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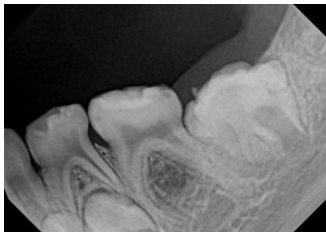
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Background

Pierre Robin sequence (PRS) is identified by the triad of glossoptosis, micrognathia, and airway obstruction; cleft palate is often a concomitant finding. Mandibular distraction osteogenesis (MDO), a surgical treatment option that can relieve upper airway obstruction and improve breathing, can impact the developing tooth buds of permanent teeth due to hardware placement. MDO is often a lifesaving intervention, the nature of which outweighs potential associated dental sequelae.

As mandibular permanent first molars (PFMs) are commonly affected, there is insight to be gained from evaluating the outcomes of these teeth after MDO. Appropriate treatment for affected teeth is determined by the extent of the impact and can range from preventive treatment to operative treatment.

While research has been done on various outcomes of MDO, further evaluation of the relationship between PRS and its impact on dental treatment could help guide education of parents of patients with PRS and inform treatment planning recommendations.



Development of mandibular permanent first molar after mandibular distraction osteogenesis

Objectives

To evaluate the relationship between PRS and its impact on dental treatment including:

- age of first operative dental treatment for PFMs
- type of operative treatment performed (composite restoration stainless steel crown, extraction)
- location of treatment rendered (outpatient clinic setting, operating room (OR) under general anesthesia)

Methods

A retrospective chart review was completed of pediatric patients at Children's Healthcare of Atlanta (Children's). Data was collected from electronic dental records (Dentrix) and electronic health records (Epic), and collection was completed by three examiners trained in both systems.

Inclusion criteria: diagnosis of PRS, treated with MDO, patient of record who was seen at Children's pediatric dentistry clinic between January 1, 2014 – December 31, 2024.

Exclusion criteria: not patient of record in Children's pediatric dentistry clinic, incomplete records regarding diagnosis or dental treatment.

Patients were considered to have a diagnosis of PRS if it was listed as a diagnosis in the Problem List of their Epic chart or noted as a diagnosis by the surgeon who performed the MDO surgery.

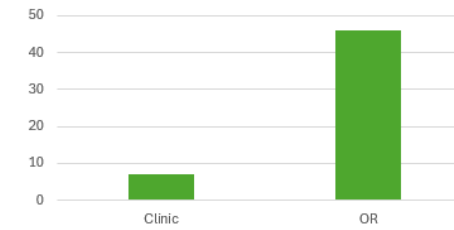
142 patients were included in this study. The data collected included:

- medical diagnoses
- age
- sex
- dental exam and treatment history
- surgical history

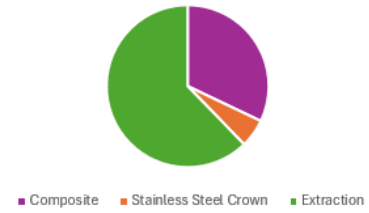
Results

Characteristics	N=142
Received treatment	53 (37%)
Of those who received treatment, n=53	
Age at treatment, years	
Mean (SD)	8.7 (2.6)
Min, Max	3.4, 16.9
Gender	
Female	29 (55%)
Male	24 (45%)
Treatment Type	
Composite	17 (32%)
Extraction	33 (62.2%)
SSC	3 (5.7%)
Treatment Location	
Clinic	7 (13%)
OR	46 (87%)

Treatment Location



Treatment Type



- Of 142 patients with PRS who were treated with MDO, 37% required operative treatment on mandibular PFMs. 63% of patients required only preventive or no treatment at all for mandibular PFMs.
- Age of first treatment varied greatly from 3.4 to 16.9 years, with a mean age of 8.7 years.
- There was no significant difference between male and female patients.
- Treatment in the OR rather than outpatient clinic setting was required 87% of the time. Contributing factors included age of patient, anatomical considerations, extent of treatment needs.

Conclusions

- Mandibular distraction osteogenesis surgery impacts mandibular permanent first molar development to the point that operative rather than preventive treatment is often necessary.
- Over 60% of mandibular permanent first molars impacted by mandibular distraction osteogenesis require extraction rather than restorative treatment.
- Operative treatment is overwhelmingly completed in the OR rather than outpatient clinic setting.
- The age of first operative treatment varies greatly.

References

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