



# Therapeutic Challenges in Work Type II First Branchial Arch Fistula

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## ABSTRACT

**Introduction:** First branchial arch fistula are often misdiagnosed and mismanaged due to its diverse clinical presentation and diagnostic challenges. In the present series, we have described our experience in the management of four cases of first branchial cleft fistula/sinus.

**Methods:** The 4 cases of Branchial cleft anomalies diagnosed between August 2021 to September 2022 were retrospectively reviewed. All the cases underwent trans-parotid exploration and excision of the tract after identification of the facial nerve and its relation with the tract.

**Results:** Two patients had an external opening near the angle of mandible and two patients had external opening of the fistula in the post auricular area near the mastoid tip. None of the patient developed recurrence of discharge post excision of the tract.

**Conclusions:** First branchial arch Work type II fistula should be considered in the differential diagnosis in the paediatric and adolescent age group with recurrent sinus discharge near the angle of mandible and post auricular area with or without otorrhea.

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## INTRODUCTION

First branchial cleft account for less than 8% of all branchial cleft anomalies<sup>1</sup>. They are often misdiagnosed and mismanaged due to its diverse clinical presentation and diagnostic challenges. The systematic elaboration of the clinical presentation, diagnosis, and optimal treatment of first branchial cleft anomaly Work type II is lacking. In the present series, we have described our experience in the management of four cases of first branchial cleft fistula/sinus.

## METHODS AND MATERIALS

The data from 4 cases of Branchial cleft anomalies diagnosed between August 2021 to September 2022 at Post Graduate Institute of Medical Education and Research were retrospectively reviewed. All the cases underwent trans-parotid exploration and excision of the tract after identification of the facial nerve and its relation with the tract (Fig 1-4).



Figure 1. postauricular discharge .

Figure 2. multiple sinuses in Submandibular region



Figure 3- MRI Neck showing T2 hyperintense cyst in left parotid deep lobe.

## RESULTS

Results are summarized in Table 1 below.

