A Review On Permanent Sixes Extractions In Orthodontics

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Abstract:
Orthodontic cases involving the extraction of first permanent molars are usually technique sensitive and difficult to treat. Molars are seldom teeth of choice for extraction for orthodontic purpose because even when they are removed at the optimal time the contact relationship between second premolar and the 2nd molar is rarely ideal that even a good result is in some way a compromise. So in many cases that would benefit from sixes extraction, because of the doubtful long-term prognosis s are treated with the extraction of healthy premolars. Sothe aim of this article is to discuss a rationale for extraction of first molars and to highlight some of the problems which are faced by orthodontists in such cases and some of the solutions to overcome this problem.
Keywords: First,Permanent, Molars, Extractions, Orthodontics, Problems.

INTRODUCTION:
In Orthodontics the extraction of sixes are thought to be technically more difficult to treat and thus the avoidance of first molar cases may be due to a number of factors as follows:

1. Does not give adequate space for anterior segment
2. Results in deepening of bite
3. operator comfort with all 4s extraction cases
4. lack of experience
5. and the requirement for a multidisciplinary approach involving endodontists, orthodontists, and crown and bridge specialists[1]

Clinical Indications:

1. Enforced extractions
2. Prophylactic treatment of crowding (Wilkinson extractions).
3. Elective first molar extractions to provide space for orthodontic purpose
4.

1. ENFORCED EXTRACTIONS

Compensating Extraction:
In general, if a lower first molar is to be extracted, the upper molar on the same side should also be extracted. This prevents unwanted over eruption of the upper first molar and the upper second molar will usually erupt into a good position.
However, if an upper first molar is to be extracted, the lower counterpart is usually left in situ. Because the lower second molar behaves unpredictably and rarely achieves good spontaneous alignment. Lower molars over erupt less than upper molars and will not interfere with the progress made by upper second molars.

Balancing extractions:
It is defined as the removal of tooth on the opposite side of the same arch in order to preserve symmetry[2]

Guidelines For Forced First Molar Extraction (Rcseng. Cobourne 2014):[3]

1. A number of general guidelines on treatment planning first permanent molar extraction cases for a number of malocclusions are available
2. As a general rule, if in doubt, get the patient out of pain, try and maintain the teeth and refer for an orthodontic opinion.

CLASS I CASES

Class I Cases With Minimal Crowding (3mm)

Aim for extraction at the optimal time without balancing extraction

1. If the lower first molar is to be lost, compensating extraction of the upper first molar should be considered to avoid over eruption of this tooth, unless the lower second molar has already erupted and the upper first molar is in occlusal contact with it.
2. If the upper first molar is to be lost, do not compensate with extraction of the lower first molar if it is healthy.

Class I Cases With Crowding > 5mm

1. First molar extractions can be delayed until the second molars have erupted and then the extraction space used for alignment with fixed appliances.
2. Alternatively, first molars can be extracted at the optimum time and the crowding treated once in the permanent dentition. If premolar extractions are likely to be required at this stage, the third molars should be present.
3. If the buccal segment crowding is bilateral, consider balancing extraction to provide suitable relief and maintain the centreline. Sometime asymmetrical balanced extraction (extraction of other poorer tooth than 6s) is indicated if there is sever crowding and if extraction is decided at early age with a risk of midline shift. Compensating extraction of upper first molars should be considered to prevent over eruption or to relieve premolar crowding

CLASS II CASES
The main complicating factors often involve the upper arch because of the need for space to correct the incisor relationship.

Class II Cases With Minimal Crowding
Lower first molar extraction
It should be carried out at the ideal time for successful eruption of the second permanent molar and control of the second premolar. Regarding compensating and balancing extraction:
Compensating and balancing extraction of healthy lower first molars are not indicated. So that, if the upper first molars are to be left unopposed, a simple removable appliance may be required to prevent their over-eruption, whilst waiting for the second molars to erupt. Alternatively, a functional appliance can be used immediately to correct the incisor relationship prior to extraction of the first molars and fixed appliances.
If the upper first permanent molar is sound, elective extraction may be indicated if it is at risk of over-erupting; however, the third molars should ideally be present radiographically.
If there is no sign of upper third molar development, an appliance to prevent the over-eruption of sound upper first molars should be considered.

Upper First Molar Extraction

In the upper arch, space will often be required to correct the incisor relationship: If the upper first permanent molars require immediate extraction, orthodontic treatment may be instituted to correct the incisor relationship. A functional appliance or removable appliance and headgear can be used to correct the buccal segment relationship, followed by fixed appliances if required.

If the upper first permanent molars can be temporised or restored, then their extraction can be delayed until the second permanent molars have erupted. The resultant extraction space can then be used to correct the malocclusion with fixed appliances.

Alternatively, after extraction of the upper first permanent molars, the second permanent molars can be allowed to erupt and the incisor relationship corrected then by the loss of two upper premolars teeth. But as a condition, there should be a radiographic evidence of third molar development.

CLASS II CASE WITH CROWDING.

Lower First Molar Extraction

Space will also be required in the lower arch for the relief of crowding. If the third molars are present radiographically, lower first molars can be extracted at the optimum time to allow second molar eruption and then premolars extracted at a later stage for the correction of crowding. In these cases, fixed appliances will usually be required.

