



## Chapter 70 – Oral Medicine

### Episode Overview:

1. How are teeth traditionally numbered?
2. Describe the classification and management of tooth fractures
3. Describe the method for reducing a jaw dislocation? What is the usual direction of the dislocation?
4. Explain Ludwig's Angina and its management
5. List 3 complications of maxillary (eg canine) tooth infection
6. Describe management of Dental Caries vs Periapical abscess
7. Describe your approach to Acute Necrotising Ulcerative Gingivitis
  - a. What is Vincent's Angina?
  - b. What is cancrum oris?
8. Rapid Fire treatment for the following:
  - a. Post root canal pain
  - b. Cracked Tooth or Split root syndromes
  - c. Maxillary Sinusitis
  - d. Atypical Odontalgia
  - e. Post extraction pain
  - f. Neuropathic pain
  - g. Temporomandibular Myofascial Pain Dysfunction Syndrome
  - h. Pericoronitis
  - i. Aphthous Stomatitis

### Wisecracks

Spot diagnosis!

### Rosen's in Perspective

The oral cavity and associated facial structures, AKA stomatognathic system, is made up of the:

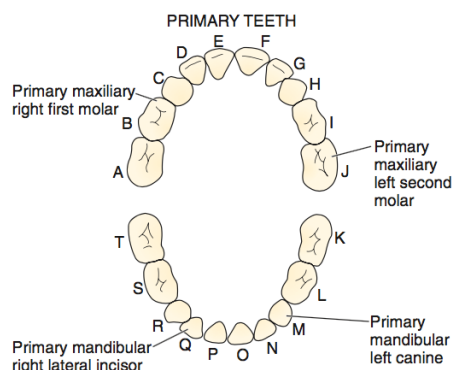
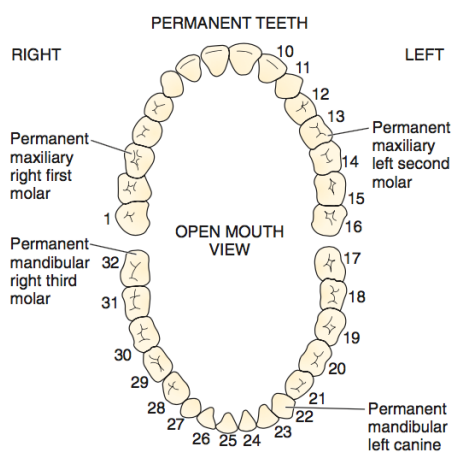
- Mandible
  - TMJ - diarthrosis surrounded by fibrous capsule
  - Horizontal Rami
    - Ascending Rami
      - Anterior:Coronoid
      - Posterior:Condylar
- Maxilla
- Muscles of mastication
  - Mandibular Elevators
  - Mandibular depressors
- The dental unit (teeth); the attachment apparatus that anchors teeth
  - Pulp/Dentin/Enamel
  - Central incisor - Lateral incisor - Canine - 2 premolars - 3 molars

- Cementum - periodontal ligament - alveolar bone
- Gingiva
- And other soft tissues of the oral cavity

## 1) How are teeth traditionally numbered?

Numbered 1-32, with 1 starting upper right third molar, left upper 3rd molar is 16, eventually ending at lower right third molar number 32

Number like the patients teeth are a book. Start from left top and ‘read’ top to bottom’.  
 THINK UPRIGHT - start numbering from upper right molar



**Figure 70-3.** Identification of teeth, adult and child. Conventional numbering starts with the upper right third molar 1 to the upper left third molar 16; lower left third molar 17 to the lower right third molar 32. For the primary dentition, A to J and K to T. (From Roberts J, Hedges J: Clinical Procedures in Emergency Medicine. Philadelphia, Elsevier, 2010, Fig. 65-2, p 1219.)

