

ORAL SURGERY FOR PEDIATRIC PATIENTS..2

INTRAORAL SOFT-TISSUE PROCEDURES

MUCOCELES

A mucocele or mucous retention cyst is a benign pathologic lesion resulting from the extravasation of saliva from an injured minor salivary gland. The collection of extravasated fluid develops a fibrous wall around itself, forming a pseudocyst. The lesion can fluctuate in size, depending on its fluid-filled state. A decrease in lesion size is frequently associated with a history of drainage of a thick viscous fluid. The lesion is non-painful, soft, doughy, and fluctuant to palpation. Clinically, the overlying mucosa may have the same coloration as the lower lip or have a bluish hue. Lesions of longer duration may appear firmer and fibrotic and be difficult to distinguish from a fibroma. It most likely results secondary to a traumatic event that, in most situations, goes unrecognized. The lower lip is the most common location.

The basic premise in excising a mucocele is to remove the fibrous capsule and any associated minor salivary glands. For a lesion within the lip, the lip is frequently averted and stretched. This stabilizes the lesion. An elliptical incision (staying within the confines of the lesion) is made in the lip perpendicular to the fibers of the orbicularis oris muscle. By a combination of sharp and blunt dissection, the fibrous capsule of the lesion is separated from the surrounding tissue. If done properly, the mucocele can be removed intact. All minor salivary glands surrounding the lesion and within the surgical field should be removed to minimize the potential for recurrence.

Hemostasis is controlled and closure is accomplished with a 4-0 resorbable suture. The lip is a prominent area, and it may be challenging for the smaller child to not disturb the wound during healing. The suture knots should be buried, and an extra suture to ensure integrity of the closure may prevent the wound from dehiscing.

FIBROMA AND PYOGENIC GRANULOMA

Common lesions found in the pediatric patient. If the lesion is small, it may be excised completely, and the specimen submitted for histological evaluation. This can usually be accomplished by an elliptical incision made within normal tissue around the lesion. The depth of the dissection is determined by the appearance and feel of the lesion. Minor modifications to this basic technique are dependent on the differential diagnosis. For example, removal of interproximal tissue and scaling of teeth may be

indicated when a pyogenic granuloma is excised, to ensure complete removal and minimize recurrence.

INCISIONAL BIOPSY

Incisional biopsies are performed to confirm a diagnosis by removing part of a lesion. It is preferable that the oral surgeon who is going to treat the lesion performs the incisional biopsy.

EXCISION BIOPSIES OF NON-ATTACHED MUCOSA

Small lesions of the oral mucosa are removed by excisional biopsy, which involves the removal of an ellipse of tissue including the lesion. While block anesthesia may be beneficial, infiltration around the lesion aids haemostasis and provides a dry operating field. The long axis of the ellipse is made parallel to the direction of muscle pull, and it is best to hold the specimen with a suture passed under it to avoid crushing, which could render the specimen useless for histological examination. All tissue surgically removed should be placed in a solution of 10% formal saline (not in water) and transported to the laboratory for histological examination. Primary closure is preferred and the biopsy site is sutured with a 4/0 resorbable suture. Lesions that are obviously benign and are not interfering with function or causing emotional distress can be left in the young child and removed, if necessary, at a later date.

DENTAL INFECTION:

Infections can progress rapidly in both the pediatric patient and the adult patient; however, the pediatric patient is especially susceptible to becoming rapidly dehydrated and systemically ill from what may appear to be a relatively minor infection. Any collection of pus requires drainage. Fortunately, children usually attend the dentist (or doctor) early with odontogenic infections that have spread to involve the fascial planes of the face and typically, these present as a cellulitis.

When treated inappropriately with repeated antibiotics and without removal of the cause (i.e. extraction of the offending tooth), or with particularly virulent organisms, then an abscess may develop. An abscess is a collection of pus within a cavity. An abscess will not resolve by itself and pus will track to the most dependent point and in the case of head and neck infections; extraorally or between tissues planes. This may be life-threatening and any posterior spread of pus from a tooth in the upper arch may spread from the canine fossa to the antrum → the pterygopalatine fossa → the orbit → the cavernous sinus and the brain. A submandibular abscess may spread to the floor of mouth → the buccal

spaces → the pterygomandibular space → the parapharyngeal spaces and neck and ultimately the mediastinum.

The following cases represent surgical emergencies and require urgent and immediate care and/or referral:

- A floor of mouth swelling, particularly those that have crossed the midline.
- Dysphagia or respiratory obstruction.
- Trismus.
- A fluctuant enlarging swelling in the head and neck.
- An enlarging swelling associated with acute fever, particularly a spiking temperature.

