

# CONTINUING EDUCATION

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## Learning Objectives

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

1. Describe the computer-aided design and manufacturing (CAD/CAM) of the LightForce fixed appliance system.
2. Discuss the potential for alveolar bone recovery after substantial molar distalization.
3. Evaluate the use of skeletal anchorage for en masse mandibular distalization in adult patients with severe Class III malocclusions and anterior open bites.
4. Compare methods of managing transmigrant lower canines.

## Article 1

Waldman, A.; Moshiri, M.; and Bonebreak-Jackson, C.: *Introduction to LightForce, Part 1: 3D-Printing the Next Generation of Fixed Appliances* (pp. 500-510)

1. CAD/CAM methods of customizing orthodontic fixed appliances include all of the following except:
  - a) custom slot milling
  - b) three-dimensional wire printing
  - c) additive manufacturing
  - d) robotic wirebending
2. LightForce brackets are manufactured from 3D-printed:
  - a) stainless steel
  - b) nickel titanium
  - c) polycrystalline alumina
  - d) synthetic sapphire
3. In the LightForce system, the location and type

of bracket hooks can be customized using:

- a) a Tooth Movement Table
  - b) Lab Management software
  - c) Appliance Designer software
  - d) LightPlan software
4. Torque control is more precise with LightForce brackets than with conventional brackets because:
    - a) the torque prescription is independent of vertical bracket position
    - b) almost any tooth can be bonded at the start of treatment
    - c) optimal bond strength can be achieved with minimal adhesive
    - d) all of the above

## Article 2

Kim, H.J. and Park, H.S.: *The Potential for Regeneration of Mandibular Lingual Cortical Bone after En Masse Molar Distalization* (pp. 512-521)

5. Studies using cone-beam computed tomography have identified the anatomical limit of mandibular orthodontic movement as the:
  - a) buccal shelf
  - b) infrazygomatic crest
  - c) posterior lingual cortex
  - d) infratemporal fossa
6. Moving the second molars beyond this anatomical limit can cause:
  - a) dehiscence around their distal roots
  - b) gingival recession
  - c) alveolar fenestration
  - d) formation of bone lesions
7. A reduction in the rate of molar distalization

might be used as a clinical indicator of:

- a) root resorption
- b) root-to-cortex contact
- c) gingival recession
- d) bone perforation

8. Bone regeneration may be enhanced by:

- a) mesenchymal cells
- b) periodontal-ligament cells
- c) functional stimulation of the thin alveolar process

process

- d) any of the above

**Article 3**

Arveda, N.; Cremonini, F.; Palone, M.; Derton, N.; and Lombardo, L.: *Skeletal Anchorage for Strategic Treatment of Hyperdivergent Class III Malocclusion in Adult Patients* (pp. 522-531)

9. Conventional fixed appliance treatment of adult patients with both skeletal and dental Class III relationships can achieve an acceptable incisor occlusion, overjet, and overbite primarily through:

- a) bodily distal movement of the mandibular dentition
- b) distal tipping of the lower molars
- c) intrusion of the lower incisors
- d) restriction of mandibular growth

10. The mandibular cortical bone and alveolar ridge tend to be thicker in patients with:

- a) hypodivergent patterns
- b) hyperdivergent patterns
- c) anterior open bites
- d) well-erupted third molars

11. As a miniscrew insertion site with relatively thick cortical bone, and a location that would not interfere with tooth movements, the authors selected the:

- a) buccal shelf at the distobuccal cusp level of the second molar
- b) interradicular area between the first and second molars
- c) retromolar trigone
- d) submandibular fossa

12. In the case shown here, to prevent anterior torque loss during molar distalization:

- a) strategic decompensation of the lower arch was performed
- b) the entire mandibular arch was retracted and rotated as a rigid segment
- c) the lower-incisor brackets were rotated 180°
- d) both a and c

**Article 4**

Giuntoli, F.; Dassatti, L.; Papi, G.; and Migliorati, M.: *Management of a Transmigrant Lower Canine without Skeletal Anchorage in a Growing Class II Patient* (pp. 537-547)

13. Other than third molars, the most commonly impacted teeth are the:

- a) second molars
- b) lower canines
- c) upper canines
- d) lower first premolars

14. Transmigration is the migration of an impacted tooth across the midline by:

- a) more than half its length
- b) more than its entire length
- c) more than 10mm
- d) the width of the adjacent tooth

15. In this case, the ectopic lower canine was erupted using:

- a) a removable appliance
- b) a lingual arch with a cantilever arm
- c) elastomeric chain from an interradicular miniscrew

d) a compressed spring over a stainless steel archwire

16. To avoid root resorption of the ectopic canine and adjacent teeth, the authors:

- a) used sectional wires
- b) left the anterior teeth free during the initial stage of treatment
- c) directed the canine traction force away from the anterior roots
- d) both b and c