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Learning Objectives

After completion of this exercise, the participant will be able to:

1. Discuss the mechanical and biological principles behind a new multi-force superelastic archwire.
2. Describe a palatal anchorage system that combines self-ligating miniscrews with prefabricated stainless steel plates.
3. Contrast various methods of alleviating pain from orthodontic treatment.
4. Compare an orthodontic method of narrowing buccal corridors with common surgical and orthopedic procedures.

Article 1

Olsen, M.E.: *SmartArch Multi-Force Superelastic Archwires: A New Paradigm in Orthodontic Treatment Efficiency* (pp. 70-81)

1. Sharp deformation of a superelastic nickel titanium wire in its cold martensitic condition will result in:
   a) permanent wire deformation
   b) a deflection of about 1mm
   c) immediate transition to the austenitic stage
   d) a 3rd-order bend
2. SmartArch wires are programmed for transformation by:
   a) furnace heating
   b) holding and cooling
   c) pulsed electric current
   d) pulsed fiber laser conditioning
3. Larger teeth are more resistant to movement than smaller teeth because of:
   a) periodontal ligament (PDL) necrosis
   b) greater PDL and root support
   c) lesser attraction of osteoclasts
   d) greater stress levels
4. Viecilli and Burstone found that the .014" Copper NiTi archwire typically used to begin treatment provides:
   a) too little force on the upper arch
   b) too much force on the upper arch
   c) too little force on the lower anterior teeth
   d) too much force on the lower posterior teeth

Article 2

Maino, B.G.; Lombardo, L.; Maino, G.; Salomone, A.; and Siciliani, G.: *Spider Link: A Palatal Skeletal Anchorage System* (pp. 82-95)

5. The two primary configurations of the authors' Power Plate are:
   a) central and lateral
   b) Spider and intruder
   c) H-shaped and frog-shaped
   d) pin and ligature
6. After an archwire is inserted into the slot of the self-ligating miniscrew head, it should be locked into place by:
   a) tying it with ligature wire
   b) rotating the inner portion of the head 45°
   c) attaching it to the Power Plate hook with elastic chain
   d) inserting it into the molar tubes
7. For direct anchorage during molar distalization, the Power Plate should be placed:
   a) with the hooks at the molars and premolars
   b) with the arms mesial to the first molars and premolars

c) with the hooks distal to the first molars
d) with the hooks at the canines

8. The intruder-type Power Plate enables:
a) intrusion of different teeth at the same time
b) forces applied from different directions
c) asymmetrical molar distalization
d) both a and b

Article 3

Al-Okla, N.; Bader, D.; Al-Mulla, A.; Ferguson, D.; and Shaughnessy, T.: *Effect of Photobiomodulation on Pain Perception Among Orthodontic Patients: A Randomized Clinical Trial* (pp. 96-103)

9. Orthodontic forces promote bone remodeling by releasing:
a) prostaglandins
b) interleukins
c) histamines
d) all of the above

10. Orthodontic-related pain typically peaks:
a) immediately after bonding
b) 24 hours after bonding
c) 48 hours after bonding
d) one week after bonding

11. Photobiomodulation (PBM) has been used in orthodontics for all of the following reasons except to:
a) enhance tissue growth and regeneration
b) accelerate treatment
c) enhance long-term stability
d) stimulate bone remodeling

12. This study found significantly lower mean pain ratings for the PBM group at all time points except for:
a) baseline
b) day 1
c) day 2
d) day 3

Article 4

Moura, W.; Bellini-Pereira, S.A.; Cotrin-Silva, P.P.; Gambardela-Tkacz, C.M.; and Henriques, J.F.C.: *Buccal Corridor Changes for Improvement of Smile Esthetics* (pp. 111-119)

13. The current esthetic preference regarding buccal corridors is for:
a) minimal spacing
b) minimal exposure
c) maximum spacing
d) maximum exposure

14. Maxillary transverse deficiency can be corrected by any of the following methods except:
a) rapid maxillary expansion
b) slow maxillary expansion
c) mandibular constriction
d) compensation with dentoalveolar expansion

15. In this case, the low-friction system provided by self-ligating brackets allowed the authors to:
a) reduce elastic forces
b) increase elastic forces
c) use thermally activated archwires
d) accelerate leveling and alignment

16. The dentoalveolar expansion achieved in both arches contributed to:
a) successful leveling and alignment
b) resolution of the moderate lower crowding
c) correction of labial tipping and protrusion of the incisors
d) all of the above