Clinical Presentation

Cellulitis

- A hard, brawny swelling.
- Diffuse and tender.
- Warm to touch.

Abscess

- A soft, warm and painful swelling, usually fluctuant.
- Usually circumscribed, may be very well localized in the mouth or more diffuse if extraoral.

The Principles of the Treatment of Acute Infection are to:

- (1) Institute drainage.
- (2) Remove the cause is essential to cure an orofacial infection arising from a dental source. This usually means extraction or endodontic therapy.
- (3) Prevent spread and restore function.
- (4) It is important to remember that acute infections are painful and that analgesics, the use of paracetamol elixir is usually sufficient,
- (5) Antibiotics should be prescribed.
- (6) Similarly, it is important that a child suffering from an acute infection is adequately hydrated. If the infection has restricted the intake of oral fluids due to dysphagia then admission to hospital for intravenous fluid replacement is required.

Surgical Technique

Remember that such infections are serious and potentially life-threatening and prompt referral to an experienced surgeon is warranted.

Anaesthesia

Obtaining adequate anaesthesia may be difficult, so block injections are preferable.

Where there is a significant swelling either intra-orally or extra-orally, general anesthesia will be required to adequately manage and protect the airway and to undertake the procedure.

Intra-oral

- Protect the airway with gauze from pus or irrigating solutions that may go down the throat.
- Raise a flap and allow drainage of subperiosteal pus.
- An incision into the buccal or labial sulcus may also be required to establish drainage of any pus above periosteum.
- Irrigate with copious sterile saline or a 50:50 mixture of povidine iodine and water.
- Suturing a drain through the incision may be required to maintain drainage.
- Treatment of the accused tooth by endodontic treatment or extraction.

Extra-oral

Extra-oral drainage is typically only required for mandibular swellings.

- Prepare and drape the skin.
- Take a sample of pus for culture and antibiotic sensitivity testing.
- Incise over the most dependent point of the abscess with the No.15 blade. Hilton's method is used to incise into the abscess along any skin folds and along a line inferior to (if possible) the lower border of mandible. The incision must avoid the marginal branch of the facial nerve, the facial artery and the lower lobe of the parotid gland.
- Enter the abscess cavity with a pair of haemostats, opening the beaks of the forceps to bluntly dissect and establish a flow of pus. It may be necessary to investigate other tissue spaces such as the sublingual, submasseteric or pterygomandibular spaces.
- Copiously irrigate the cavity.
- Suture a drain into the depth of the cavity for few days. The drain keeps the wound open and patent, facilitating irrigation (if necessary) and spontaneous drainage of the wound and preventing a recurrent collection from developing.
- Place a dressing over the skin.

FRENAL ATTACHEMENT

1. Maxillary Labial Frenectomies

Surgical procedure is only performed when it has been observed that high maxillary labial frenum is causative factor for diastema between maxillary central incisors until permanent canines have erupted, i.e. until the age of 11 to 12 yrs. of age.

2. Lingual Frenotomy

A lingual frenotomy (simple cutting of the frenulum) is a procedure indicated in those infants where a significant tongue-tie is affecting breast-feeding. A lactation consultant or speech pathologist must assess attachment and feeding practices in order to determine the need for a frenotomy. It is normally performed on babies from birth to 4 months of age. Local anesthesia is usually not required.

A lingual frenotomy is simple and quick with few complications. The frenum is usually a very fine translucent tissue in babies, although clinicians should be aware of the risk of a small amount of bleeding and possible postoperative infection. To minimize the risk of infection, parents are advised to sterilize/disinfect any nipple shields, pacifiers and bottles adequately.

Clinical procedure

- The infant is wrapped (swaddled) to minimize movement.
- A Lorenz retractor (grooved) director is used to retract the ventral surface of the tongue and to stretch the lingual frenulum.
- Blunt-ended scissors are used to release the lingual frenulum taking care not to injure the submandibular ducts or the ventral surface of the tongue. The cut is made superior to Wharton's (submandibular) duct extending posteriorly but NOT involving muscle.
- Once the frenum is released, the baby is immediately placed on the breast/bottle to begin feeding. Postoperative feeding helps to comfort the baby and assists in haemostasis.
- Once haemostasis is achieved, the baby can be discharged.

Reports indicate that this simple procedure leads to successful breast-feeding in most cases.