## 2) Describe the classification and management of tooth fractures

SPACED Repetition: Remember Episode 42, we covered the Ellis classification

Kicking it back old school to episode 42, let us remember Treatment:

- Ellis classification:
  - Ellis I - enamel only, can have outpatient follow-up
  - Ellis II - enamel and dentin visible (yellow substance of tooth), can have outpatient follow-up but can benefit from covering/protection of dentin
  - Ellis III - enamel, dentin, and pulp visible (small red line or dot), need early referral to dentist or endodontist

**Table 70-1** Classification of Tooth Fractures

Tooth Injuries	
<b>Crown Fractures</b>	
Enamel infraction	A crack or craze line in the enamel.
Uncomplicated crown fracture	Fracture of enamel and dentin only.
Complicated crown fracture	Fracture involving enamel and dentin with pulp exposure.
<b>Root Fractures</b>	
Crown-root fracture	Fracture through the crown and extending into the root (oblique or transverse).
Intra-alveolar root fracture	Fracture of the root within the alveolar bone (diagnosed with a periapical radiograph; tooth may be mobile on clinical examination).
<b>Luxation Injuries</b>	
Conussion	Blunt trauma to the tooth, but it does not change position.
Subluxation	Slight mobility but no significant displacement from the socket.
Intrusion	The tooth is displaced apically into the alveolus.
Extrusion	Tooth is displaced out of the socket but is still attached by periodontal ligament fibers to the alveolar bone.
Avulsion	The tooth has been completely dislodged out of the socket and has no attachment to the alveolar bone.

Adapted from Fuks AB, Camp J: Crown fractures: A practical approach for the clinician. Chapter 3 in Berman LH, Cohen S, Blanco L: A Clinical Guide to Dental Traumatology. St Louis, Mosby, 2007:4-5.



### What is the management of an avulsed tooth?

- The tooth should be placed in saline or ToothSaver solution. The tooth can be gently rinsed but should not be wiped as this can remove the periodontal ligament and cause failure of re-implantation
- Tooth is re-implanted in the socket with firm pressure until it “clicks” into place - this may often require rotation or angling of the tooth to follow the course of the root, and local anesthesia is generally required for the patient. The re-implanted tooth should be secured with a splint and the patient referred to a dentist for follow-up
- Optimum re-implantation time is less than one hour (66% success), and viability falls off rapidly after 3 hours (20% success)
- Beware aspirated teeth, and consider radiographic investigation for aspirated teeth

### What is a luxated tooth? How is it managed?

- Luxation of a tooth is loosening of or displacement of the tooth in the socket, without avulsion
- Four major types:
  - **Subluxation** - loosened tooth
  - **Extrusive** - partial displacement of the tooth out of the socket, along the axis of the tooth
  - **Lateral** - displacement of the tooth eccentrically (not along the axis of the tooth), often accompanied by alveolar socket fracture
  - **Intrusive** - displacement of the tooth deeper into the socket, along the axis of the tooth.
- Management is repositioning and splinting of the tooth and referral to a dentist for follow-up

### What is an alveolar ridge fracture?

- Fracture through the ridge of bone that forms the sockets for the teeth (the dental alveoli).
- Can result in a group of teeth being dislodged or displaced.
- Requires reduction and splinting of teeth, and follow-up with a dental or maxillofacial surgeon.

### 3) Describe the method for reducing a jaw dislocation? What is the usual direction of the dislocation?

#### MORE SPACED Repetition - Episode 42

- Jaw dislocation is normally anterior (mandibular condyle is displaced anteriorly from the mandibular fossa of the temporal bone). This is because the joint allows some degree of translation, and the anteromedial capsule is formed of loose, weak synovial tissue.
- Dislocation can be unilateral or bilateral.
- Spasm of the muscles of mastication prevents reduction of the TMJ
- Reduction is accomplished by providing sedation and analgesia (helps relieve spasm), placing the thumbs in the buccal sulcus bilaterally, and providing downward



traction on the mandible while rotating the chin upwards and backwards (video here: <https://www.youtube.com/watch?v=-Zm7ev8LUAA>)

