ORAL SURGERY

Extractions

BACKGROUND

When an extraction is required, patients expect that it will be accomplished painlessly and skillfully. Unfortunately, not all extractions are simple and some can be extremely challenging for dentists. The current issues related to exodontia, including its diagnosis, indications, technique, complications, and management, were explored.

DIAGNOSIS AND INDICATIONS

Diagnostic Process

When exodontia is being considered, a thorough diagnostic process must be undertaken to ensure that it's the correct course of action (Table 1). This includes a complete history, clinical examination, and diagnostic tests as indicated. In addition, pre-extraction radiographs can verify the diagnosis and reveal any potential difficulties in store for the dentist (Figure 1).Both pulp sensitivity and periodontium status can also add invaluable information.

Indications

Indications can be considered at the tooth level, the patient's oral level, or the overall patient health status level. Individual teeth should be extracted when there is gross decay, advanced periodontal disease, or fracture. Sometimes patients insist that an apparently painful tooth be extracted, even if it's intact. The history and clinical examination should exclude referred pain from cramped masticatory muscles or sinus disease that is causing the patient discomfort. Trigeminal neuralgia should also be considered. A clear diagnosis of a problematic tooth is required before the tooth is extracted.

When considered from the patient's mouth level, extractions can be done to facilitate orthodontic treatment in the presence of a tooth size–jaw size discrepancy or as part of a prosthodontic plan. Such extractions require a careful workup and fully informed consent. Often showing the patient and parents study models will clarify the situation.

Table 1. Harm Benefit Analysis for Surgical Procedures – Exodontia

	Benefit	Harm
Procedure performed		
Exodontia	control pain resolves problem	incomplete procedure dry socket damage
Procedure not performed		
No Extraction	saves tooth avoids procedure avoids complications	spreading infection later complications

(Courtesy of Sambrook PJ, Goss AN: Contemporary exodontia. *Austral Dent J* 63:S11-S18, 2018.)

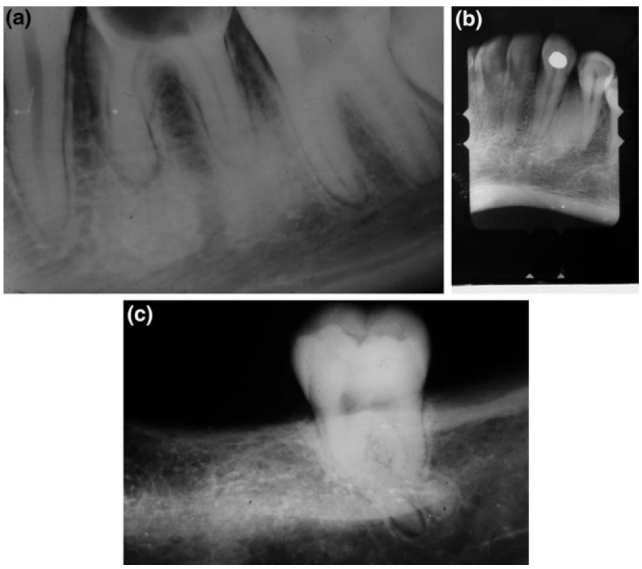

Figure 1. Preoperative radiographs showing potential difficulty in extraction. **A,** Cemental hyperplasia and condensing osteitis. **B,** Enostosis. **C,** Dilacerated roots. (Courtesy of Sambrook PJ, Goss AN: Contemporary exodontia. *Austral Dent J* 63:S11-S18, 2018.)

Extractions can also be done to improve the patient's overall health. Situations of this type include oncology patients who require head and neck radiotherapy or chemotherapy.

Medically Compromised Patients

It's essential that the patient's medical condition, including current medications, be evaluated before beginning an extraction. Among the situations of most concern are those that have an impact on healing, such as diabetes, steroid medication use, use of antiresorptive medications, and oncologic conditions requiring head and neck radiotherapy. Patients taking medications that can cause increased bleeding, such as anticoagulants and antiplatelet drugs, should be evaluated using a benefit/risk profile. In addition, the dentist should be prepared to manage medication-related hyposalivation problems, which can be complicated by difficulties in denture wearing, cognitive decline, and the need for continuing medications to address chronic pain, such as narcotic and antidepressant medications. Often consultation with the medical care provider is appropriate for these patients.

