UPRIGHTING OF POSTERIOR TEETH

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ABSTRACT

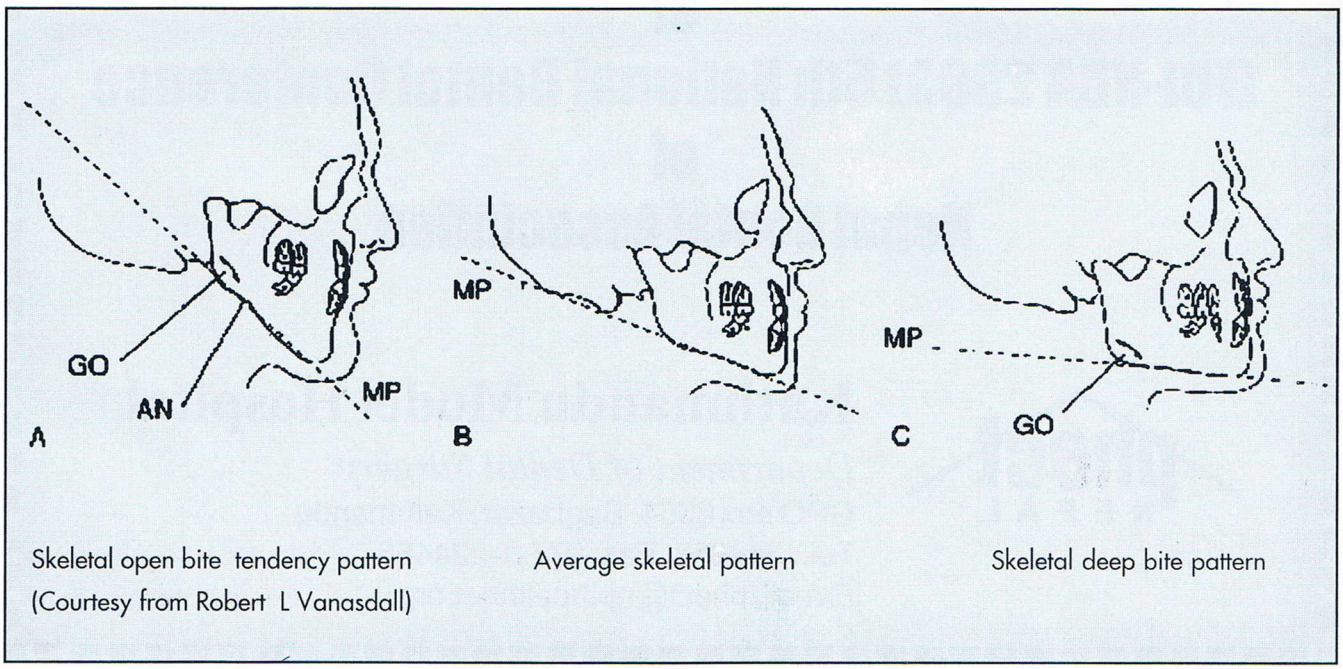
The first permanent molar is the earliest of the second set of teeth to erupt but in children it is often first to be extracted due to dental caries. When this tooth is missing arch integrity is lost. The main problems associated with this are inadequate parallelism, excessive tooth preparation, and inadequate pontic space. This problem can be solved by various uprighting methods. In this article common methods, contraindication and complications are explained.

INTRODUCTION

One of the most common problems faced by general dental practitioner is the mesially tilted or migrated second molar. Such type of problem is usually seen in adult who had undergone first molar extraction long back and didn't put any prosthesis. Most of the tooth is lost due to dental caries or failure of endodontic treatment or periodontal disease. The typical clinical feature consists of mesial migration of lower second molar, distal drifting of second premolar, supra eruption of upper first molar, altered gingival form, periodontal osseous defect specially on mesial aspect, food impaction , dental caries and ultimately collapse of posterior bite. Thus this type of problem should be treated as soon as possible.

TREATMENT PLANNING CONSIDERATION

Before treatment the selection of patient is very important. It is always advised to select patient with normal to mild class II skeletal relationship in all the three planes[1] . For example if hyperdivergent case is selected then during uprighting it may cause openbite. Similarly in the presence of tight or strong musculature there is potential for trauma to the tooth that is being uprighted.



