

# Oral Rehabilitation of a Child Superimposed with Tooth Impaction and Ranula

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## ABSTRACT

**Introduction:** Dental impaction may be due to several etiological factors, including genetic conditions, lack of space, failure of primary tooth resorption and prolonged retention of these teeth, presence of intraosseous cysts, and trauma in the region. The ranula is a mucus-filled cyst-like mass that usually originates from extravasation of mucus from the sublingual gland.

**Case description:** A 7-year-old Saudi female presented to the pediatric dental clinic at Prince Mohammed Bin Abdulaziz Hospital (PMBAH), Al-Madinah al-Munawwarah, Saudi Arabia, with complicated orodental problems that were identified after clinical and radiological assessment, including the following: an intruded primary central incisor in close relation to the nasal cavity, hypodontia, hypomineralization, multiple carious teeth, abscess, and sublingual ranula. The pediatric dentistry, oral and maxillofacial surgery (OMFS), and anesthesiology teams discussed the diagnosis and treatment plan for comprehensive oral rehabilitation under general anesthesia (GA).

**Conclusion:** This case report highlights the crucial need for early dental screening and intervention in pediatric patients to educate the parents, prevent orodental problems, and treat the current complaints. It also shows the importance of a multidisciplinary approach in such cases to reach an ideal treatment plan and results.

**Clinical significance:** The potential for pain, difficulty chewing, malalignment of surrounding teeth, and the risk of infection or cyst formation if left untreated.

**Keywords:** Case report, Child, Impaction, Ranula, Rehabilitation.

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## INTRODUCTION

Hypodontia refers to the developmental absence of one or more primary or permanent teeth, excluding the third molars, and is believed to result from minor ectodermal disruptions during early development.

The occurrence of congenitally missing primary teeth is quite rare, with a prevalence between 0.1 and 0.9%.<sup>1</sup> In contrast, the prevalence of congenitally missing permanent teeth ranges from 1.6 to 6.9%.<sup>2</sup> Research indicates that the mandibular second premolar is the most commonly missing tooth, followed by the maxillary second premolar and the maxillary lateral incisor.<sup>3</sup>

Traumatic intrusion is characterized by the apical displacement of a tooth into the alveolar bone, accompanied by compression of the periodontal ligament, with or without a fracture of the alveolar socket.

The prevalence of primary incisor intrusion in pediatric patients is 23.15%.<sup>4</sup>

Due to the underlying permanent tooth bud risk, ideal management in such cases should be selected after performing clinical and radiographic assessment. Two reports included surgical relocation and spontaneous re-eruption. Although the benefits of surgical repositioning cannot be fully assessed with just a few case series, this procedure can be performed if the primary root does not affect the permanent tooth bud.<sup>5,6</sup>

Ranula, a pseudocyst found on the floor of the oral cavity, occurs due to mucous retention or saliva extravasation from the sublingual gland. The diagnosis of a ranula is mainly clinical. Imaging is used to distinguish between the two primary subtypes: simple and plunging ranulas. A simple ranula appears as a cystic mass on the floor of the mouth, whereas a plunging ranula manifests as a submandibular

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mass extending through the mylohyoid muscle. Ultrasound, computed tomography (CT), and fine needle aspiration cytology (FNAC) are diagnostic tools used to identify these subtypes.<sup>7</sup>

Initially, marsupialization was the most prevalent approach for ranula control. As the cyst was not entirely removed, it had a high recurrence rate of 61–89%.<sup>8</sup>

## CASE DESCRIPTION

A 7-year-old Saudi female presented to the pediatric dental clinic at Prince Mohammed Bin Abdulaziz Hospital (PMBAH), Al-Madinah al-Munawwarah, Saudi Arabia. Her father reported that she had been experiencing swelling under her tongue on the right side, which was interfering with her daily activities. Upon intraoral examination, sublingual swelling was observed on the floor of her mouth. The tentative diagnosis after a complete examination was ranula. Moreover, clinical and radiographic examinations showed dental caries in primary teeth, abscess, and root resorption in tooth #75, congenitally missing teeth #15, #35, #45, and an intruded primary central incisor #51 in the nasal cavity due to a history of previous trauma when she was 3 years old, resulting in hypomineralization of the permanent central incisor #11 (Figs 1 and 2).

