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Acute Amoxicillin - Clavulanate Hypersensitivity During Perioperative Management of Ankyloglossia: A Case Report

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ABSTRACT

Background

Ankyloglossia, commonly known as tongue-tie, is a condition characterized by restricted tongue mobility resulting from an abnormal or restrictive lingual frenulum. Although it is frequently recognized during infancy, symptomatic ankyloglossia may persist into adolescence and become clinically relevant when associated with functional limitations such as speech articulation difficulties. The decision to perform surgical release should consider the relationship between anatomical restriction and functional impairment.

Case Presentation

A 13-year-old male presented with longstanding speech articulation difficulty that had been present since childhood. Clinical assessment was consistent with ankyloglossia, and surgical tongue-tie release was planned. Preoperative evaluation demonstrated stable vital signs and satisfactory systemic status. Hematological, biochemical, coagulation, infectious disease, and cardiac investigations were performed. During hospitalization, an amoxicillin-clavulanate test dose resulted in an acute allergic reaction, following which the drug was discontinued and emergency treatment was initiated. After stabilization, the patient underwent tongue-tie release under anesthesia. The procedure was completed in approximately 15 minutes. Postoperatively, the patient was initially maintained nil per oral and subsequently advanced to liquid and semi-solid foods. Intravenous ceftriaxone, pantoprazole, dexamethasone, diclofenac-based analgesia, and ondansetron were administered. The postoperative course remained clinically stable without significant bleeding or wound-related complications. The patient was discharged in stable condition with oral medications and postoperative care instructions.

Conclusion

This case demonstrates the presentation and perioperative management of symptomatic ankyloglossia in an adolescent patient with longstanding speech articulation difficulty. Surgical tongue-tie release was successfully performed with an uncomplicated immediate postoperative course. The acute hypersensitivity reaction to amoxicillin-clavulanate emphasizes the importance of vigilant medication monitoring and prompt emergency management during perioperative care. Objective long-term assessment of tongue mobility and speech function remains important for evaluating functional outcomes following surgical release.

Keywords: Ankyloglossia; tongue-tie; lingual frenulum; tongue-tie release; speech articulation; adolescent; surgical management; case report

1. Introduction

Ankyloglossia is a congenital or developmental anomaly involving the lingual frenulum that may restrict normal tongue movement. Its clinical presentation varies considerably, ranging from an anatomically restrictive frenulum without clinically significant functional impairment to symptomatic restriction associated with feeding, oral function, speech articulation, or other mechanical limitations. The diagnosis of ankyloglossia is primarily clinical. Anatomical appearance alone does not necessarily predict functional impairment; therefore assessment of tongue mobility and the patient's symptoms is important when determining the need for intervention. Several assessment systems have been proposed, including the Kotlow classification and the Hazelbaker Assessment Tool for Lingual Frenulum Function. However, differences in diagnostic definitions and treatment indications remain in clinical

practice.¹

Management depends on the degree of functional restriction and associated symptoms. Asymptomatic patients may be managed conservatively, whereas symptomatic patients may be considered for surgical intervention. Surgical approaches include frenotomy, frenectomy, and frenuloplasty, with selection influenced by the anatomical characteristics of the frenulum, patient age, clinical indication, and operator preference. Speech-related manifestations may become clinically apparent when ankyloglossia persists into later childhood or adolescence. The relationship between ankyloglossia and speech impairment remains complex, and evidence regarding improvement following surgical release is heterogeneous. This case describes an adolescent male with longstanding speech articulation difficulty associated with ankyloglossia who underwent surgical tongue-tie release and experienced an uncomplicated immediate postoperative recovery.²

2. Case Presentation

2.1 Patient Information

A 13-year-old male presented with a longstanding difficulty in speech articulation. The difficulty had been present since childhood and had persisted into adolescence, prompting specialist evaluation. The clinical assessment was consistent with ankyloglossia, and surgical tongue-tie release was planned. At admission, the patient was clinically stable. His baseline clinical parameters are presented in Table 1.

Table 1. Baseline Clinical Parameters

Parameter	Finding
Age	13 years
Sex	Male
Presenting complaint	Longstanding speech articulation difficulty
Duration of complaint	Since childhood
Clinical diagnosis	Ankyloglossia
Blood pressure	100/60 mmHg
Pulse rate	86 beats/minute
Respiratory rate	22 breaths/minute
SpO ₂	99% on room air
Temperature	99.2°F
Random blood glucose	105 mg/dL
Associated symptom	Cough for approximately 2 days
Fever	Absent

Cardiovascular, respiratory, abdominal, and neurological examinations were clinically unremarkable. Airway assessment was satisfactory, with no anticipated difficult intubation.

