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Case Series

A case series of congenital neck swellings

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ABSTRACT

Congenital neck swellings are diverse group of anomalies present at birth or in 1st or 2nd decade of life, resulting from developmental defects during embryogenesis. These swellings may arise from remnants of the branchial apparatus, thyroglossal duct, lymphatic system or vascular malformations. Common entities include thyroglossal duct cysts, branchial cleft anomalies, cystic hygromas (lymphangiomas), dermoid cysts and vascular malformations. Though many lesions are benign, they may present with cosmetic deformity or infection. Early and accurate diagnosis is essential for effective management and to prevent complications or recurrence. A total of 5 patients, clinically diagnosed as congenital neck swellings were included. Detailed history and clinical examination were performed for all patients. Diagnostic investigations such as USG and CT/MRI were undertaken. All patients underwent surgical excision of the swelling with appropriate technique based on the type and location of the lesion. Histopathological examination was done to confirm the diagnosis. Patients were followed up postoperatively to monitor for complications and recurrence. Congenital neck swellings, though often benign, requires accurate diagnosis and timely surgical intervention. Clinical and radiological findings are often non-specific, making histopathological evaluation crucial for definitive diagnosis. Surgical excision remains the definitive treatment, and histopathology provides the final confirmation. Early identification and appropriate treatment lead to an excellent outcome with no recurrence.

Keywords: Congenital neck swelling, Surgical management, Recurrence

INTRODUCTION

Congenital neck swellings represent a heterogeneous group of developmental anomalies arising from defects in embryological development of branchial arches, thyroglossal tract, lymphatic system or other embryonic structures.[1]

They constitute a significant proportion of pediatric and young adult neck masses, often presenting as painless swellings that may become symptomatic due to infection, rapid enlargement or cosmetic concerns.[1]

The most common congenital lesions include thyroglossal duct cysts, branchial cleft anomalies, dermoid cysts, cystic hygromas and vascular malformations.[2]

Among these, thyroglossal duct cysts are reported to be the most frequently encountered followed by branchial cleft anomalies. Their clinical presentation varies from small, asymptomatic lumps to large swellings causing airway compromise or swallowing difficulties.[2]

Accurate diagnosis is essential as clinical examination alone may be insufficient due to overlapping features among different lesions. Radiological modalities such as ultrasonography, CT scan and MRI play a pivotal role in delineating the extent of the lesion, while fine-needle aspiration cytology (FNAC) and histopathological examination remain the gold standards for definitive diagnosis.[6]

The management of congenital neck swellings is primarily surgical, aimed at complete excision to prevent recurrence

and complications such as infection or fistula formation. Early recognition and intervention are crucial to reduce morbidity and improve outcomes.[6]

Thyroglossal duct cyst

The thyroid anlage descends down to reach the thyroid bed anterior to laryngeal cartilages through the Thyroglossal duct by the seventh week of gestation, and Thyroglossal duct begins to involute by 8-10 weeks of gestation.[1]

If any segment of the Thyroglossal duct fails to involute, then the persistent secretory activity from the epithelial lining owing to repeated infection or inflammation would give rise to Thyroglossal duct cyst.[2]

Cystic lymphangioma (hygroma)

Cystic lymphangioma also known as cystic hygroma is a rare benign congenital malformation of the lymphatic system characterised by fluid-filled, multilocular cysts resulting from lymphatic channel obstruction.[3]

Most commonly located in the neck (75% cases). Usually presents as soft, painless and fluctuant mass.

This condition typically arises from sequestration of lymphatic tissue during embryonic development, failing to connect with the normal lymphatic system.[4]

Branchial cleft cyst

The word 'branchial' is derived from the Greek 'bragchia' meaning gills. Branchial cysts appear as a developmental failure of the branchial apparatus.[5]

Four theories have been suggested to explain the origin of branchial cysts.[6] Branchial apparatus theory, cervical sinus theory, thymopharyngeal duct theory and inclusion theory.

Dermoid cyst

Dermoid cysts are classified as epidermoid, true dermoid and teratoid cysts, depending on the types of tissues identified pathologically within them.[6]

Epidermoid cysts contain only skin and no other adnexal structures. They are lined with squamous epithelium with or without keratinous material. These are the most commonly encountered variety.

These lesions develop because of ectodermal differentiation of multipotential cells trapped at the time of closure of the anterior neuropore, especially along the lines of fusion, hence their being located along the midline of the neck.[7]

The complete surgical excision is the treatment of the choice.[7]

CASE SERIES

A total of 5 patients, clinically diagnosed as congenital neck swellings were included.

Detailed history and clinical examination were performed for all patients.

Diagnostic investigations such as USG, and CT/MRI were undertaken. All patients underwent surgical excision of the swelling with appropriate technique based on the type and location of the lesion.

Histopathological examination was done to confirm the diagnosis. Patients were followed up postoperatively to monitor for complications and recurrence.