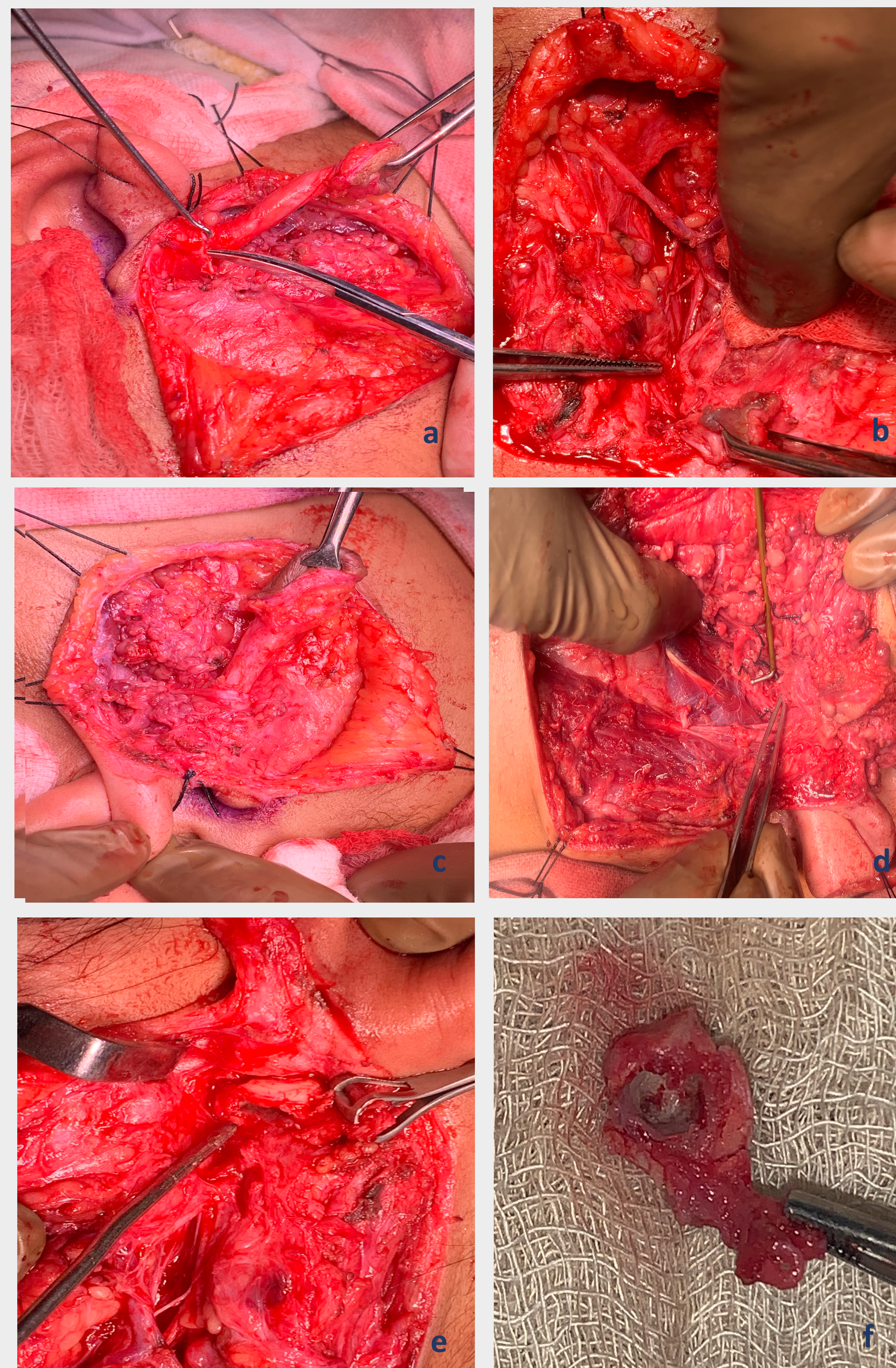


Figure 4: a- showing tract entering the floor of EAC; b- showing facial nerve lying deeper to the tract; c- nerve trunk lying lateral to tract; d- nerve trunk pushed superiorly by the cyst after excision; e- defect in floor of EAC after excision; f- excised tract with duplication of EAC.

Case	Age/ Gender	Complaints	Previous surgery	Procedure	Relation of tract to facial nerve
1.	13/M	Right post auricular discharge for 6 months	Underwent Incision and Drainage on 17/3/21	Right atresiotomy and excision of sinus tract	Tract lying <b>lateral</b> to vertical segment of facial nerve intratemporally.
2.	18/F	Left post auricular discharging sinus for 5 years	Underwent Incision and Drainage multiple times	Excision via Trans parotid approach	Tract lying <b>lateral</b> to main trunk of facial nerve in the parotid
3.	9/F	Purulent discharge from the left side of the neck and ear for 5 years.	Underwent incision and drainage 3 years back	Excision via Trans parotid approach on	Tract lying <b>medial</b> to main trunk of facial nerve in the parotid
4.	19/M	Left Postauricular discharge for past 5 years	Underwent left mastoid exploration outside in view of postaural discharge	Excision of sinus and cyst via transparotid approach	Tract and cyst lying <b>lateral</b> to main trunk of facial nerve in the parotid

Table 1. showing patient demographics and surgical findings.

## DISCUSSION

First branchial cleft anomalies are rare, accounting for less than 8% of all branchial cleft anomalies<sup>1</sup>. They were categorized into two types by Work: Type I, which involves the outer skin layer and appears as a cystic lump, and Type II, which affects both the outer skin layer and deeper tissues, presenting as a cyst, passage, or connection<sup>2</sup>. It forms a tube-like connection between the floor of the outer ear canal and the neck at the jawline. This connection can be located near the surface, deep inside, or within the branches of the facial nerve. To diagnose branchial cleft anomalies accurately, a comprehensive patient history and examination are essential. This helps identify any potential signs.

Additionally, CT/MRI scans are valuable tools to assess and define the anomaly and its relationship with the facial nerve<sup>3</sup>. Misdiagnosing first branchial cleft anomalies is common and can lead to unnecessary procedures like incisions and drainage. This can result in prolonged recovery and more hospital visits. If left untreated, scarring can complicate later removal, and there is a risk of damaging the facial nerve during surgery.

Definitive treatment is complete surgical excision via trans-parotid approach to prevent recurrence.

## CONCLUSION

First branchial arch Work type II fistula should be considered in the differential diagnosis in the paediatric and adolescent age group with recurrent sinus discharge near the angle of mandible and post auricular area with or without otorrhea.

## REFERENCES

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