3. Diagnostic Assessment

3.1 Clinical Assessment

The patient was clinically diagnosed with ankyloglossia based on the presence of a restrictive lingual frenulum associated with longstanding speech articulation difficulty. Surgical tongue-tie release was planned because of the persistent functional complaint. A specific anatomical severity grade or

objective baseline speech score was not assigned.

3.2 Hematological Investigations

Table 2. Hematological Investigations

Investigation	Result
Hemoglobin	11.6 g/dL
RBC count	4.70 million/mm ³
Hematocrit	36.7%
MCV	78.0 fL
MCH	24.7 pg
MCHC	31.7 g/dL
RDW	14.3%
Total leukocyte count	12,600 cells/mm ³
Neutrophils	69.4%
Lymphocytes	26.5%
Monocytes	4.1%
Platelet count	352,000/mm ³
Bleeding time	2 min 30 sec
Clotting time	4 min
Blood group	O positive

3.3 Biochemical Investigations

Table 3. Biochemical Investigations

Investigation	Result
Random blood glucose	99 mg/dL
Blood urea	19 mg/dL
Serum creatinine	0.66 mg/dL

3.4 Infectious Disease Screening

Table 4. Infectious Disease Screening

Investigation	Result
HIV rapid test	Non-reactive
HBsAg	Non-reactive
HCV	Non-reactive

3.5 Cardiac and Preoperative Assessment

Table 5. Cardiac and Preoperative Assessment

Parameter	Finding
Heart rate during cardiac evaluation	Approximately 74 beats/min
Left ventricular ejection fraction	Approximately 61%
Regional wall-motion abnormality	Not identified
Significant structural abnormality	Not identified
Pericardial effusion	Not identified
Intracardiac clot	Not identified
Cardiac rhythm	Sinus rhythm
Airway assessment	Adequate
Anticipated difficult intubation	No
Anesthesia fitness	Confirmed

Cardiac evaluation demonstrated preserved left ventricular systolic function with an estimated ejection fraction of approximately 61%, without significant structural abnormality or regional wall-motion abnormality.

4. Perioperative Hypersensitivity Reaction

During preoperative management, an amoxicillin-clavulanate test dose was administered. Shortly after administration, the patient developed an acute allergic reaction. Further administration of amoxicillin-clavulanate was immediately discontinued.

Emergency management was initiated with Avil and dexamethasone, followed by nebulized adrenaline and intravenous adrenaline diluted in normal saline. The patient was closely monitored following stabilization, and subsequent antimicrobial therapy was modified.

Table 6. Management of Acute Hypersensitivity Reaction

Stage	Medication	Dose	Clinical Purpose
Initial exposure	Amoxicillin-clavulanate	Test dose	Preoperative antimicrobial administration; followed by allergic reaction
Immediately after reaction	Amoxicillin-clavulanate discontinued	-	Prevention of further exposure

Stage	Medication	Dose	Clinical Purpose
Emergency treatment	Avil	Administered	Antihistamine therapy
Emergency treatment	Dexamethasone	0.5 cc documented	Corticosteroid therapy
Subsequent treatment	Adrenaline nebulization	Administered	Emergency management of hypersensitivity
Subsequent treatment	Adrenaline + normal saline	1 mL adrenaline + 9 mL NS	Intravenous emergency treatment
After stabilization	Clinical monitoring	Close observation	Monitoring for recurrence or deterioration

The occurrence of this reaction was clinically important because it required immediate discontinuation of the suspected drug and modification of subsequent antimicrobial therapy.

5. Therapeutic Intervention

5.1 Preoperative Management

Following stabilization after the hypersensitivity reaction, the patient remained under clinical observation. Anesthesia fitness was confirmed, consent was obtained, and routine preoperative preparation was completed.

The patient was maintained nil per oral from midnight before the planned surgical procedure.

6. Surgical Management

6.1 Anesthesia and Intraoperative Management

The surgical procedure was performed under anesthesia using an intravenous anesthetic technique.

