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Learning Objectives

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

1. Discuss the efficiency of a 3D-printed custom bracket system.
2. Follow the procedure to design and print a rapid palatal expander using computer-aided design and manufacturing (CAD/CAM) software.
3. Describe a digital method of planning gingival recontouring after clear aligner therapy.
4. Compare the pterygoid area to other sites for the insertion of temporary anchorage devices (TADs).

Article 1

Wheeler, T.T.; Garvan, C.S.; Waldman, A.; and Ford, J.: *Clinical Efficiency of LightForce 3D-Printed Custom Brackets in Diverse Practice Settings* (pp. 273-282)

1. The initial severity of cases in this study was scored according to the:
 - a) Index of Orthodontic Treatment Need
 - b) ABO Model Grading System
 - c) Salzmann Scoring Index
 - d) Severity and Outcome Assessment
2. Compared with the conventional-bracket group, average treatment times for the LightForce group were about:
 - a) 15% longer
 - b) 30% shorter
 - c) 50% shorter
 - d) the same
3. Compared with the conventional-bracket group, the average number of scheduled appointments for

the LightForce group was about:

- a) 15% lower
 - b) 30% lower
 - c) 50% lower
 - d) the same
4. For their LightForce cases, three of the four practices in the study selected:
 - a) .018" slots
 - b) .022" slots
 - c) .020" slots
 - d) a bidimensional setup

Article 2

Yoo, S.W.; Schwindling, F.P.; Gonidis, S.; and Ludwig, B.: *CAD/CAM Design of a Rapid Palatal Expander to Prevent Buccal Molar Tipping* (pp. 283-288)

5. Buccal molar tipping, a common dental side effect of a rapid palatal expander (RPE), can be caused by any of the following factors except:
 - a) inadequate separation of the palatal suture
 - b) positioning of the expansion screw apical to the center of resistance (CR)
 - c) wear and bending of the expansion screw
 - d) deformation of the molar bands
6. The software used to design the custom hinge connector for the authors' RPE is:
 - a) Fusion 360
 - b) OrthoCAD
 - c) Diagnostics
 - d) Invivo
7. The hinge connector transforms a statically indeterminate force into a statically determinate force by:

- a) transferring the force from the molars to the premolars
 - b) disrupting the static connection between the expansion screw and the molar bands
 - c) applying the force at the level of the upper first molars' CR
 - d) all of the above
8. The skeletal-to-dental ratio of expansion at the first molars in the 10-year-old patient shown here was comparable to that of:
- a) traditional toothborne RPEs
 - b) leaf expanders
 - c) fully boneborne RPEs
 - d) surgically assisted RPEs

Article 3

Pinter, C.: *Digital Planning for Gingival Recontouring after Clear Aligner Treatment* (pp. 304-311)

9. Elements of smile esthetics, as listed by Zachrisson, include all of the following except:
- a) crown lengths of the maxillary and mandibular incisors
 - b) incisal-edge contours
 - c) crown torque of the canines, premolars, and molars
 - d) upper and lower lip competency
10. Indications for gingivectomy include:
- a) a wide band of attached gingiva
 - b) a narrow band of movable mucosa
 - c) gingival overgrowth
 - d) both a and c
11. To evaluate the need for gingival recontouring after clear aligner therapy, Spark Approver software integrates:
- a) an intraoral scan
 - b) a panoramic radiograph
 - c) cone-beam computed tomography
 - d) a cephalometric radiograph
12. To simplify the gingival-recontouring proce-

dure and avoid the need for a cutting template, the author uses:

- a) the gingival zenith as a guide
- b) an electrotome
- c) a virtual surgical guide
- d) a punch and cut system

Article 4

Friedländer, I.M. and Chhatwani, S.: *The Pterygoid Anchorage Technique* (pp. 312-321)

13. Extensive molar distalization can be difficult to achieve when using interradicular TADs because of the:
- a) difficulty of miniscrew insertion
 - b) risk of contact between the screws and adjacent roots
 - c) lack of cortical bone
 - d) absence of keratinized mucosa
14. Placing TADs in the maxillary tuberosity:
- a) reduces the risk of damaging the neurovasculature or molar roots
 - b) extends the potential range of orthodontic tooth movement
 - c) allows greater insertion torque
 - d) both a and b
15. For insertion of TADs in the pterygoid region, the authors recommend a minimum miniscrew length of:
- a) 8mm
 - b) 12mm
 - c) 16mm
 - d) 20mm
16. When pterygoid TADs are used, delivery of the orthodontic force below the CR of the entire maxillary dentition promotes:
- a) clockwise rotation of the occlusal plane
 - b) retraction and extrusion of upper incisors
 - c) distalization and intrusion of upper molars
 - d) all of the above