MANAGEMENT

Pain Management

Pain control is the first concern when an extraction is planned. Each of the choices must be considered in the light of a harm/

benefit analysis. Usually, local anesthesia is selected, but oral sedation with benzodiazepines can be a useful adjunct measure. Dosage should be determined based on the patient's level of anxiety, previous experience with the medication, and complexity of the procedure. Patients receiving these agents should not drive and will require an escort. Patients may also benefit from the use of nitrous oxide and oxygen, but penthrox use remains questionable. All factors, including possible complications, must be weighed in the decision regarding pain management.

Analgesia after the completion of extraction is usually required transiently and accomplished with over-the-counter (OTC) paracetamol and/or nonsteroidal anti-inflammatory drugs (NSAIDs). Patients can be consulted about what seems to work best for such pain and what they don't like or don't find useful. Patients should not use OTC medications containing codeine because these are subtherapeutic doses, the codeine is associated with a wealth of side effects, and about 1% of patients are rapid metabolizers who run a high risk for dependence.

Antibiotic Prophylaxis

In Australia, the use of prophylactic antibiotics is not considered necessary for patients with artificial joints. In addition, the indications for these agents are greatly restricted for cardiac and various other conditions. As a result, the prescription of amoxicillin 2 g has been reduced by 75% but has been accompanied by no discernible increase in the occurrence of endocarditis.

No antibiotics are required after routine extractions in healthy patients. Even immunocompromised patients have been shown to have no evidence of a reduction in post-extraction infection associated with prophylactic antibiotic use.

Technical Considerations

Care should be taken to preserve the residual alveolus as completely as possible. This includes both the hard and soft tissues. The traditional extraction method includes gripping, rocking, and twisting the tooth via forceps or elevators. If the force is too great, the tooth or alveolus can be broken. Multirooted teeth should be sectioned into component parts to conserve the alveolus. Other methods to ensure the alveolus is conserved include replacement of fractured buccal plates using mini screws and a mucosal flap or a small bone graft.

Complications

Among the possible complications is a broken tooth or one that cannot be removed. Often this indicates a faulty decision-making process. It's often best to commence the extraction as a surgical procedure, raising a mucoperiosteal flap and sectioning the tooth. If the root tip fractures, it may be left in place if it remains vital, is less than 5 mm, and is near a vital structure such as a nerve. If it can be removed, the best course is to use a small bony window to maintain alveolar bone height. The residual shape of the alveolus should also be considered.

The most common complication is alveolar osteitis or dry socket. This painful condition occurs in 3% to 5% of cases, is self-limiting, and resolves in 2 to 3 weeks. Risk factors include a traumatic extraction, smoking, posterior teeth, and mandibular site; however, dry socket can occur despite the absence of any risk factors. If signs and symptoms extend beyond the alveolus, the condition is actually a spreading infection and not dry socket. If excessive granulation tissue is present, it may represent residual pieces of tooth or bone.

Sometimes there is penetration into or loss of tooth roots into the sinus with posterior maxillary teeth. When such teeth are extracted, they should be evaluated to determine if they are complete. Any oro-antral communication can be revealed by the process of holding the patient's nose while he or she blows, then listening for the passage of air or bubbles. With an intact tooth and small communication, the socket and suture can be compressed and closed, with instructions to the patient not to blow the nose or create a negative pressure. For a large communication, usually more than 4 mm, or an incomplete tooth, the patient should be referred to an oromaxillofacial surgeon.

If the tooth or root has been displaced into the soft tissues, it's likely the force used was excessive. The probability of infection in these cases is high, so these patients should also be referred to a specialist, with antibiotic coverage provided if the wait to be seen is extended.

Clinical Significance

For the dentist, exodontia is a cornerstone of his or her practice. Each practitioner should carefully approach the process with a complete history, examination, radiographic assessment, and benefit/risk analysis before making the decision to extract a tooth. The patients who require extraction will include those who suffer from multiple chronic conditions as well as those who are relatively healthy. In each case, the dentist should evaluate the circumstances and contact the patient's medical health care provider as necessary. If the procedure proves to carry a high risk for failure, the patient should be referred for specialist care to an oromaxillofacial surgeon.

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