World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(RESEARCH ARTICLE)

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Congenital cysts and fistulas of the face and neck: A Series of 72 Cases

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World Journal of Advanced Research and Reviews, 2026, 30(01), 2462-2468

Publication history: Received on 20 March 2026; revised on 26 April 2026; accepted on 28 April 2026

Article DOI: https://doi.org/10.30574/wjarr.2026.30.1.1098

Abstract

Cervical cysts and fistulas are common congenital malformations in pediatric ENT practice. In our series, they accounted for 2.5% of consultations and 82% of cervicofacial congenital malformations. This is a retrospective study of 72 cases of cervicofacial cysts and fistulas. Epidemiological, clinical, paraclinical, therapeutic, and follow-up data were analyzed. A slight male predominance was observed, with a mean age of 10 years; 69% of patients were under 20 years old. Painless cervical swelling was the main presenting feature. Lesions were cervical in 90% of cases. Thyroglossal duct cysts were the most frequent form, followed by second branchial cleft cysts and preauricular sinus. Cervical ultrasound was the first-line investigation, supplemented by CT scan (35%), fistulography (10%), and direct laryngoscopy. Treatment consisted on complete surgical excision. Outcome was favorable in 91.67% of cases. The recurrence rate was 8.33%. No malignant transformation was observed.

Keywords: Thyroglossal Duct Cyst; Congenital Malformation; Cervical Surgery; Pediatric ENT

1. Introduction

Congenital cysts and fistulas of the face and neck are anomalies resulting from disruptions during the embryological development of cervical and facial structures. Although relatively rare, these malformations represent a diagnostic and therapeutic challenge for clinicians, given their variety, location, and often non-specific clinical presentations. They are frequently discovered during childhood, although some may only become apparent in adulthood.

Based on a retrospective analysis, this study aims to assess the epidemiological, clinical, and paraclinical aspects, as well as the therapeutic management and outcomes of this condition in our department.

2. Materials and Methods

We reviewed the records of patients who consulted the ENT department of the University Hospital Mohammed VI of Marrakech between January 2014 and June 2025 for a congenital cyst or fistula of the face or neck.

We reviewed consultation registers and patient records throughout our study period. Data were collected using previously designed data collection forms.

The variables collected included sociodemographic data (age, sex), clinical data (circumstances of discovery, personal and family history, symptoms), physical examination findings, paraclinical investigations, treatment, and post-treatment outcomes.

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3. Results

3.1. Epidemiological Data

Cysts and fistulas (72 cases) accounted for 2.5% of consultations and 82% of cervicofacial congenital malformations.

The sex distribution showed a slight male predominance with 54.18% of cases. Females represented 45.82% of the study population, giving a sex ratio of 1.11 (38 males / 34 females).

The mean age of our patients was 10 years, with extremes ranging from 8 months to 62 years. Fifty patients (69%) were under 20 years old, of whom 23 cases (31.94%) were aged between 11 and 20 years, and 27 cases (37.5%) were under 10 years of age.

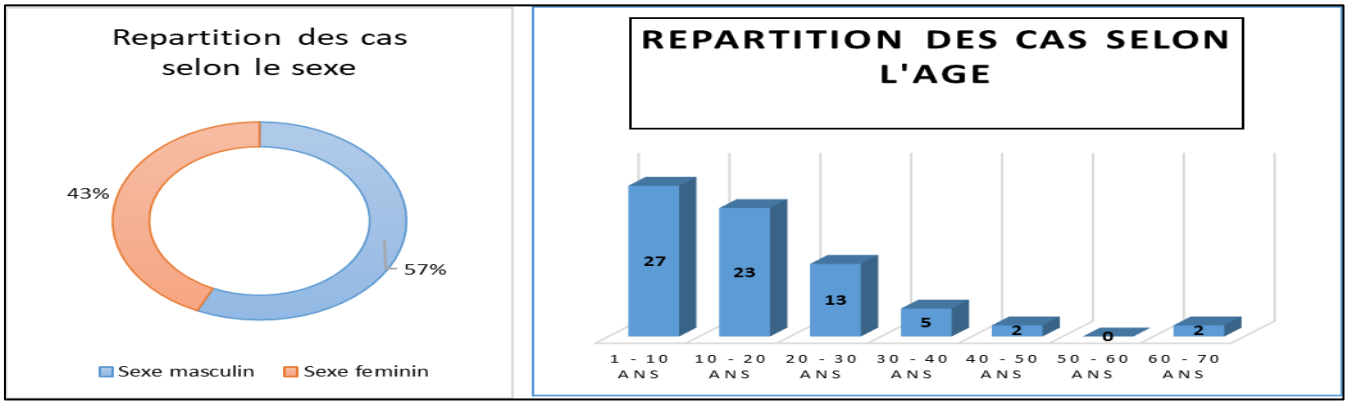

Figure 1 Distribution of cases by age and sexe.