Skeletal open bite tendency pattern (Courtesy from Robert L Vanasdall)

Average skeletal pattern

Skeletal deep bite pattern

According to Proffit, few questions has to be answered before starting the treatment[2]. First - whether the uprighting to be done with second and third molar or only second molar. The answer depends on the arch perimeter. If sufficient space is present we can upright both second molar and third molar. The other thing to be considered is presence or absence of upper third molar. If the upper third molar is absent then it is wise to extract mandibular third molar and upright only mandibular second molar. The second question is whether to do distal crown tipping or mesial root movement. Distal crown tipping is advocated in case of prosthesis while mesial root movement is indicated for extraction space closure especially of young age group. Definitely distal crown movement is easier than mesial root movement. Stepovich[3] studied space closure in eight teenagers and eight adults in mandible. He concluded that alveolar bone readily followed the tooth as it was moved into an edentulous space that was narrower than the tooth. In contrast, half of the adult patients resisted the formation of any new bone. He also said that there was definite loss of height of alveolar crest especially in adult.

Distal crown tipping normally extrudes the tooth to be uprighted. Stephane Brown[4] has shown on his experiment that the distal tipping produce significant reduction in the depth of periodontal defect and highly desirable changes occurs in the architect of gingiva. He concluded that efficacy of uprighting molar as an appropriate therapeutic regime to be routinely included where indicated in the sequence of therapy of periodontal disease.

APPLIANCES

Appliances can be divided into fixed or removable.

REMOVABLE APPLIANCE

If space loss is only slight, split acrylic spring type of removable space regainer may be used[5]. Other are finger spring and sling slot. Removable appliances are normally not preferred because of difficulty in insertion, dependent on patient and less control over tooth movement.

FIXED APPLIANCE

Fixed appliance is preferred since it can efficiently correct rotation, torque and parallelism of roots.

Banded molar is preferred than bonded molar because of two reasons. a) It is quite difficult to control moisture in posterior region. b) There is heavy occlusal force on posterior region. Both leads to the repeated dislodgment of brackets.

Since it is an adjunctive treatment and we do not have intention of moving other tooth rather than tilted molar or molars. Most of the authors advocate nontorque, nonangulated 0.022 edgewise brackets to be placed in the most convenient way i.e., the horizontal slot of the bracket is in a straight line. Along with this either banded or bonded canine to canine lingual arch is necessary to increase anterior anchorage.

TECHNIQUES

There are several alternative methods in treating the missing mandibular first molar.[6]:

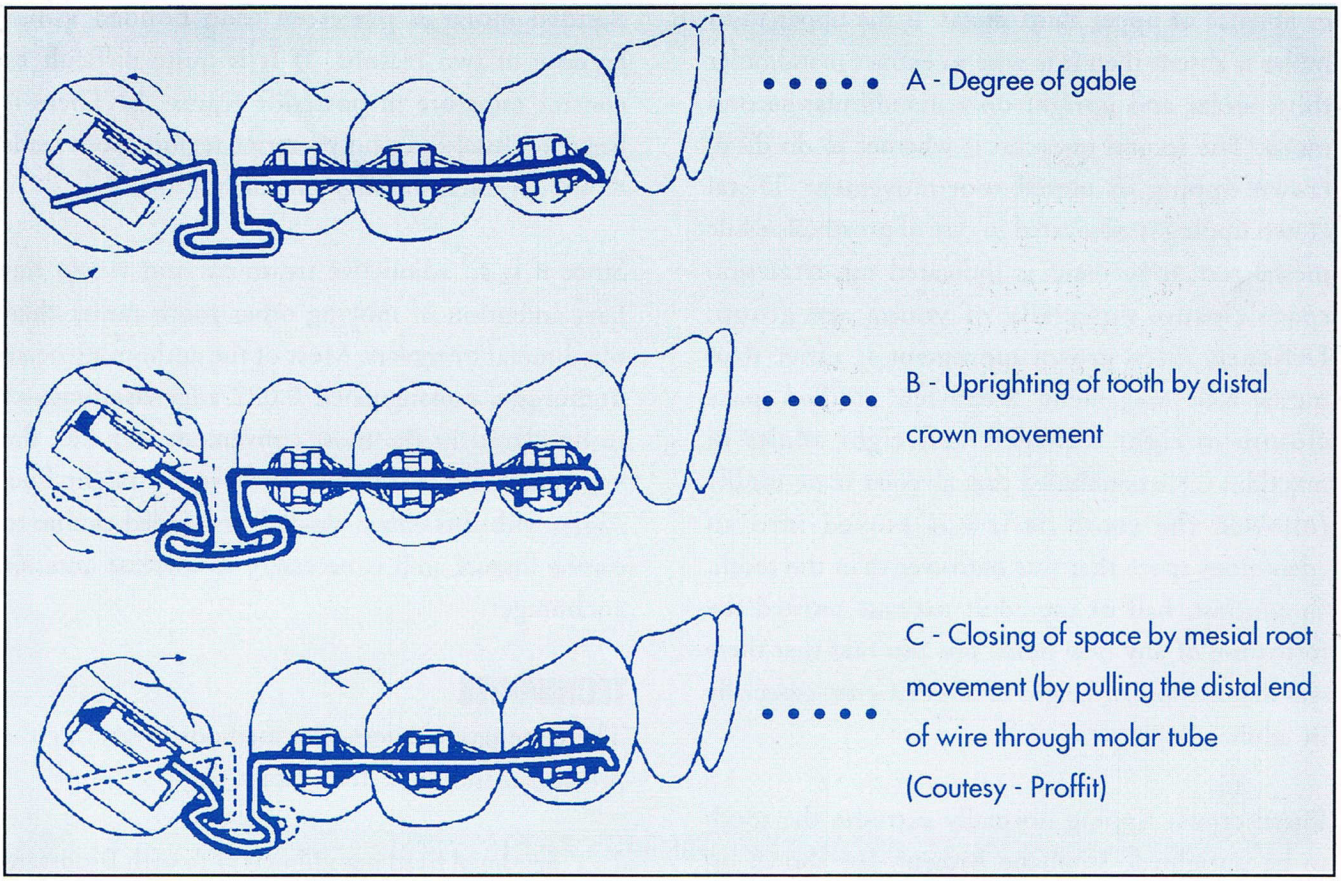
1. Sectional fixed mandibular arch with Broussard uprighting spring
2. Sectional fixed mandibular arch with "L" loop or "T" loop
3. Sectional fixed mandibular arch with open coil spring

IN BILATERAL CASES,

1. Full fixed mandibular arch wire only
2. Full fixed mandibular arch with bilateral "T" loop or "L" loop

Many clinician advocate the use of an uprighting spring with stiffer wire (17x25 braided). Since this method causes considerable occusal as well as distal crown movement, this method should be used only when the terminal molar has an occusal antagonist.

When uprighting with minimum extrusion is desired 'T' loop with gable can be used. This can also be used to upright the molar with mesial root movement with space closure. Only the thing to do is pull the distal end of the wire through the molar tube that will open the T loop and generate a mesial force that will upright the molar by mesial root movement. Tuncay[7] concluded that 'T' looped uprighting springs offer excellent controled movements of teeth in three planes of space; accepantance by the patient is favorable and treatment time is less.



A compressed coil spring may be used to complete molar uprighting while closing spaces in premolar region.

William W Roberts and his college[8] advocate modified Burstone root spring because of the several advantages like few adjustment necessary, less discomfort for patient, and less chances of distortion of wire by normal function.

To upright second and third molar two boot loop one on the mesial side and other in distal side of second molar can be used. The alternative method is to use of box loop.

Retention -can be done by either extracoronal or intracoronal for at least of six weeks after which prosthesis can be placed.

Contraindication[9] cases are

1) Skeletal dysplasia
2) Dysfunction of TMJ
3) Openbite
4) Absence of several anterior teeth
5) Extensive alveolar bone loss

Complication- Excessive tooth mobility of tooth to be uprighted occurs either due to much force or failure to reduce occlusal interference. Since there is less wear on the mesial marginal ridge than on the distal marginal ridge of mesially inclined teeth, mesial marginal ridge need to be reshaped so that

the occlusal table will be perpendicular to the long axis of the tooth[10]. Occlusal reduction on the lower molar should be minimal. If excessive adjustment were done, not only would sensitivity be a problem but also there might be insufficient interarch room for restorative material, thereby necessitating endodontic therapy on the molar. To avoid excessive crown reduction it may be helpful to use Hawley type bite plane on the opposing arch. Hawley bite plane is usually inserted with the platform of the anterior plane adjusted at a right angle to the long axis of lower incisors.

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