## DISCUSSION

The clinical procedure was performed under local anesthesia (LA) in the dental clinic. It was the patient's first visit to a dental clinic. She was somewhat apprehensive and anxious but accepted the dental treatment after using basic behavioral management techniques. The treatment started with an inferior alveolar nerve

block (IANB) and sublingual infiltration. Then, with blade #15, marsupialization was done to deroof the cyst, followed by closure with simple interrupted stitches using a surgical resorbable suture 3-0 (Figs 3 and 4). Instructions were given to the parents to prevent the recurrence of the cyst. The parents were also informed that excision of the cyst with the underlying salivary gland might be considered if recurrence occurred.

After a 2-week follow-up, the patient returned to the dental clinic with a recurrent ranula (Fig. 5). The case was referred for



**Fig. 1:** Orthopantomography (OPG) showing dental caries in primary teeth, abscess, and root resorption in tooth #75, congenitally missing teeth #15, 35, 45, and intruded primary central incisor #51 in the nasal cavity



**Fig. 2:** Preoperative intraoral picture showing the ranula



**Fig. 3:** Removing the ranula under local anesthesia (LA)



**Fig. 4:** Removing the ranula under local anesthesia (LA)



**Fig. 5:** Two-week follow-up shows recurrent ranula



consultation with the OMFS doctors, and the patient was sent for CT of the paranasal sinuses (PNS) (Figs 6A to D).

A multidisciplinary approach was employed to achieve the best treatment outcomes, utilizing various treatment options suggested in the literature. Pediatric dentists and oral and maxillofacial surgery (OMFS) specialists collaborated in the treatment planning. The primary goal was to provide restorations to preserve the remaining tooth structure and prevent further sensitivity and wear. Treatment included the restoration of anterior teeth with composite resin to improve esthetics, full coverage of posterior primary molars with stainless steel crowns (SSCs), and the extraction of nonrestorable teeth. Additionally, the ranula and sublingual salivary gland were excised, and the intruded primary central incisor #51 was removed from the right nostril. Written informed consent was obtained from the parents prior to treatment.