3.2. Clinical Data

The circumstances of discovery were as follows:

- **Painless swelling:** 56 cases (77%), including 2 facial (2%) and 54 cervical (75%);
- **Infectious complication :** 10 cases (14%)
- **Intermittent productive fistula:** 6 cases (9%)

Lesions were cervical in 65 cases (90%) and facial in 7 cases (10%). Regarding anatomoclinical forms, 68% of recorded cases were thyroglossal duct cysts, followed by second branchial cleft cysts with 8 cases (11.11%). We found 6 cases of preauricular sinus and 4 cases of fourth branchial cleft cysts (5.56%); 3 tonsillar cysts and 2 dermoid cysts.

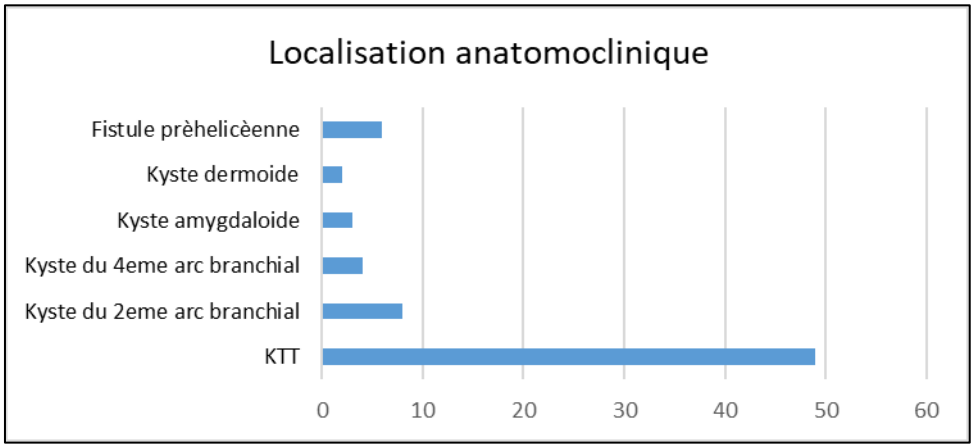

Figure 2 Anatomical location of cysts and fistulas

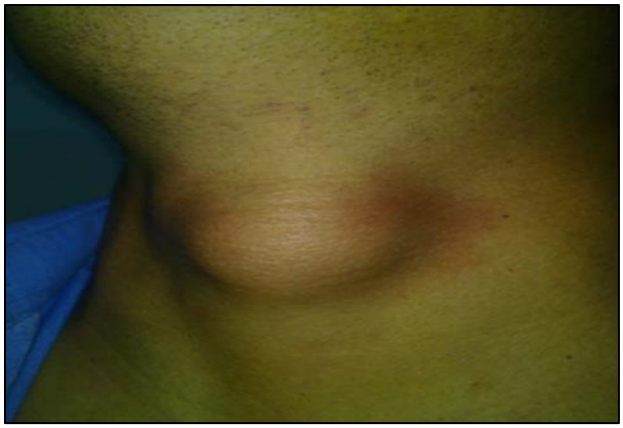

Figure 3 Anterior median subhyoid cervical mass with local inflammatory signs

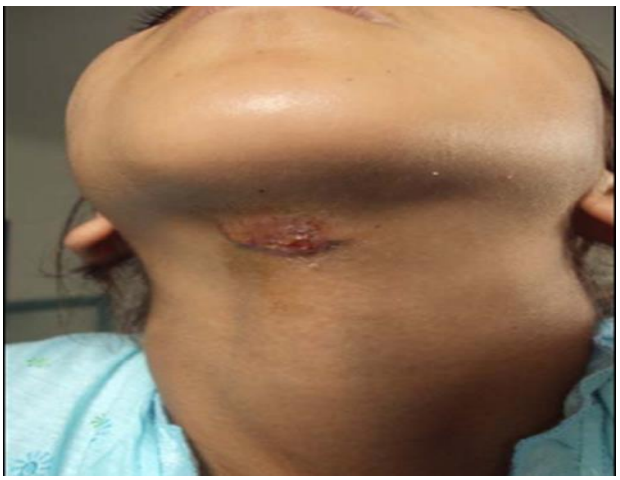

Figure 4 Cervical fistula at the hyoid level with inflammatory signs surrounding the fistulous orifice

