

Essentials of Oral and Maxillofacial Surgery

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Fig. 8.3 Cone-beam computed tomography (CT) scan showing malposition of the upper left third molar blocking the eruption of the second maxillary molar.

Fig. 8.4 Supernumerary tooth in the first molar region. This tooth will have to be followed radiologically and should be removed if any signs of pathology, such as progressive root resorption of the first molar, is suspected.

Fig. 8.5 Tooth 48 which is root fractured and is located in the line of a mandibular fracture should be extracted. Tooth 33 is also in the line of a fracture but can be preserved if it does not interfere with repositioning of the bone fragment.

Fig. 8.6 (a) Hypercementosis of the mesial root of the first lower left molar would prompt surgical extraction of this tooth. Closed extraction in this case is impossible. The second molar has a large restoration, and the tooth could be fragile leading to fracture. The option of surgical extraction should be considered. (b) The extent of external root resorption makes extraction of the canine almost impossible due to the risk for fracture. Surgical extraction should be considered. (c) The root configuration of the second lower right molar makes it impossible to remove this tooth without a surgical procedure. (d) The lower first right molar has slender roots that taper towards each other apically. Besides, the cervical portion of the mesial root is narrower than the apical part. This will make extraction difficult and surgical extraction will have to be considered.

Fig. 8.7 (a) Scanogram showing the relation of the mandibular canal with respect to the apices of 37 and 38. Root anatomy makes it highly likely that the third molar would require a surgical extraction. The position of the mandibular canal must be determined before

surgical extraction. (b, c) The distally angulated third molar and configuration of the root make an extraction avoiding a root fracture very difficult. Note the position of the mandibular canal in close proximity to the roots.

Fig. 8.8 (a) The mental foramen is just inferior to the roots of 45 with the anterior loop of the mental nerve visible. (b) The mental foramen is projected in contact with the apex of 45. The lamina dura of the root can be distinctly followed throughout, and this excludes apical pathology. (c) It is difficult to identify the position of the mental foramen from this single radiograph. Before surgical removal of the second premolar additional radiographs are needed to determine the relation to the mental foramen.

Fig. 8.9 (a) Note the proximity of the sinus membrane to 15. The infection around the apex of 15 can lead to destruction of the lower sinus wall and cause an oroantral communication when 15 is extracted. (b) Large maxillary sinus that extends over the apices of the molars with a risk for oroantral communication during extraction of these teeth. (c) Severe caries and loss of tooth substance will make extraction of 26 difficult. The maxillary sinus is in close relation to the apices which have apical periodontitis. This increases the risk for a rupture of the sinus membrane when extraction is attempted.

Fig. 8.10 Surgeon with proper clinical attire: gloves, mask, cap, and protective eye shield. Patient with sterile drape across the chest and a cap. The surgeon is in a standing position for extracting maxillary anterior teeth.

Fig. 8.11 Surgeon with proper clinical attire: gloves, mask, cap, and protective eye glasses. Patient with sterile drape across the chest and a cap. The surgeon is in a standing position for an extraction from the maxilla.

Fig. 8.12 Surgeon with proper clinical attire: gloves, mask, cap, and protective eye shield. Patient with sterile drape across the chest and a cap. The surgeon is in a sitting position with the patient lowered as low as possible so the mouth is level with the surgeon's elbow. The surgeon is in a sitting position for an extraction from the mandible.

Fig. 8.13 The use of a periosteal elevator for releasing and expansion of gingival tissue before using elevators and forceps for extraction. This creates space for both instruments and minimizes soft tissue injury during extraction.

Fig. 8.14 The dental elevator is used as a wedge with the tip being forced into the periodontal space to expand the alveolar bone and force the tooth out of the socket.

Fig. 8.15 The forceps is applied to the crown of a central maxillary incisor. The forceps is placed as far apically as possible so the center of rotation (star) is located as palatally as possible. Continued apical pressure is applied and the incisor is luxated buccally and lingually. Once some mobility is noted, the conical root allows rotational forces to be applied. Buccal, palatal, and rotational forces are used and finally the tooth is lifted out of its socket. The same technique can be used to extract maxillary lateral incisors and canines.

Fig. 8.16 The forceps is applied to a maxillary first premolar which has two thin roots. There is a high risk of fracture if careful technique is not applied. The forceps is placed as far apically as possible to move the center of rotation (star) as far apically as possible. The tooth is then luxated carefully buccally to expand the alveolus, and thereafter the tooth is luxated palatally. Rotational force should be avoided in teeth that have

more than one root. After the tooth has been luxated it can be lifted out of its socket.

Fig. 8.17 Forceps is applied to a maxillary molar with two buccal and one palatal roots. Three-rooted teeth and root divergence will make the extraction difficult. The initial step is to seat the forceps firmly against the tooth and apply apical force to move the rotational center (star) as far apically as possible. Expansion of the sockets is achieved by careful buccal and palatal luxation. Large initial forces should be avoided and can result in uncontrolled fractures of the roots, buccal bone plate or tuberosity. Forces in buccal and palatal directions will enable bone expansion. After the tooth has been luxated the tooth is then carefully delivered out of the socket and mouth buccally.

Fig. 8.18 Preoperative periapical radiograph showing severe caries in a second mandibular molar to be extracted. There is also evidence of a large amalgam filling on the first molar. Because of the high risk of fracture of crowns and filling a surgical extraction may be preferred.

Fig. 8.19 (a) Envelope flap with incision along the gingival margin. (b) Envelope flap with incision along gingival margin and a vertical releasing incision.

Fig. 8.20 The dental elevator is pushed apically along the root axis to expand the periodontal space and thus displacing the root out of its socket. Note the finger rest using the index finger to control the force delivered during removal of the tooth, preventing slipping with the instrument.

Fig. 8.21 Roots are separated by a bur and can then be more easily removed individually.

Fig. 8.22 Surgical removal of maxillary molar roots by elevator after root sectioning. The palatal root has been removed and the buccal roots are separated by an elevator before removal.

Fig. 8.23 Root retrieval using a bur hole into the root (a) will facilitate leverage. Standard technique using curved Warwick James or Cryer elevators (b) to remove interradicular bone and elevated retained root (c, d). Root tips can often be elevated using a Mitchell's trimmer.

Fig. 9.1 Clinical photograph of partially erupted lower left molar with no local inflammation.

Fig. 9.2 Clinical photograph of partially erupted lower left with acute pericoronitis of 38. Notice the "imprint" of 28 occlusal surface.

Fig. 9.3 Diagram of application point depth. How is this measured? From the alveolar ridge to the point of application on the tooth. This will vary depending on the depth and angulation of the tooth. (a) Vertical; (b) mesoangular; (c) distoangular; (d) horizontal. Red line indicates application depth (mm); red dot indicates the application point. The length of the red line indicates the necessary vertical bone removal to reach the application point. (e) Key application points for each angulation: (i) vertical – mid-buccal; (ii) mesoangular – meso-buccal; (iii) distoangular – buccal/disto-buccal; (iv) horizontal – buccal.

Fig. 9.4 The orientation of the tooth and the proximity to the adjacent tooth are important to assess, particularly with regard to distinction between vertical and distoangular orientation which may affect the requirements for bone removal. (a) Maxillary buccally erupted mesoangular 28 with no application space distal