- Also extra-oral technique - less risk of being bitten
  - <https://m.youtube.com/watch?v=N3edJvp5DoA>
- Gorchynski et al. recently published a technique for auto-reduction of jaw dislocations where the patient rolls a syringe between their molars:
  - Gorchynski J, Karabidian E, Sanchez M. The "syringe" technique: a hands-free approach for the reduction of acute nontraumatic temporomandibular dislocations in the emergency department. The Journal of emergency medicine. 47(6):676-81. 2014.  
(<http://www.ncbi.nlm.nih.gov/pubmed/25278137>)

#### 4) Explain Ludwig's Angina and its management

A simple dental caries can kill you!!! Well... kind of. Let's back up and describe the normal progression of dental disease:

Cariogenic bacteria form **plaque**, produce acid to **decalcify enamel**. Once the gain access to pulp, all hell breaks loose. Eventual necrosis of the tooth will happen, with formation of **periapical abscess**. Usually these infections stay isolated to alveolar bone, but they can extend into the subperiosteal space. Just a hop-skip and a jump to the fascial layers and boom, badness.

Once Infection **extends into the submaxillary, sublingual, and submental spaces** with displacement of tongue, we have **Ludwig's angina**.

Treatment is similar to other skin and soft tissue infections of the head and neck:

- Early airway protection - approach as DIFFICULT AIRWAY
  - > Avoid neuromuscular induced paralysis
- If presence of trismus, may need surgical airway as not always responsive to paralysis (internal pterygoid or masseter muscle spasm)
- Broad antibiotics to cover hemolytic strep, mixed strep-staph and bacteroides species. Usually recommended High-dose antibiotic therapy, such as 24 million units penicillin daily Q 4hrs IV plus metronidazole 1 g IV load, with 500 mg IV q6h, Clindamycin 900 mg q6h also is effective but as always, if very ill consider going broader (eg Mero + Vanco + Clinda)
- CT
- OR

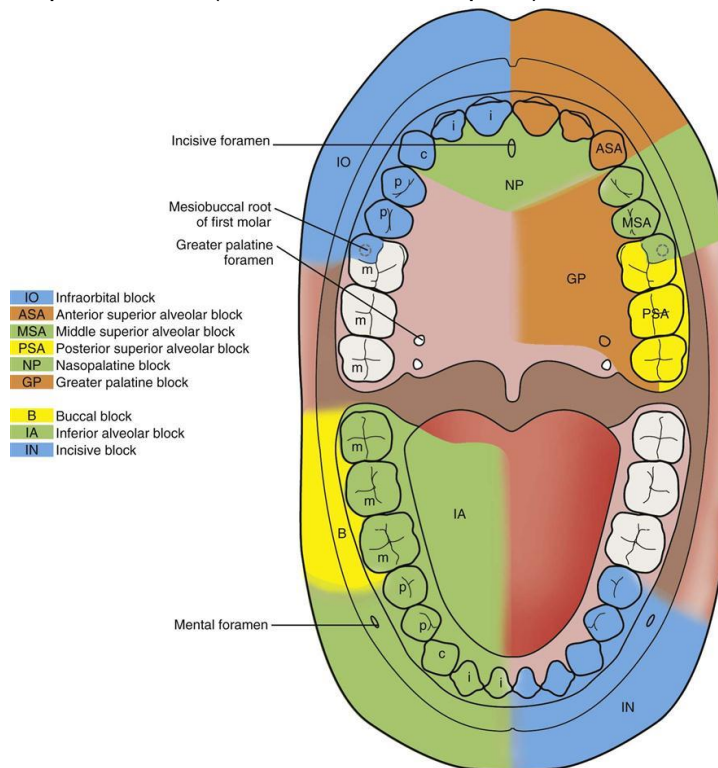
#### 5) List 3 complications of maxillary (eg. canine) tooth infection?

