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Learning Objectives

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

1. Follow a procedure for digital bracket positioning prior to indirect bonding.
2. Discuss the combination of a “surgery-first” approach with postsurgical Invisalign therapy.
3. Describe a technique for uprighting horizontally impacted lower second molars using miniscrew anchorage.
4. Compare C-tube microplates with other types of skeletal anchorage for upper incisor intrusion.

Article 1

Layman, B.: *Digital Bracket Placement for Indirect Bonding* (pp. 387-396)

1. In the author’s in-office analysis, when compared with analog bracket placement, digital bracket placement saved lab time amounting to:
 - a) eight minutes per patient
 - b) 21 minutes per patient
 - c) eight minutes per arch
 - d) 200 minutes per year
2. The process of establishing the occlusal plane and defining the upper and lower teeth on the models starts with:
 - a) segmentation
 - b) three-dimensional scanning
 - c) validation
 - d) setting the facial axis points
3. The author recommends that final digital bracket positioning be performed in:
 - a) Communicator
 - b) Appliance Designer

- c) Indirect Bonding Studio
 - d) MiniSTAR
4. Printing flat on the 3D printer platform is not advised because of:
 - a) the need for small supports
 - b) the likelihood of distorting bracket wings and hooks on the model
 - c) the lack of undercuts for retention of the transfer tray
 - d) both a and b

Article 2

Chang, J.; Steinbacher, D.; Nanda, R.; and Uribe, F.: *“Surgery-First” Approach with Invisalign Therapy to Correct a Class II Malocclusion and Severe Mandibular Retrognathism* (pp. 397-404)

5. In a patient with a severe skeletal jaw discrepancy, disadvantages of conventional presurgical orthodontic treatment include all of the following except:
 - a) a lengthy compensation period
 - b) worsening of the facial appearance
 - c) inability to restore functional occlusion
 - d) exacerbation of the malocclusion
6. In-depth and accurate treatment planning for orthognathic surgery followed by Invisalign treatment is facilitated by:
 - a) a virtual model setup
 - b) ClinCheck software
 - c) OrthoAnalyzer software
 - d) cone-beam computed tomography
7. Because this patient would not be wearing fixed appliances during orthodontic treatment, intermaxillary fixation was supplied by:

- a) eight temporary anchorage devices
 - b) temporary archwires
 - c) rigid internal fixation
 - d) a fixed functional appliance
8. Surgical stability was enhanced with the use of:
- a) bonded attachments
 - b) Class II elastics
 - c) seating elastics
 - d) refinement aligners

Article 3

Zhen, J.; Liu, C.H.; Zhang, W.X.; Zhou, L.S.; He, H.X.; Qin, X.; and Lan, Z.D.: *Uprighting Deeply Impacted Mandibular Second Molars with Miniscrew Anchorage* (pp. 405-413)

9. Major etiological factors contributing to the impaction of mandibular molars include all of the following except:
- a) local soft-tissue obstruction
 - b) local hard-tissue obstruction
 - c) local pathology
 - d) abnormal molar development
10. Since impacted lower second molars often present with bony adhesions around their roots, a submerged ankylosed tooth can cause:
- a) gingival necrosis
 - b) apical absorption
 - c) an alveolar bone defect
 - d) any of the above
11. Three-dimensional finite element analysis shows that a greater angle between the direction of orthodontic traction and the long axis of the tooth results in:
- a) greater force
 - b) less rotation
 - c) a longer distance of tooth movement
 - d) both a and c
12. If the impacted molar is surrounded only by alveolar mucosa, orthodontic tooth movement

could result in:

- a) marginal bone loss
- b) gingival recession
- c) periodontal attachment disorder
- d) any of the above

Article 4

Noh, M.K.; Seo, K.W.; Choo, H.; Chung, K.R.; and Kim, S.H.: *Use of C-Tube Microplates for Controlling the Vertical Dimension During Maxillary Incisor Intrusion* (pp. 414-425)

13. The appropriate C-tube microplate design for placement in the anterior maxilla depends on:
- a) the risk of soft-tissue infection
 - b) the orthodontic force vector
 - c) the bony contour beneath the anterior nasal aperture
 - d) all of the above
14. The prebent I-shaped C-tube microplate is affixed with:
- a) two miniscrews
 - b) three miniscrews
 - c) elastic chain
 - d) a long lever-arm retractor
15. The long T-shaped C-tube microplate is affixed with:
- a) two miniscrews
 - b) three miniscrews
 - c) elastic chain
 - d) a long lever-arm retractor
16. To maintain the activation distance as incisor intrusion progresses:
- a) the anchor screws should be repositioned
 - b) the dentition should be pulled toward the C-tube plate with elastic chain
 - c) segmented archwires should be added
 - d) the head of the microplate should be bent upward