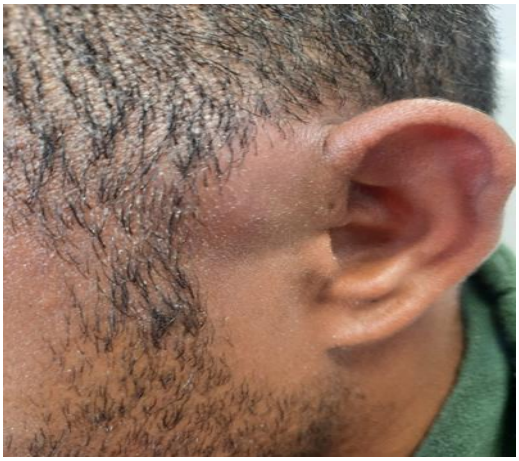

Figure 5 Infected preauricular sinus

3.3. Paraclinical Data

All patients underwent cervical ultrasound to confirm the diagnosis.

35% of patients underwent a CT scan in cases of superinfection to assess the extent of infection or mass extension.

10% of patients had fistulography due to diagnostic difficulties or in cases of recurrence.

3 patients underwent direct laryngoscopy to identify a fourth branchial arch fistula in the pyriform sinus.

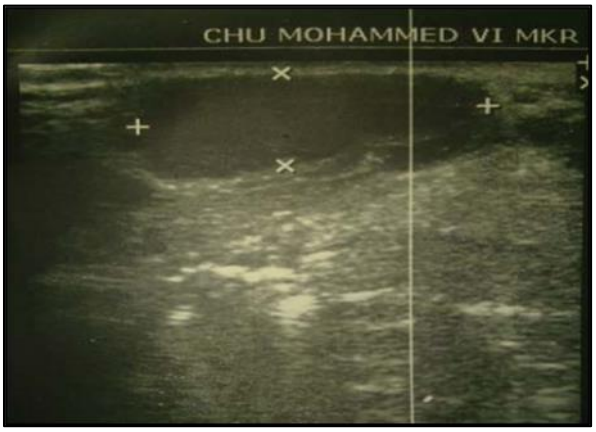

Figure 6 Cervical ultrasound showing an oblong, well-defined hypoechoic cystic image with posterior acoustic enhancement, consistent with a thyroglossal duct cyst

3.4. Therapeutic Management

The therapeutic approach consisted of surgical excision of the various cysts and fistulas, performed outside of any infectious episode. In 14 cases (18%) of infected thyroglossal duct cysts, antibiotic therapy and surgical drainage of the collection were necessary prior to definitive surgical excision.

One case of a fourth branchial arch cyst was treated by electrical cauterization of the fistula at the level of the pyriform sinus.

3.5. Outcomes

The outcome was favorable in 66 cases and unfavorable in 6 cases (8.33%) due to cystic recurrence.

No malignant lesion or transformation was found.

4. Discussion

In our series, cervical cysts and fistulas represented 2.5% of ENT consultations and 82% of all cervicofacial congenital malformations. These figures reflect the predominance of these lesions within cervical malformative pathology, consistent with published literature. Indeed, several authors report that thyroglossal duct and branchial arch anomalies constitute the majority of congenital cervical masses in children [1, 2]. Noyek et al. estimate that thyroglossal duct cysts alone represent the most frequent cause of congenital cervical masses after reactive lymphadenopathy [3].

Our study found a slight male predominance with 54.18% of cases, a sex ratio of 1.11 (38 males / 34 females). This male predominance is consistent with many published series [4, 5]. However, some authors report no significant sex difference, particularly for thyroglossal duct cysts, where the distribution is described as nearly equal [6].

The mean age of our patients was 10 years, with extremes ranging from 8 months to 62 years. The majority of patients (69%) were under 20 years old, of whom 37.5% were under 10. These data confirm the predominantly pediatric nature of these malformations, in agreement with the literature [1, 7]. Nevertheless, discovery in adulthood remains possible, as illustrated by our extreme cases, due to a long latency period or late presentation through an infectious complication [8].

Painless swelling was the main presenting feature in our series (77% of cases), followed by infectious complications (14%) and productive fistulas (9%). The predominance of incidental discovery or asymptomatic swelling is classically described in the literature, as most cysts evolve asymptomatically for a long time before clinical presentation [2, 9]. Infectious complications, represented by episodes of cyst superinfection, constitute the second most common presentation, complicating up to 30% of cases according to some authors [10].