Table 7. Anesthetic and Intraoperative Management

Parameter	Details
Surgical procedure	Tongue-tie release
Anesthesia	Intravenous anesthetic technique
Patient position	Supine
IV access	20-G cannula, left hand
Midazolam	Approximately 1.5 mg IV
Ketamine	Approximately 25 mg IV
Fentanyl	Administered as part of anesthetic regimen; exact dose not specified
Supplemental oxygen	Approximately 2 L/min
IV crystalloid	Approximately 200 mL
Analgesia	Paracetamol

Parameter	Details
Operative duration	Approximately 15 minutes
Suture material	4-0 Vicryl
Hemostasis	Complete

The patient was positioned supine under aseptic precautions. Tongue-tie release was performed in the operating theatre. Following release of the restrictive frenulum, the operative site was approximated using 4-0 Vicryl sutures, and complete hemostasis was achieved.

The procedure was completed in approximately 15 minutes. Following recovery from anesthesia, the patient was transferred to the postoperative ward for observation.

7. Postoperative Management

Immediately following surgery, the patient was maintained nil per oral for six hours. Once clinically appropriate, oral intake was resumed with liquid and semi-solid foods.

Table 8. Postoperative Pharmacological Management

Medication/Intervention	Dose	Route	Frequency
Ceftriaxone (Xone)	1 g	IV	BD
Pantoprazole (Pan)	20 mg	IV	BD
Dexamethasone (Dexa)	4 mg	IV	BD
Diclofenac preparation (Dynapar Aqua)	½ ampoule in 100 mL NS	IV	BD
Ondansetron (Emeset)	4 mg	IV	BD
Nil per oral	6 hours initially	—	Postoperative
Liquid/semi-solid diet	As tolerated	Oral	After 6 hours
Bleeding monitoring	Regular observation	—	Postoperative

Postoperative management focused on pain control, prevention and management of nausea, antimicrobial therapy, dietary advancement, wound observation, and monitoring for bleeding. During postoperative assessment, the patient remained comfortable and symptomatically better. Cardiovascular and respiratory examinations remained stable. Neurological examination revealed no deficit, and the abdomen remained soft. No significant postoperative bleeding was documented during hospitalization.

8. Condition at Discharge

At discharge, the patient was conscious, oriented, and afebrile. His clinical parameters were stable.

Table 9. Clinical Status at Discharge

Parameter	Finding
General condition	Conscious and oriented
Temperature	Afebrile

Parameter	Finding
Blood pressure	100/60 mmHg
Pulse rate	86 beats/min
Respiratory rate	20 breaths/min
SpO ₂	99%
Cardiovascular examination	S1 and S2 present
Respiratory examination	Bilateral air entry
Abdomen	Soft
Neurological examination	No focal neurological deficit
Surgical wound	Healthy

9. Discharge Medication

Table 10. Discharge Medication

Medication	Dose	Frequency	Duration	Instructions
Cefpodoxime	100 mg	1-0-1	5 days	After food
Montelukast LC Kid	4 / 2.5 mg	0-0-1	5 days	After food at the bedtime
Ibugesic Plus syrup	10 mL	TDS	5 days	After food
Betadine gargle	As directed	TDS	7 days	Gargle as advised

10. Discussion

Ankyloglossia is a condition in which restriction of tongue movement is associated with variable functional consequences. Current clinical consensus emphasizes that the presence of a restrictive lingual frenulum alone does not necessarily establish an indication for surgery. The relationship between anatomical restriction and functional impairment should be considered when making treatment decisions. In the present case, the patient presented during adolescence with a speech articulation difficulty that had persisted since childhood. The prolonged duration of symptoms illustrates that ankyloglossia may remain clinically relevant beyond infancy and early childhood.^{3,7}

Speech articulation is one of the functional concerns discussed in older children with ankyloglossia. The association between ankyloglossia and speech impairment remains complex. Studies assessing postoperative speech outcomes have used different methodologies, and the available evidence is heterogeneous. A systematic review reported insufficient and heterogeneous evidence regarding speech improvement following frenotomy, whereas subsequent systematic reviews have reported potential improvement in speech articulation following surgical intervention in selected patients.⁴