Thyroglossal duct cyst

An 18-year-old female presented with a midline neck swelling for 1.5 months. Examination showed a 1×1 cm firm, non-tender swelling moving with deglutition and reducing with tongue protrusion. Ultrasonography suggested a thyroglossal cyst. FNAC confirmed the diagnosis. A Sistrunk procedure was performed without complications. Histopathology revealed a cyst lined by flattened epithelium with thyroid follicles, confirming a thyroglossal duct cyst.

Follow up

Surgical excision resulted in complete resolution of symptoms in the case. No postoperative complications or recurrences were noted during the follow-up period of 6 months. Cosmetic outcomes were satisfactory, and patient did not require revision surgery.

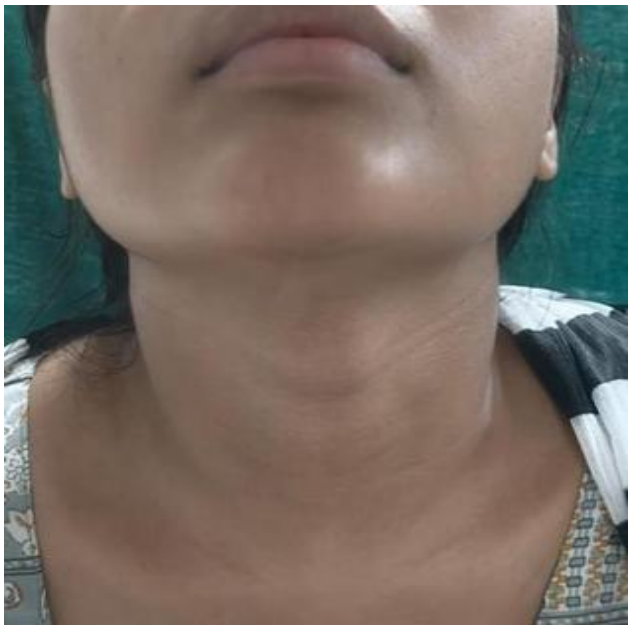

Figure 1: Pre-operative image of thyroglossal duct cyst.

Cystic lymphangioma (hygroma)

A 35-year-old male presented with a right-sided neck swelling gradually increasing over one year. Examination showed a 3×2 cm firm, non-tender swelling in the posterior triangle. CECT indicated a cystic lesion suggestive of a second branchial cleft cyst or cystic lymphangioma. The swelling was surgically excised. Histopathology showed dilated lymphatic channels consistent with cystic lymphangioma.

Follow-up

At 6 months of follow-up, the patient remained asymptomatic with no evidence of postoperative complications or recurrence. Surgical excision resulted in a satisfactory cosmetic outcome, and no further surgical intervention was necessary.

Figure 2: Pre-operative image.

Branchial cleft cyst

An 8-year-old male presented with bilateral neck swellings for 2 years. Imaging showed cystic lesions on both sides consistent with second branchial cleft cysts. Right-sided excision and left-sided sinus tract excision with tonsillectomy were performed. Histopathology confirmed branchial cleft cyst.

Follow-up

Surgical excision led to complete symptomatic resolution. Over a 6-month follow-up period, there were no complications or recurrences, the cosmetic result was acceptable, and revision surgery was not required.

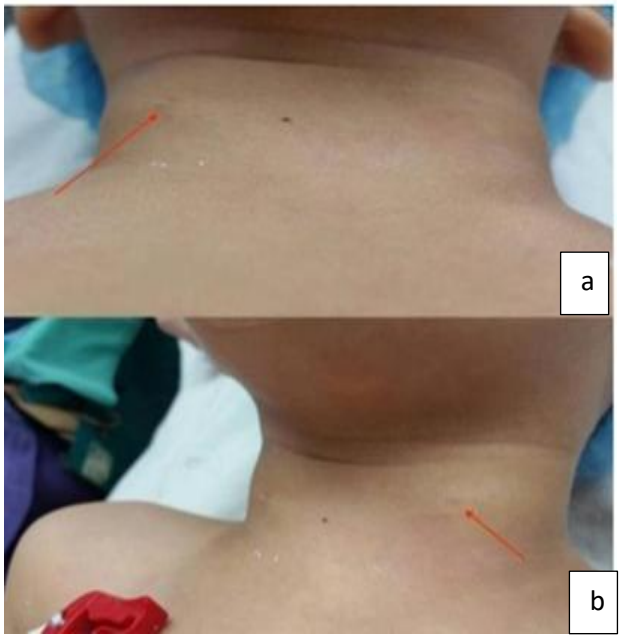

Figure 3 (a and b): Pre-operative image of the patient showing swelling over both side of neck.

Branchial cleft cyst

A 25-year-old male presented with bilateral diffuse neck swellings for 5-6 months. CECT suggested bilateral lymphatic malformation. Surgical excision of both swellings was performed. Histopathology confirmed bilateral branchial cleft cysts.