3. Lingual Frenectomy

A frenectomy is normally carried out under local anesthesia in older children and under general anaesthesia in younger children.

Clinical procedure

- Local anaesthesia is administered into the tip of the tongue and the floor of the mouth on either side of the frenum.
- The tongue may be secured with a large stay suture through the dorsal surface to retract and control the tongue.
- A small curved haemostat is clamped parallel to the tongue from the insertion of the lingual frenulum at the tongue tip to a point at the greatest depth and most inferior aspect of the tongue. Iris scissors are used to cut along the jaws of the haemostat, releasing the frenulum. A small

transverse (horizontal) incision at the base of the haemostat allows for an extension of the incision and lengthening of the base of the tongue.

- The haemostat is then removed and the surgical site is closed with 4-0 resorbable sutures on the ventral surface of the tongue. Do not place sutures in the floor of the mouth as it leads to scarring.
- Postoperative instructions should include analgesia if required.

Tongue-tie exercises as prescribed by the speech pathologist are commenced 2–3 days postoperatively.

4. Mandibular Labial Frenectomy

Is indicated when a lower lip tie put too much tension on the gingiva, giving cause to potential future problems or the lip tie is in an unusual eccentric position probably by a minor genetic defect.

HARD TISSUE SURGERY

DENTOALVEOLAR CYSTS:

A cyst is a tissue cavity that is enclosed by a membrane (epithelium) and may consist of several chambers, usually containing a liquid/mushy content.

In general, the cystectomy is the treatment of choice for cysts in the area of the head/neck. With the exception of very large cysts or if, for example, important anatomical structures are located in close proximity of the cyst, which could be damaged during the removal of a cyst, a so-called, "Cystostomy" is first performed.

ERUPTION CYST

Eruption cysts are really dentigerous cysts that present as swellings of the alveolar mucosa. They may precede the eruption of both primary and permanent teeth. When filled with blood they are often called eruption haematomas. It is caused by eruption trauma, usually seen in erupting molar areas, it usually resolves spontaneously when the involved tooth penetrates the gingival tissue.

IMPLANTOLOGY

The use of dental implants in children is contraindicated except under circumstances where severe psychological stress merits such treatment. There are 3 reasons for avoiding implants in young patients:

- The implant does not move with the growing alveolus – it acts as an ankylosed tooth. Thus implants should be placed until vertical growth of the bone is virtually complete (around 18 years of age). The exception of this rule is the lower intercanine region which can receive implants earlier in exceptional cases of hypodontia e.g. X-linked ectodermal dysplasia.
- Implants can interfere with normal growth of the bone.

- Young bone does not behave in the same way as mature bone. Due to squashing and crushing, the axis of an inserted implant may deviate widely from the axis of tap. In addition, the use of teeth for autotransplantation is often a viable alternative in young patients.

ODONTOMA

Odontomas are the most frequently occurring odontogenic tumors seen in pediatric patients. They are frequently discovered when the patient presents for evaluation of an unerupted tooth or incidentally during routine radiographic examination. There are two types of odontomas: compound and complex. A compound odontoma represents multiple toothlike structures. A complex odontoma has irregularly shaped masses of enamel with no anatomic resemblance to a tooth. Treatment for an odontoma involves simple enucleation and curettage. Enucleation is usually carried out intraorally. A mucoperiosteal flap of sufficient size is elevated to expose the lesion.

FACIAL INJURY

Signs and Symptoms of Maxillary or Midface Fractures

(Patients may present with any or all of the following.)

- Altered occlusion
- Numbness in the infraorbital nerve distribution
- Double vision
- Periorbital ecchymosis (bruising)
- Facial asymmetry or edema
- Limited mandibular opening
- Subcutaneous emphysema (skin cracking upon palpation)
- Nasal hemorrhage
- Ecchymosis of the palatal or buccal mucosa
- Mobility or crepitus upon manipulation of the maxilla

Signs and Symptoms of Mandibular Fractures

(Patients may present with any or all of the following.)

- Mandibular hemorrhage
- Numbness in the mental or inferior alveolar nerve distribution
- Altered occlusion
- Ecchymosis or abrasion of the chin
- Ecchymosis of the floor of the mouth or buccal mucosa
- Periauricular pain
- Mandibular deviation on opening
- Mobility or crepitus upon manipulation of the mandible.

Initial management of facial fractures should be directed toward:

- *Immobilization of fractured segments*
- *Early antibiotic therapy for open fractures*
- *Pain control.*
- *Definitive treatment should then be performed by a qualified specialist.*