Alternatively, first molars can be extracted after second molar eruption and the space used directly for the correction of crowding with fixed appliances.

Balancing and compensating extraction of lower first molars are not generally required.

Upper First Molar Extraction

Space requirements in the upper arch can be significant. The upper first permanent molars should be temporised or restored and the child referred to a specialist orthodontist whenever possible.

If the upper first permanent molar is unopposed, at risk of over-erupting and third molars are present radiographically, then extraction of the upper first molar may be indicated. The patient should be counselled that additional premolar extractions in the upper arch may be required in the future to create sufficient space for crowding relief and incisor correction.

Class III Cases

As a general rule, extraction of maxillary molars should be avoided if at all possible, whilst balancing and compensating extractions are not recommended in class III cases.

3. Interceptive Extractions Of The 6's, (Wilkinson 1940)[4]

Wilkinson advocated extraction of all 6's between the age of 8.5 to 9 years. The basis of it is the fact that molars are highly susceptible to caries.

IDEAL WILKINSON CRITERIA

1. Class I malocclusion seen at between 8.5 and 9.5 years
2. No increase in overbite.
3. Mild anterior segment crowding
4. Moderate posterior crowding
5. All successional teeth present and third molars present
6. Lower second molar bifurcation beginning to form,
7. Angle between long axis of crypts of 6 and 7 = 15-30 degree and
8. Crypt of lower 7 overlaps the root of lower 6

Complication Of Wilkinson Extractions

1. Black triangle between 5 and 7
2. Limited space for crowding correction
3. 2nd premolar and 2nd molar rotate and may tip into the extraction space.

4. Elective First Molar Extractions To Provide Space For Orthodontic Purpose:[5]

There are many clinical situations in which extraction of first permanent molars should at least be considered such as:

5. Extensively Carious First Molars

Hypoplastic first molars

- Heavily filled first molars where premolars are perfectly healthy
- Apical pathoses or root treated first molars
- Crowding at the distal part of the arches and wisdom teeth reasonably positioned
- High maxillary/mandibular planes angle
- Anterior open bite cases

Potential problem with first molar extractions to provide space for orthodontic purpose, and solutions to overcome the problems (Sandler 2000)

1. Anchorage	• 7s provide little anchorage • 7s unsuitable for Kloehn bow extra oral treatment	• Palatal arch with a button • • Miniscrew anchorage
2. Overbite Reduction	• Bite opening curves less effective • Less scope for class II elastics	• Anterior bite plane early in treatment • Functional appliance prior to straight wire appliance • Miniscrew anchorage
3. Mesial Tipping Space closure after the extraction of the first permanent molar teeth has been studied in some detail and has led to conclusions that satisfactory closure of spaces was best achieved on children and young adults	• Mesial tipping particularly in the lower arch • • Rotations particularly in the upper arch	• Do not over tighten lacebacks • Do not over load the second moalrs • Build up archwires quickly, particularly in the lower arch, even if not all anterior teeth are fully engaged

4. Lower Second Molar Lingual Rolling	• Initial alignment with rectangular Niti wire • Add buccal crown torque in later wires • Expand lower archform • Class II or cross elastics from lingual surfaces • MBT molar tubes (and premolar brackets) • Nance or lingual arch on the 7s

5.Class II second molars	• It is caused by the fast migration of the U7s than L7s causing a class II molar relationship • It can be a real problem and can become established in a matter of weeks, even in cases that are class I or 1/2 unit class II at the outset. Prevention of this complication is highly recommended.	The solutions vary according to whether the remainder of the malocclusion is class I or II. **Solutions if the occlusion is Class I incisors at the start** • Palatal arch with button • Miniscrew anchorage if necessary • Laceback lower but not upper • Hold back 7s with stopped arch • Hold back 7s with coil spring **Solutions if the occlusion is Class II incisors at the start** • Functional appliance, Upper removable appliances with hesdgear to premolars if 7s unerupted & TADs •

CONCLUSION:

Many factors influence the choice of molar extraction in orthodontics. Careful treatment planning in conjunction with good patient cooperation, appliance selection and management of the treatment are essential to achieve an acceptable, aesthetic and functional occlusion.

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CONFLICT OF INTEREST: NIL

ETHICAL CLEARANCE: NOT APPLICABLE

REFERENCES:

1.Houston WJB, Stephens CD, Tulley WJ. A textbook of orthodontics, 2nd edition, Oxford: John Wright; 1992. p. 196-9.

2.Laing E, Ashley P, Naini FB, Gill DS. Space maintenance. International journal of paediatric dentistry. 2009 May;19(3):155-62.

3.Cobourne MT, Williams A, Harrison M. National clinical guidelines for the extraction of first permanent molars in children. British dental journal. 2014 Dec;217(11):643-8.

4.Wilkinson AA. The first permanent molar again. Br Dent J 1940;8:269-84

5.Sandler PJ, Atkinson R, Murray AM. For four sixes. American Journal of Orthodontics and Dentofacial Orthopedics. 2000 Apr 1;117(4):418-34.