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Learning Objectives

After completion of this exercise, the participant will be able to:
1. Discuss the biomechanics involved in molar protraction.
2. Plan bracket selection in cases requiring canine substitution.
3. Consider the advantages and disadvantages of autotransplantation in growing patients with compromised anterior teeth.
4. Review the potential applications of autotransplantation in adult patients.

Article 1

Zhang, Y.; Azami, N.; and Uribe, F.A.: *Biomechanics of Molar Protraction* (pp. 16-25)

1. During the initial phase of molar protraction, the point of force application is:
   a) occlusal to the center of resistance (CR) of the molar
   b) lingual to the molar's CR
   c) distal to the molar's CR
   d) buccal to the CR of the anterior unit
2. Undesirable mesial rotation of the molar can be minimized by:
   a) applying a counteracting force from the lingual side
   b) engaging a rigid, continuous archwire
   c) connecting the anterior teeth together
   d) either a or b
3. The magnitudes of differential moments and vertical forces developed by a V-bend are determined by all of following except the:
   a) wire material
   b) friction caused by wire binding
   c) dimensions of the bend
   d) position within the interbracket space
4. Indirect loading of temporary anchorage devices for molar protraction should be avoided in patients with:
   a) wide edentulous spans
   b) Class III skeletal patterns
   c) absolute anchorage requirements
   d) limited cortical alveolar bone

Article 2

Kravitz, N.D.; Miller, S.; and Fleming, P.: *Esthetic Guide for Canine Substitutions, Part 1: Bracket Selection and Positioning* (pp. 26-38)

5. The selection criteria for canine substitution have recently expanded to include:
   a) Class I skeletal patterns with moderate to severe mandibular crowding
   b) Class II skeletal patterns with mild mandibular crowding
   c) mild Class III skeletal patterns
   d) Class III skeletal patterns with moderate to severe mandibular crowding
6. When consolidating space for missing or extracted upper lateral incisors, brackets can be substituted on any of the following maxillary teeth except the:
   a) central incisors
   b) substituted canine
   c) substituted first premolar
   d) first and second molars
7. The primary esthetic concern with a substituted canine is:

a) its relatively large size
b) inadequate palatal root torque
c) its unique mesial anatomy
d) the available space in the arch

8. For a substituted premolar, the authors recommend using:
a) a same-side upper canine bracket
b) an opposite-side lower second premolar bracket
c) a same-side upper first premolar bracket
d) either a or c

Article 3

Christensen, J.R.: *Autotransplantation to Replace Compromised Anterior Teeth in a Growing Patient* (pp. 39-47)

9. Complications that can lead to failure of autotransplantation include all of the following except:
a) ankylosis
b) root resorption
c) pulpal necrosis
d) white-spot lesions

10. Autotransplantation has demonstrated success rates similar to those of:
a) orthodontic space closure
b) prosthetic replacement
c) dental implants
d) reimplantation

11. When replacing adjacent teeth by autotransplantation, predictability can be improved by:
a) transplanting one tooth at a time
b) transplanting both teeth at the same time
c) opening enough space for both teeth during the initial phase of treatment
d) performing a bone graft before the transplantation

12. Autotransplantation is best performed when the root of the donor tooth is at:
a) less than one-half of its final length
b) one-half to three-quarters of its final length
c) complete development
d) the same level of maturity as the root of the tooth being replaced

Article 4

Contreras, M.; Berant, D.; Hayes, M.; Lin, L.; Cronin, M.E.; Gogarnoiu, D.; and Chung, C.H.: *Autotransplantation to Replace an Upper First Premolar in an Adult Patient* (pp. 48-59)

13. Some advantages of autotransplantation over other methods of managing partially edentulous patients include:
a) restoration of natural function
b) establishment of a functional periodontal ligament
c) ability to apply orthodontic forces
d) all of the above

14. Ideally, the recipient site should be wider than the donor tooth by:
a) less than 1mm
b) 1.4mm
c) 2mm
d) at least 3mm

15. Extraction of the donor tooth can be facilitated by:
a) applying orthodontic force prior to the surgical procedure
b) removing the tooth at the recipient site well before the transplantation
c) performing a bone graft at the recipient site
d) performing endodontic treatment before the transplantation

16. A prolonged period of rigid splinting after transplantation can:
a) improve long-term stability
b) increase the risk of ankylosis
c) avoid the need for endodontic treatment
d) allow better periodontal healing