Follow up

Surgical excision resulted in complete resolution of symptoms in the case. No postoperative complications or recurrences were noted during the follow-up period of 6 months. Cosmetic outcomes were satisfactory, and patient did not require revision surgery.

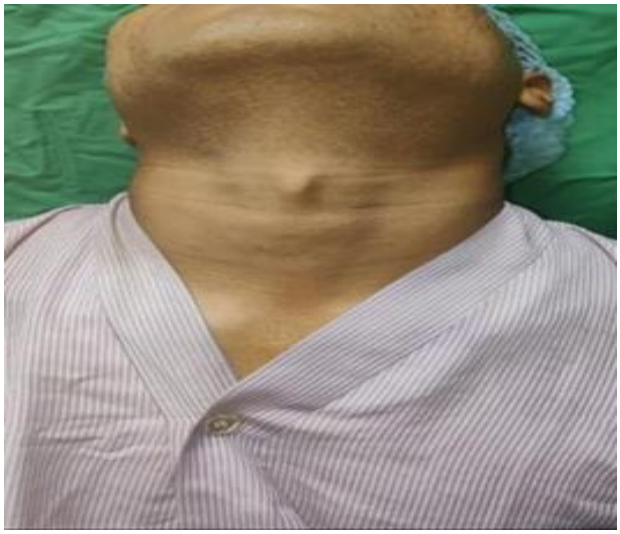

Figure 4: Pre-operative image branchial cleft cysts.

Dermoid cyst

A 9-year-old male presented with a midline chin swelling for 4 years. Ultrasonography and FNAC suggested an epidermoid/dermoid cyst. Surgical excision was performed under general anaesthesia. Histopathology confirmed an epidermoid cyst.

Follow-up

At 6 months of follow-up, the patient remained asymptomatic with no evidence of postoperative complications or recurrence. Surgical excision resulted in a satisfactory cosmetic outcome, and no further surgical intervention was necessary.

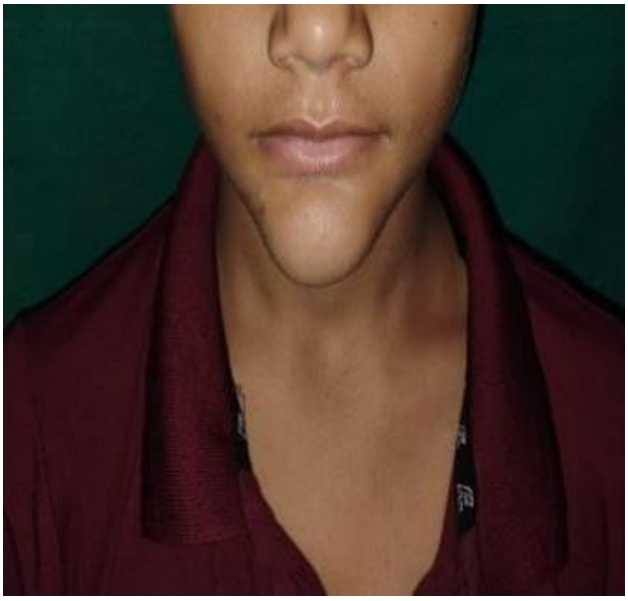

Figure 5: Pre-operative image of dermoid cyst at chin.

DISCUSSION

Congenital neck swellings are among the most common developmental anomalies in the head and neck region, with thyroglossal duct cysts and branchial cleft anomalies being the predominant lesions.[3]

Cystic hygromas and dermoid cysts were also observed, though less frequently. These findings are in agreement with earlier studies highlighting the varied clinical spectrum of congenital neck lesions. Ultrasonography proved to be a reliable first-line diagnostic tool, given its ability to distinguish cystic from solid lesions, while CT and MRI were reserved for complex or extensive cases. FNAC provided supportive evidence but was limited in purely cystic lesions.[4]

Surgical excision remained the mainstay of management, with the Sistrunk procedure for thyroglossal duct cysts showing excellent outcomes and low recurrence rates. Complete excision of branchial cleft and dermoid cysts also resulted in favorable results. Our study reinforces the importance of early recognition and timely surgical intervention to prevent complications such as recurrent infections, fistula formation, or airway compromise.[4]

Although our series reflects the typical distribution and outcomes of congenital neck swellings, the limitations include a small sample size and single-center experience. Larger multicentric studies are warranted to provide stronger epidemiological data and long-term follow-up outcomes.

CONCLUSION

Congenital neck swellings, though often benign, requires accurate diagnosis and timely surgical intervention. Clinical and radiological findings are often non-specific, making histopathological evaluation crucial for definitive diagnosis.

Surgical excision remains the definitive treatment and histopathology provides the final confirmation. Early identification and appropriate treatment lead to an excellent outcome with no recurrence.

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