Management of Premature Loss of Mandibular Primary First Molar Using a Band and Loop Space Maintainer: A Case Report

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Abstract

Premature loss of primary teeth may result in space loss and subsequent malocclusion. This case report describes the management of an 8-year-old patient who underwent extraction of the mandibular right primary first molar due to extensive caries. A band and loop space maintainer was fabricated and placed to preserve arch space for the eruption of the permanent successor. Follow-up demonstrated successful maintenance of space and proper appliance stability. Early intervention with a simple fixed appliance can effectively prevent future orthodontic complications.

Keywords: Space maintainer, band and loop, premature tooth loss, pediatric dentistry, arch space preservation

Introduction

The premature loss of primary teeth is a common clinical scenario in pediatric dentistry, often resulting from dental caries. Loss of arch length due to drifting of adjacent teeth can lead to crowding, impaction, or ectopic eruption of permanent successors. Space maintainers are indicated to preserve the integrity of the dental arch.

The band and loop space maintainer is one of the most widely used fixed appliances for unilateral loss of a single primary molar. It is simple in design, cost-effective, and easy to fabricate.

Case Report

Patient Information

Age: 8 years

Gender: Male

Chief Complaint: Pain in lower right back tooth region

Medical History: No relevant history

Clinical Findings

Intraoral examination revealed:

Extensive caries in the mandibular right primary first molar

Tooth structure severely compromised and deemed non-restorable

Adjacent teeth were clinically sound

Radiographic Findings

Preoperative radiographic evaluation showed:

Deep carious lesion involving the pulp

No evidence of periapical pathology affecting the underlying permanent successor

Developing permanent premolar present beneath the affected tooth

Diagnosis

Non-restorable mandibular right primary first molar due to severe dental caries with pulpal involvement.

Treatment Plan

Extraction of the affected primary molar

Placement of a band and loop space maintainer to prevent space loss

Treatment Procedure

Extraction:
The mandibular right primary first molar was extracted under local anesthesia with atraumatic technique.

Impression Making: A mandibular alginate impression was obtained for appliance fabrication.

Appliance Fabrication: A stainless steel band was adapted to the mandibular permanent first molar. A loop was constructed using orthodontic wire extending across the edentulous space to contact the distal surface of the adjacent primary canine.

Cementation:
The appliance was cemented using glass ionomer cement, ensuring proper fit and patient comfort.

Follow-Up and Outcomes

The appliance was well tolerated with no soft tissue irritation

Radiographic evaluation confirmed correct positioning

No evidence of space loss was observed during follow-up visits

Oral hygiene around the appliance remained satisfactory

Discussion

Premature loss of primary molars can significantly affect occlusal development. The mesial migration of permanent molars is one of the most common consequences, leading to reduction in arch length.

The band and loop space maintainer remains the appliance of choice in cases involving unilateral loss of a single primary molar. It offers several advantages:

- Fixed and non-compliance dependent
- Simple design and easy fabrication
- Minimal chairside time
- However, periodic monitoring is essential to:

- Ensure appliance integrity
- Prevent plaque accumulation
- Assess eruption of the permanent successor

Conclusion

The timely use of a band and loop space maintainer following premature extraction of a primary molar is an effective preventive measure. It helps preserve arch space and supports normal eruption of permanent teeth, thereby reducing the risk of future malocclusion.

Clinical Significance

Early diagnosis and intervention in cases of premature tooth loss can prevent complex orthodontic problems. The band and loop appliance remains a reliable and efficient option in pediatric dental practice.

Figures

Figure 1: Preoperative intraoral view showing carious mandibular right primary first molar

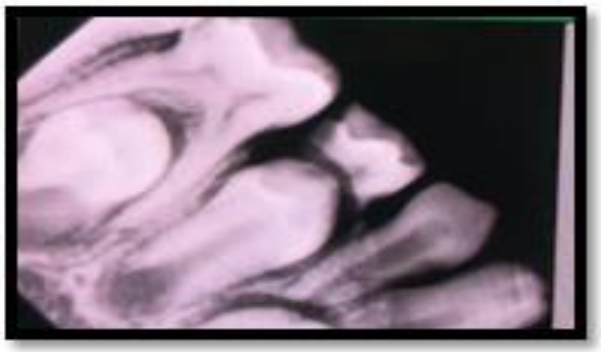

Figure 2: Preoperative radiograph indicating pulpal involvement

Figure 3: Postoperative intraoral view showing cemented band and loop appliance

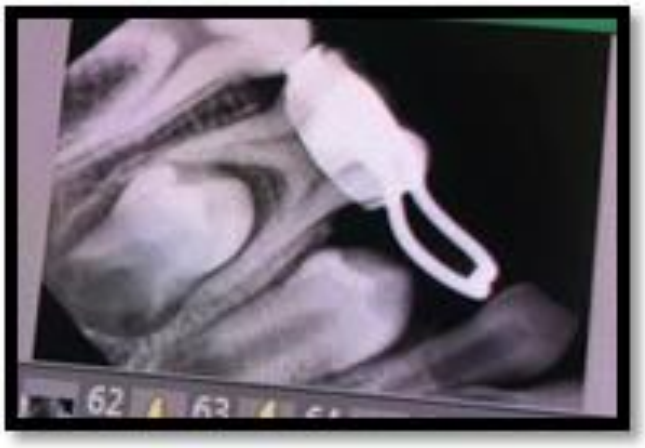

Figure 4: Postoperative radiograph confirming proper placement of the appliance

References

Pinkham JR. *Pediatric Dentistry: Infancy through Adolescence.*

McDonald RE, Avery DR. *Dentistry for the Child and Adolescent*.

American Academy of Pediatric Dentistry. Guideline on Management of the Developing Dentition.