Management of the poor first permanent molar

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Problems of First Permanent Molars

- The first group of permanent teeth erupt in the oral cavity.

- Deep groove and pit
Problems of First Permanent Molars

- Abnormal Enamel Structure
- Difficult to clean
- Misunderstand
- Mastication
- Development of functionally occlusion
The effect of premature loss of the first permanent molar
THE EFFECT OF PREMATURE LOSS OF THE FIRST PERMANENT MOLAR
THE EFFECT OF PREMATURE LOSS OF THE FIRST PERMANENT MOLAR

- Diminished local function
- Drifting of teeth
- Mid line deviation
- Continued eruption of opposing teeth
THE EFFECT OF PREMATURE LOSS OF

THE FIRST PERMANENT MOLAR

- Diminished local function

  Drifting of teeth

  Mid line deviation

  Continued eruption of opposing teeth
Diminished local function

- Result in a reduction in chewing efficiency as great as 50%.
- Shifting of the load of mastication to the unaffected side.
- An unhygienic condition of the unused side.
• Result in a reduction in chewing efficiency as great as 50%.

• Shifting of the load of mastication to the unaffected side.

• An unhygienic condition of the unused side.
THE EFFECT OF PREMATURE LOSS OF THE FIRST PERMANENT MOLAR

Diminished local function

• Drifting of teeth

Mid line deviation

Continued eruption of opposing teeth
Drifting of teeth

- The second molar drift mesially.
- The premolars and all the anterior teeth to the space may show evidence of movement.
• The second molar drift mesially.

• The premolars and all the anterior teeth to the space may show evidence of movement.
THE EFFECT OF PREMATURE LOSS

OF

THE FIRST PERMANENT MOLAR

Diminished local function

Drifting of teeth

• Mid line deviation

Continued eruption of opposing teeth
Mid line deviation
Balancing extractions are not required where

- The dentition is **space**.
- A **previous extraction** in the same arch was balanced.
Balance extraction

Prevent midline deviation
THE EFFECT OF PREMATURE LOSS OF THE FIRST PERMANENT MOLAR

Diminished local function

Drifting of teeth

Mid line deviation

• Continued eruption of opposing teeth
Continued eruption of opposing teeth

- The occlusal tables of the lower molar teeth are wider than the occlusal tables of the upper molar teeth.
Continued eruption of opposing teeth

Preventing the mesial drift of the second molar
Compensation extraction

VS

Continued eruption of opposing teeth
Orthodontic Considerations before extraction the first permanent molar

- Long term prognosis.
- Congenital absence of teeth
- Hypoplasia of premolars
- Type of malocclusion and degree of crowding
- Stage of dental development
Assessment of long term prognosis

- Large amalgam restorations already present
- Abnormal enamel structure
- Endodontically tooth
- Unfavourable attitudes of the child and parent regarding dental care
- Poor oral hygiene
- Poor patient cooperation
## Orthodontic Considerations

<table>
<thead>
<tr>
<th>Long term prognosis</th>
<th>Success rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulpotomy (Formocresol)</td>
<td>71-97%</td>
</tr>
<tr>
<td>RCT</td>
<td>90%</td>
</tr>
<tr>
<td>Apexification</td>
<td>80%</td>
</tr>
<tr>
<td>Preformed crown</td>
<td>95%</td>
</tr>
<tr>
<td>Final post and crown</td>
<td>95%</td>
</tr>
</tbody>
</table>
Orthodontic Considerations

Type of malocclusion

Class II and III Malocclusions

Consult orthodontists
Orthodontic Considerations

Class II

Class III
Orthodontic Considerations

Degree of crowding

Consult orthodontists
Orthodontic Considerations

Lengthy appliance therapy

- Treatment lasts longer than with extraction of first premolars
- Requires carefully management to avoid tipping the second molar
- Reinforcement of the anchorage
Lengthy appliance therapy
Orthodontic Considerations

Dental age of the patient

- The early mixed dentition.
- The mid mixed dentition.
- The late mixed dentition.
- The early permanent dentition.
Dental age of the patient

The early mixed dentition

- The ages of 7-8.5 years
Dental age of the patient

The early mixed dentition.

• The presence of the second premolars relatively apical to the fully-formed apices of the primary second molars.
Dental age of the patient

The early mixed dentition.