Lesions were predominantly cervical (90% of cases). This cervical predominance is expected given the embryological structures involved — thyroglossal tract, branchial arches — whose course lies essentially in the anterior and lateral cervical region [1, 11].

Thyroglossal duct cysts were the most frequent form in our series, representing 68% of cases. This predominance is consistently reported in worldwide literature. Marianowski et al. report that thyroglossal cysts represent approximately 70% of median congenital cervical masses in children [6]. Their pathophysiological mechanism is well established: they result from persistence and dilation of epithelial remnants of the thyroglossal tract, a canal formed during embryological migration of the thyroid from the foramen cecum to its final position [1].

Second branchial cleft cysts were the second most frequent entity, with 11.11% of cases (8 cases). These data are comparable to those in the literature: second branchial arch anomalies represent 90 to 95% of all branchial apparatus anomalies [12]. Their typical location is the lateral cervical region, along the anterior border of the sternocleidomastoid muscle [13].

We identified 6 cases of preauricular sinus (8.33%). Although often classified among first branchial arch anomalies, their precise embryology remains debated. They are generally diagnosed in early childhood, presenting as a small punctate cutaneous opening in the preauricular area with recurrent secretions [14].

4 cases of fourth branchial cleft cysts (5.56%) were identified. This entity is rare and often overlooked. Its clinical presentation, dominated by recurrent abscesses of the left thyroid lobe or left anterior cervical region, distinguishes it from other branchial forms [15]. The characteristic fistulous tract involves the pyriform sinus, which explains the need for direct laryngoscopy to identify the ostium [16].

3 tonsillar cysts and 2 dermoid cysts completed our series. Cervical dermoid cysts are rare and result from ectodermal inclusion during the fusion of facial processes; the submental location is the most frequent [17].

Cervical ultrasound was systematically performed in all our patients. It is the first-line examination recommended by most authors for cervical masses in children: it confirms the cystic nature of the lesion, evaluates its dimensions and location, and guides etiological diagnosis [2, 18].

A CT scan was indicated in 35% of our patients, mainly in cases of infection to evaluate the extent of lesions or involvement of adjacent structures. This examination is particularly useful preoperatively for complex or recurrent forms [9, 19].

Fistulography was performed in 10% of patients, in cases of diagnostic difficulty or recurrence. Although less commonly used since the advent of MRI, it retains value for visualizing the fistulous tract [13].

Direct laryngoscopy was performed in 3 patients with fourth branchial arch anomalies to identify the fistulous ostium at the level of the pyriform sinus. This examination is essential for confirming the diagnosis and guiding endoscopic treatment [15, 16].

The reference treatment for these lesions remains a complete surgical excision, performed outside any infectious episode, in accordance with published recommendations [1, 20].

In our series, 14 cases (18%) of thyroglossal duct cyst superinfection required antibiotic therapy and prior surgical drainage before definitive excision. This approach is classically recommended to reduce the risk of intraoperative rupture and recurrence [6, 21]. For thyroglossal duct cysts, the Sistrunk technique — which combines excision of the cyst with the body of the hyoid bone and the tract up to the foramen cecum — represents the reference technique, with a reported recurrence rate of less than 5% [3, 22].

One case of a fourth branchial arch cyst was treated by endoscopic electrical cauterization of the fistula at the level of the pyriform sinus. This minimally invasive approach, described by several authors, represents an attractive alternative to open surgery for uncomplicated forms, with favorable results in small published series [15, 16].

Outcomes were favorable in 66 cases (91.67%) and unfavorable in 6 cases (8.33%) due to cystic recurrence. This recurrence rate, although higher than data from large series using the Sistrunk technique (2 to 5%), is comparable to that reported by some authors in the context of incomplete initial surgery or preoperative superinfection [22, 23]. No

case of malignant degeneration was observed in our series. Malignant transformation of thyroglossal cysts, although described in the literature, remains exceptional, estimated at less than 1% of cases [24].

5. Conclusion

Congenital cysts and fistulas of the face and neck are relatively common developmental anomalies but are often asymptomatic, detected late in the event of complications. Their diagnosis relies on careful clinical evaluation and imaging. Treatment is primarily surgical, with a generally favorable prognosis after a complete excision. However, early management and rigorous follow-up are essential to minimize the risks of recurrence and associated complications.

Advances in surgical techniques and the growing understanding of the embryological basis of these malformations continue to improve clinical outcomes for patients.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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