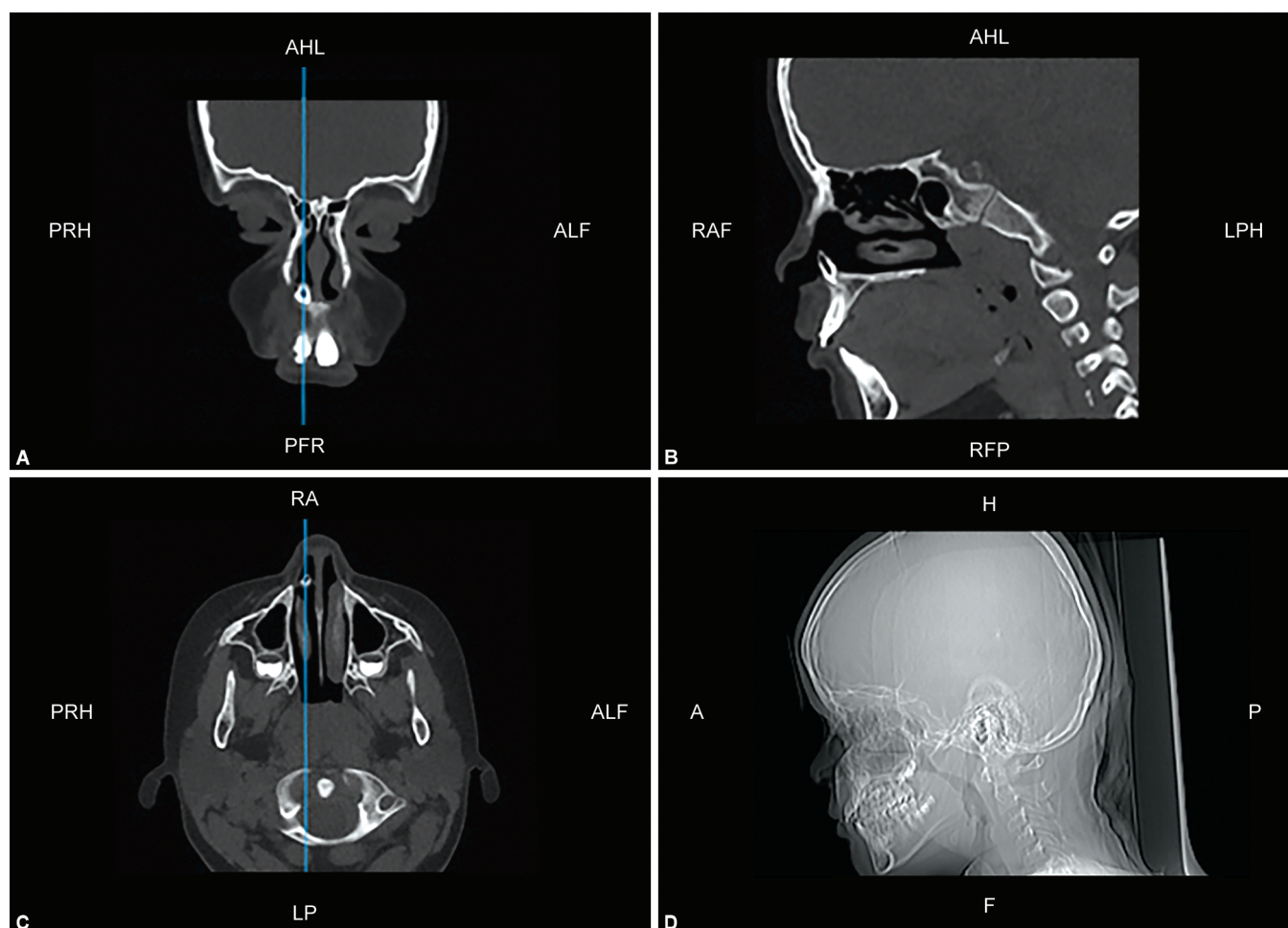
After dental and medical consultations, it was determined that the procedure should be performed under general anesthesia (GA) due to the case's complexity and the necessity of the following procedures: comprehensive oral rehabilitation, removal of the intruded primary central incisor, and excision of the ranula and sublingual salivary gland. According to the radiologist, a tooth-like bony structure with central radiolucency was seen in the right nasal sinus. The examined maxillary, sphenoid, and ethmoid

sinuses had regular aeration. There was no fluid collection, mucosal thickening, polyps, or retention cysts, apart from minimal mucosal thickening in the right maxillary sinus. Normal patency of the osteomeatal complex on both sides was detected. The bony outline of the sinuses was intact, and there was a significant nasal septum deviation. There were grossly aerated middle ear clefts and mastoid air cells. A diagnosis of ectopic intranasal tooth on the right side was made. Figures 7 to 10 show preoperative intraoral pictures before dental rehabilitation under GA.