The clinical decision to perform surgical release should therefore be individualized. In this case, the longstanding speech articulation complaint and clinical diagnosis of ankyloglossia led to surgical management. Several assessment systems have been proposed for ankyloglossia, including the Kotlow classification and Hazelbaker Assessment Tool for Lingual Frenulum Function. The present case did not include a formal standardized anatomical classification, quantitative tongue-mobility measurement, or validated preoperative speech assessment. Therefore, the case should not be used to establish a relationship between a particular anatomical severity grade and speech impairment.^{5,6}

Surgical treatment of ankyloglossia may involve frenotomy, frenectomy, or frenuloplasty. The selected technique depends on the anatomical characteristics of the frenulum, extent of restriction, patient age, clinical indication, and surgeon preference. In this patient, tongue-tie release was performed under anesthesia and the surgical site was closed with 4-0 Vicryl sutures. Complete hemostasis was achieved, and the operative procedure was completed in approximately 15 minutes. The postoperative course was uncomplicated. The patient was initially maintained nil per oral and subsequently

advanced to liquid and semi-solid foods. Postoperative treatment included intravenous ceftriaxone, pantoprazole, dexamethasone, diclofenac-based analgesia, and ondansetron. Monitoring was focused on bleeding, wound complications, pain, oral intake, and general clinical stability.

An important feature of this hospitalization was the acute allergic reaction following the amoxicillin-clavulanate test dose. Prompt discontinuation of the suspected medication followed by emergency treatment with antihistamine, corticosteroid, and adrenaline resulted in stabilization. Subsequent antimicrobial therapy was modified. This event highlights the importance of careful medication history assessment, recognition of drug hypersensitivity, and immediate access to emergency treatment during perioperative care. The patient remained clinically stable during the postoperative period, and the wound was healthy at discharge. No significant postoperative bleeding or wound related complication was observed.⁸

The immediate postoperative clinical course alone cannot establish long term functional success. Objective assessment of tongue protrusion, elevation, lateralization, and speech articulation before and after surgery would provide stronger evidence of functional benefit. A structured follow-up assessment by an ENT specialist and, where appropriate, a speech-language professional would be valuable for evaluating the longer term outcome.

11. Clinical Significance

This case demonstrates several clinically relevant aspects of adolescent ankyloglossia. First, ankyloglossia may persist into adolescence and may become clinically significant because of longstanding functional complaints. Second, treatment decisions should consider functional impairment rather than anatomical appearance alone. Third, surgical tongue-tie release can be performed with a short operative duration and uncomplicated immediate postoperative recovery in an appropriately selected patient. This case also demonstrates the importance of perioperative medication safety. The acute hypersensitivity reaction following amoxicillin-clavulanate required immediate recognition, discontinuation of the suspected medication, emergency treatment, and subsequent modification of antimicrobial therapy.

12. Limitations

The principal limitation of this case is the absence of standardized quantitative assessment of tongue mobility and speech articulation before and after surgery. A formal Kotlow classification, Hazelbaker score assessment was not done.

13. Conclusion

Ankyloglossia may persist into adolescence and can present with longstanding functional complaints such as speech articulation difficulty. In this adolescent patient, clinical assessment led to surgical tongue-tie release, which was completed successfully with 4-0 Vicryl closure and complete hemostasis. The patient experienced a stable immediate postoperative recovery without significant bleeding or wound-related complications and was discharged in clinically stable condition.

The acute hypersensitivity reaction following an amoxicillin-clavulanate test dose further emphasizes the importance of vigilant perioperative medication monitoring and prompt management of adverse drug reactions. Long-term follow-up incorporating standardized assessment of tongue mobility and speech articulation remains important to establish the functional outcome of surgical release.

14. Informed Consent

Informed consent for publication of the case report obtained from the patient's parent before submission.

15. Ethics Statement

The case report should be prepared and submitted in accordance with the ethical requirements of the treating institution and the policies of the target journal.

16. Conflict of Interest

The authors declare no conflict of interest.

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18. Author Contributions

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20. Abbreviations

BD - Twice daily

ENT - Ear, Nose and Throat

HIV - Human immunodeficiency virus

HCV - Hepatitis C virus

HBsAg - Hepatitis B surface antigen

IV - Intravenous

MCH - Mean corpuscular haemoglobin

MCHC - Mean corpuscular hemoglobin concentration **MCV** - Mean corpuscular volume

NPO - Nil per oral

NS - Normal saline

RDW - Red cell distribution width

RBS - Random blood sugar

SpO₂ - Peripheral oxygen saturation

TDS - Three times daily

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