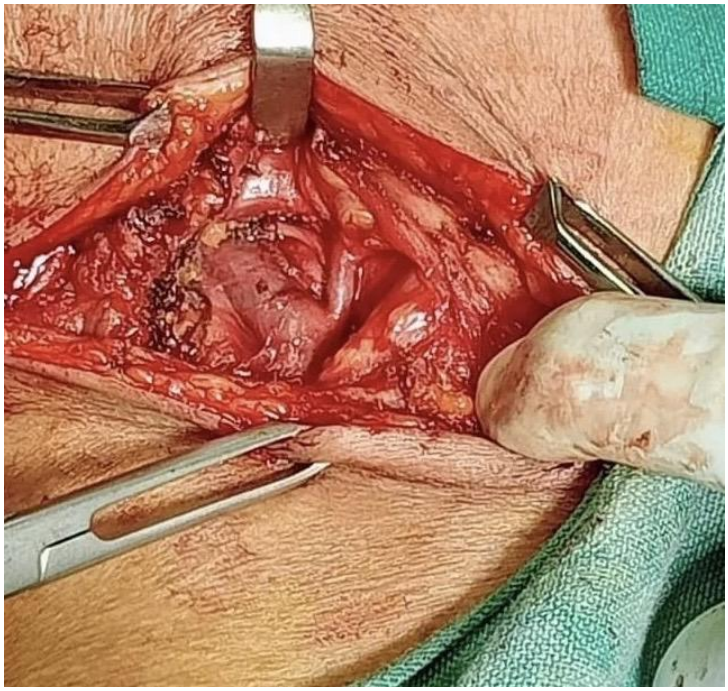

Figure 1. Intraoperative photograph showing exposure and dissection of the cystic lesion in the upper part of the left anterior triangle of the neck, with the operative field retracted.

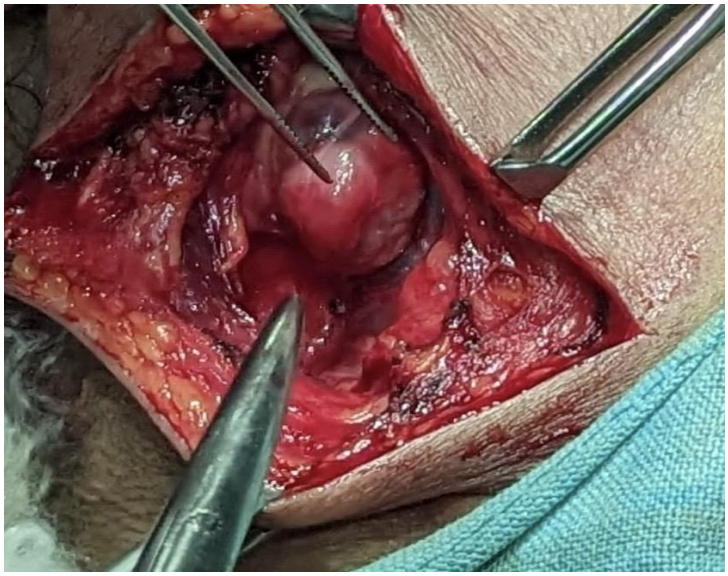

Figure 2. Intraoperative photograph demonstrating the well-encapsulated cyst delivered in situ and elevated with forceps prior to complete excision, with preservation of the surrounding neurovascular structures.