Under GA, the patient underwent a comprehensive dental treatment, which included restorative treatment for the carious



Fig. 7: Preoperative intraoral pictures before dental rehabilitation under GA



Figs 6A to D: Computed tomography sections of the para nasal sinuses (PNS). (A) Coronal section; (B) Sagittal section; (C) Axial section; (D) Sagittal coronal section



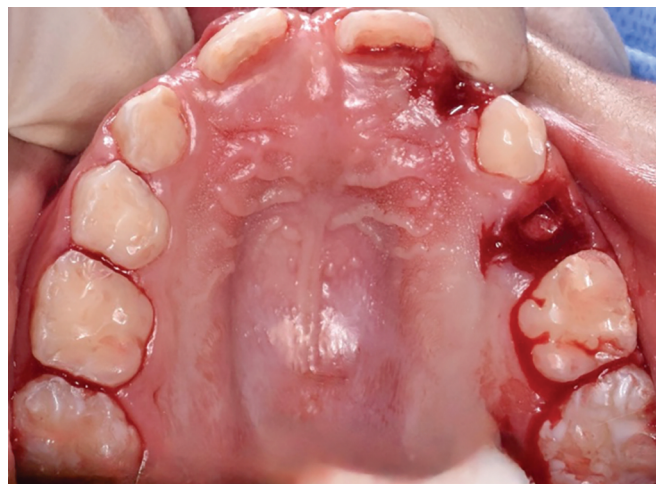
lesions, placement of SSCs on the primary molars, and extraction of nonrestorable teeth (Figs 11 and 12), followed by excision of the ranula and sublingual salivary gland (Figs 13 to 15). Finally,

the intruded primary central incisor #51 was removed from the right nostril by the maxillofacial surgeon. Figures 16 to 19 show the intruded primary central incisor #51 before and after extraction.

The patient was discharged from the hospital 2 days postsurgery in stable condition. Postoperative and oral hygiene



**Fig. 8:** Preoperative intraoral pictures before dental rehabilitation under GA



**Fig. 11:** Immediate postoperative intraoral pictures after dental rehabilitation



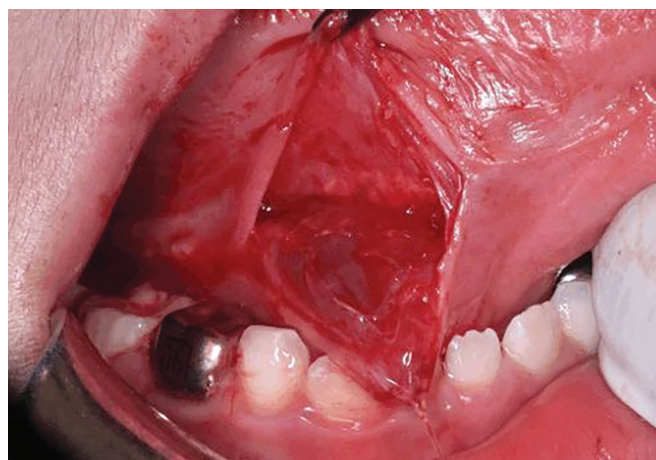
**Fig. 9:** Preoperative intraoral pictures before dental rehabilitation under GA



**Fig. 12:** Immediate postoperative intraoral pictures after dental rehabilitation



**Fig. 10:** Preoperative intraoral pictures before dental rehabilitation under GA



**Fig. 13:** Intraoperative cyst removal



instructions were given, and pain management medications were prescribed.

Recall appointments were scheduled for regular dental checkups to monitor the oral health conditions and the space maintainers. Figures 20 and 21 show intraoral pictures after a 3-month recall, displaying complete oral rehabilitation and proper fit of the space maintainers.