- Upper arch - extract
- Lower arch - delay

The lower second premolar may distally displace to the extracted site.
Dental age of the patient

The mid-mixed dentition

- The aged of 8.5-10 years.
Dental age of the patient

The Mandible

- Ideal time to extract mandibular first molar is 8.5-10 years
- Earlier extraction: mandibular second premolar have a tendency to drift distally
- Delayed extraction: the second molars will show less bodily movement and more tilting
Dental age of the patient

Ideal conditions for extraction

- 8.5-9.5 years, mild crowding or uncrowded arches.
Dental age of the patient

Ideal conditions for extraction

- The unerupted lower second premolar should **not** be distally incline.
Dental age of the patient

Ideal conditions for extraction
Ideal conditions for extraction

- Unerupted canines, premolars, and second molars are visible on a radiograph and show no evidence of abnormality.
- There is mild buccal segment crowding.
Dental age of the patient

Ideal conditions for extraction

- Having all the permanent teeth.
- The first permanent tooth should be dubious.
- Angle class I.
- The overbite should be normal or reduced.
Dental age of the patient

Ideal conditions for extraction

- A third and half of the second premolar root has developed, these teeth are sit between the roots of the second primary molars.
- Root development of the second permanent molar has not exceeded one-third.
Ideal conditions for extraction

The root formation of the mandibular second molar
Dental age of the patient

The Maxilla

- Unerupted second molars tend to be distally inclined, especially in a crowded arch
- They readily drift mesially by moving into more upright positions
- Extraction of maxillary molars can often be delayed until about 10-11.5 years of age without affecting the final occlusion
<table>
<thead>
<tr>
<th>Permanent first molar(s) to be extracted</th>
<th>Class I adequate space for canines/premolars</th>
<th>Class I inadequate space for canines/premolars</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mandibular</strong></td>
<td>Compensate</td>
<td>Compensate</td>
</tr>
<tr>
<td>One</td>
<td>Do not balance</td>
<td>Possibly balance</td>
</tr>
<tr>
<td>Both</td>
<td>Compensate</td>
<td>Compensate</td>
</tr>
<tr>
<td><strong>Maxillary</strong></td>
<td>Do not compensate or balance</td>
<td>Do not compensate or balance</td>
</tr>
<tr>
<td>One</td>
<td>Possibly balance</td>
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</tr>
<tr>
<td>Both</td>
<td>Do not compensate</td>
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</tr>
</tbody>
</table>
Loss one of first permanent molar and the others in good prognosis.

Balance extraction

Good condition
A mandible first permanent molar with a poor prognosis and the opposing first permanent molar with good prognosis

● Remove the opposing maxillary first molar
  or

● Space maintainer
If the space maintained is used the other maxillary molar should be occluded.
A maxillary 1st permanent molar with poor prognosis and the opposing first permanent molar with a good prognosis

• Only this first molar need to be removed.
Case I
Before treatment

After treatment
Unilateral opposing first permanent molars with a poor prognosis

• Balance the extractions by removing the second deciduous molars on the other side.
Three first permanent molars with a poor prognosis

Four first molar need to be removed
Early Extraction of Four first permanent molars

Report of case

Martin Rayman

Journal of Dentistry for Children 1979; May-June: 234-237

8 year girl; Angle Class I molar relationship, Canine Class I

The lower left first and second primary molar

Lower right and left first permanent molar
After extraction of the mandibular primary teeth and first permanent molars

3.2 years after extraction of the first permanent molars
4.5 years after extraction first permanent molar
Dental age of the patient

The late mixed dentition

- The dental ages of 10-11.5 years.
- The primary second molars of both archs remain.
- Before the eruption of the second permanent molars.
Dental age of the patient

The late mixed dentition

- The upper maxillary molar = extracted
- The lower mandibular molar = no extracted
The long axis of the maxillary molar is distally inclined.

The long axis of the lower mandibular molar is mesial inclined.
The early permanent dentition

- The dental age is 11.5-12.5 years.
- The recent eruption of the second molars and second premolars.
Dental age of the patient

The early permanent dentition

Upper Arch

and

Lower Arch

No extract
Dental age of the patient

Lower Arch

- No extract except
  - The unerupted lower second premolar should be distally incline.
  - Crowding has become concentrated in the premolar region following the premature loss of the primary molars.
Conclusion
First mandibular permanent molar
Heavily decayed first permanent molar

- Unrestorable
  - Extract
    - Early mixed 7-8.5 years
      - Normally related uncrowded
        - Max; Ext. Mand; No ext.
    - Mid mixed 8.5-10 years
      - Normally related uncrowded
        - Extract *
    - Late mixed 10-11.5 years
      - Normally related uncrowded
        - Max; Ext. Mand; No ext.
  - Restorable Prognosis-questionable
    - Early mixed 7-8.5 years
      - Normally related uncrowded
        - Max; Ext. Mand; No ext.
    - Mid mixed 8.5-10 years
      - Normally related uncrowded
        - Extract *
    - Late mixed 10-11.5 years
      - Normally related uncrowded
        - Max; Ext. Mand; No ext.
  - Restorable Prognosis-good
    - Early permanent 10-11.5 years
      - Normally related uncrowded
        - No extract

Absent third molars

In patients with crowding, the absence of third molars should not affect the decision.
Contraindication for extraction

- Spacing
- Missing of the second premolar.
REFERENCES


REFERENCES


- Gill D.S., Bee R.T. and Tredwin C.J. Treatment planning for the loss of first permanent molars. *Dental update* 2001; 284-293
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