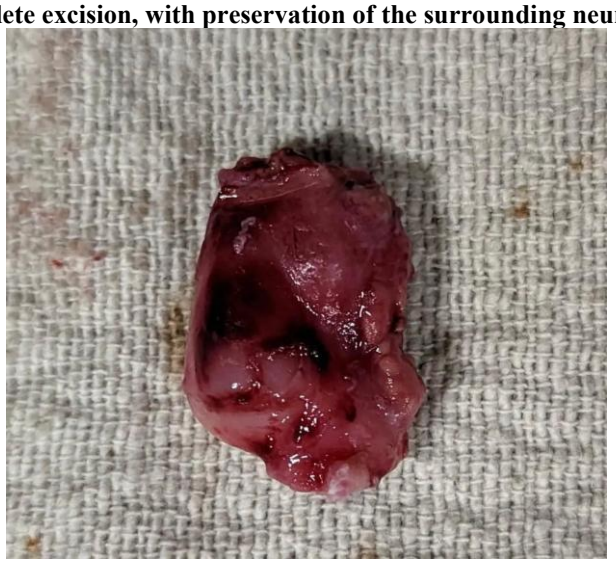

Figure 3. Gross appearance of the excised specimen – a well-circumscribed cystic mass with a smooth external surface.

Gross pathology. The specimen was received as a well-circumscribed cystic mass with a smooth external surface. On sectioning, the cyst contained thick, turbid, mucoid material and the wall was thin with focal areas of lymphoid tissue.
Histopathology. Microscopic examination showed a benign cyst wall lined by non-keratinising stratified squamous epithelium with focal ulceration and acute inflammation. The subepithelial stroma contained dense lymphoid aggregates with germinal-centre formation, and adjacent lymph nodes showed features of reactive lymphadenitis (Figures 4 and 5). The appearances were consistent with a branchial cyst.

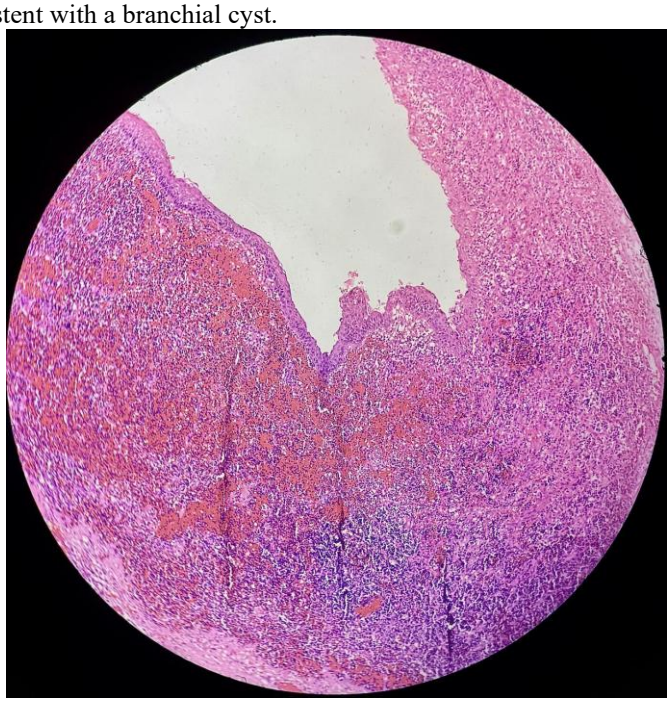

Figure 4. Photomicrograph (low-power, haematoxylin and eosin) of the cyst wall showing an epithelial lining overlying a dense subepithelial lymphoid stroma with reactive germinal centres and areas of haemorrhage – features characteristic of a branchial cyst.