Fig. 14: Intraoperative cyst removal



Fig. 15: Immediate postoperative cyst removal



Fig. 16: Extraoral pictures of the intruded primary central incisor #51

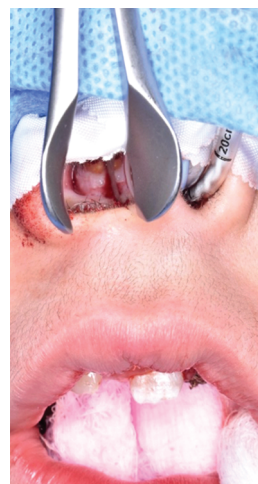


Fig. 17: Extraoral pictures of the intruded primary central incisor #51



Fig. 18: Endoscopy through the right nostril showing the crown of the tooth

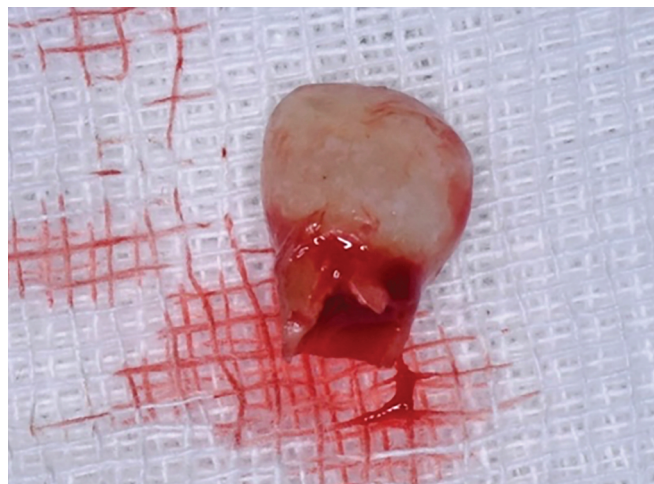


Fig. 19: The intruded primary central incisor #51 after extraction

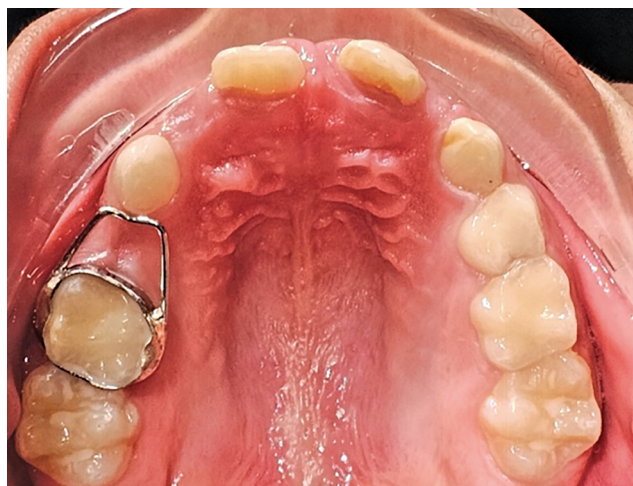


Fig. 20: Intraoral picture after 3-month recall showing maxillary arch



Fig. 21: Intraoral picture after 3-month recall showing mandibular arch

## CONCLUSION

This case report highlights the crucial need for early dental screening and intervention in pediatric patients to educate the parents, prevent orodental problems, and treat the current complaints, in addition to behavior assessment to ensure optimal oral health. It also shows the importance of a multidisciplinary approach in such cases to reach an ideal treatment plan and results. General anesthesia can be one of the best options in complex cases to avoid psychological trauma and obtain optimal and effective treatment, but it should be decided judiciously.

## AUTHOR CONTRIBUTIONS

Raed Ghulman contributed to clinical work, dental rehabilitation under LA and GA during the treatment procedure, and manuscript writing.

Motaz Kabadaya contributed to clinical work, removal of the ranula and the impacted tooth during the treatment procedure under GA.

Randah H Al-Blawi contributed to clinical work, assisted in dental rehabilitation under LA and GA during the treatment procedure, and manuscript writing.

Samah Fadhlalmawla contributed to radiographic analysis, CBCT assessment, localization of the impacted incisor, and recommendations regarding the best approach to extract the tooth through the right nostril.

Hamdi Al-Saydalani assisted in the removal of the ranula and impacted tooth during the treatment procedure under GA.

Maryam A Alshaikh contributed to assessing and writing the manuscript.

Omar A El Meligy contributed to reviewing and editing the manuscript critically.

The final manuscript has been read and approved by all of the authors.

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