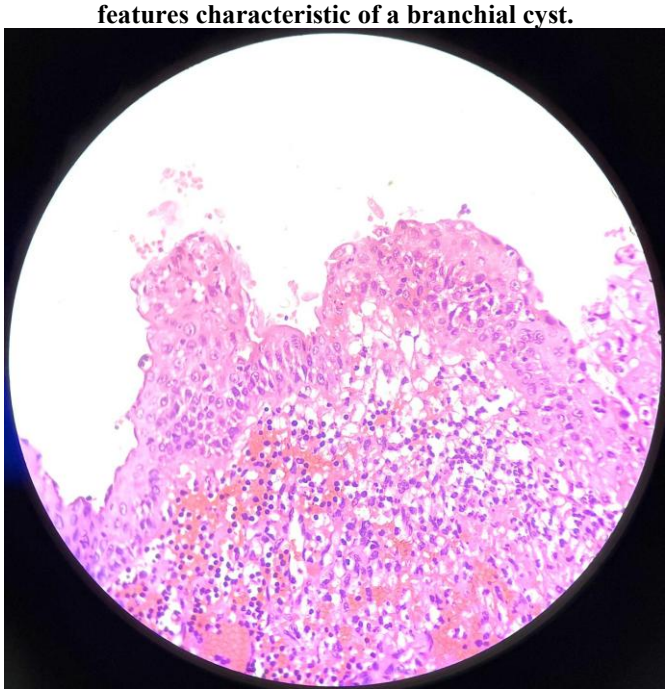

Figure 5. Photomicrograph (high-power, haematoxylin and eosin) demonstrating the cyst wall lined by non-keratinising stratified squamous epithelium with a heavy underlying lymphocytic infiltrate and focal epithelial ulceration consistent with secondary inflammation.

DISCUSSION

Branchial cleft anomalies arise from persistence of remnants of the embryonic branchial apparatus, and the great majority originate from the second branchial cleft.2 The second-cleft tract classically passes between the internal and external carotid arteries and above the hypoglossal and glossopharyngeal nerves to end near the tonsillar fossa, which explains the characteristic location of these cysts along the anterior border of the sternocleidomastoid muscle.2 Bailey's classification divides second branchial cleft cysts into four types according to depth, ranging from a superficial cyst beneath the cervical fascia (type I) to a deep cyst extending to the pharyngeal wall (type IV), with the more superficial type II lesions being the most common.[5]

Although branchial cysts are usually painless, secondary infection can cause rapid enlargement and tenderness, as observed in the present case, and such acute presentations may be mistaken for an abscess.[4] The differential diagnosis of a lateral cystic neck swelling includes lymphatic malformation (cystic hygroma), suppurative or tuberculous lymphadenitis, cystic schwannoma, a cystic salivary gland lesion and, importantly in older patients, cystic nodal metastasis.6 In children and young adults the overwhelming majority of such cysts are benign and congenital; however, in adults – particularly those over 40 years – a cystic lateral neck mass must be regarded as metastatic squamous cell carcinoma until proven otherwise, since cystic metastases from oropharyngeal or nasopharyngeal primaries may closely mimic a branchial cyst.[7]

Ultrasonography and contrast-enhanced computed tomography help to define the cystic nature, location and extent of the lesion and to plan surgery, although no imaging feature is pathognomonic.[2] Fine-needle aspiration cytology may be employed but has well-recognised limitations; its false-negative rate for distinguishing a cystic squamous cell metastasis from a simple branchial cyst can exceed 50%, so a benign cytological result does not exclude malignancy in an at-risk patient.4 Definitive diagnosis therefore rests on histopathological examination of the excised specimen, which characteristically shows a cyst lined by stratified squamous (occasionally respiratory) epithelium with abundant subepithelial lymphoid tissue, as demonstrated in our patient.[5]

Complete surgical excision is the treatment of choice and is curative, with low recurrence rates when the entire cyst and any associated tract are removed meticulously; incomplete excision and previous infection are the principal factors predisposing to recurrence.1,6 Careful dissection to preserve the hypoglossal and glossopharyngeal nerves and the great vessels is essential, given the close anatomical relations of the second-cleft tract.[2]

CONCLUSION

Branchial cysts are benign congenital lesions that should be considered in any child or young adult presenting with a cystic swelling of the lateral neck. A combination of careful clinical examination, appropriate imaging and histopathological confirmation allows accurate diagnosis while excluding more sinister mimics. Complete surgical excision provides definitive treatment with an excellent prognosis and a low risk of recurrence, as illustrated by the present case.

Ethical Considerations

Informed consent was obtained from the patient's guardian for clinical examination, investigation, surgical management and the use of clinical data and images for academic and publication purposes. Patient confidentiality has been maintained throughout.

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