1. Intracranial extension of abscess
2. Periorbital cellulitis
3. Cavernous Sinus Thrombosis

## 6) Describe management of Dental Caries vs Periapical abscess

**Dental Caries:** Locate tooth by percussion or having patient bite down on tongue depressor  
NSAIDS are mainstay of treatment. Consider local/regional blocks for rescue therapy  
May consider short course of synthetic opioids, as a take home, but falling out of favour

\*\*\*Pearl\*\*\*: If the tooth is exquisitely tender to palpation and insensate to hot / cold temp, this is likely form pulp demise and HIGH LIKELIHOOD OF PERIAPICAL ABSCESS. U/S can help to confirm (93% Sens, 100% spec?)



### Simple Dental Abscess:

Step 1: Anesthetize area - via apical nerve block or superior / inferior alveolar blocks.  
Rosens recommends lido w/epi, but consider longer acting bupivacane for patient comfort.

Checkout this link for more info: <http://emedicine.medscape.com/article/82850-overview#a1>

Step 2: Stab incision through gingiva, extend down through periosteum of alveolar bone

Step 3: Blunt dissection with mosquito hemostat

Step 4: Consider placement of penrose or iodoform if space permits. Secure with 4-0 suture.  
Drains to be removed in 24-48hrs (by Dentist preferably!)

Step 5: Old recommendations to over with Penicillin V 250mg QID or if pen allergy  
Doxycycline 100mg BID for 10 days. However, antibiotic use may not be needed if adequate drainage is achieved. Counsel for importance of warm saline rinses regularly.



## 7) Describe your approach to Acute Necrotising Ulcerative Gingivitis

ANUG (also known as trench mouth) is a bacterial invasion of non-necrotic tissue! Think cellulitis of the gingiva, except with a gray pseudomembranous layer forming in the mouth (usually ant incisor or molar region)

Mainstays of treatment are:

- a. Analgesia
  - In order to start brushing and eating again, need to tx pain. Systemic Tylenol / NSAIDS combined with topical viscous lidocaine
- b. Antibiotics
  - Penicillin or tetracycline (avoid in children with primary teeth due to staining)
- c. Improved Oral hygiene & Rinses
  - Regular brushing, warm saline rinses, and may consider dilute 3% hydrogen peroxide (avoid in patients who cannot avoid swallowing)
- d. Referral to dentist or periodontist
  - They will start feeling better, but still need further specialist care. Make sure they follow-up with a dentist, and that you document those instructions clearly

### What is Vincent's Angina?

This is ANUG that extends into the fauces and tonsils

### What is cancrum oris?

ANUG with erosion through teeth and extension into lips and buccal mucosa

## 8) Rapid Fire treatment for the following:

There is a common theme here: we are not dentists. Most of these issues need to be followed or assessed by a general dentist

### Post root canal pain

- Attempt nerve block
- If no improvement **may need** to open root canal to relieve buildup of gas / pressure (with... a power drill? Outside my scope of practice...)
- Adjust occlusion (so they don't press down on tooth)
- Refer to Dentist / Surgeon who performed the procedure

### Cracked Tooth or Split root syndromes

- Symptomatic analgesia (Tylenol, NSAIDS)
- Refer to Dentist



## Maxillary Sinusitis

- Masquerades as tooth pain - NSAIDS and Tylenol
- CT +/- Antibiotics f/u with ENT
- More on this in future chapters

## Atypical Odontalgia

- **Make sure you're not missing an MI, temporal arteritis or other major referred pain cause**
- Refer to Dentist

## Post extraction pain

- NSAIDS
- Look for dry socket aka acute alveolar osteitis
- If present, nerve block, irrigation, daily packing changes
- Antibiotic use is controversial (Most dentists cover with pen or clinda or doxy)
- Refer to Dentist / Surgeon who performed the procedure

## Neuropathic pain

- Often Tic douloureux / trigeminal neuralgia - consider Carbamazepine, referral to pain specialist / GP
- Migraines & Cluster headaches - standard Tx +/- High flow O2
- Don't miss Myocardial Ischemia, Giant cell arteritis (Temporal arteritis), and Polymyalgia Rheumatica

## Temporomandibular Myofascial Pain Dysfunction Syndrome

- Imaging w/ xrays not helpful
- Heat pack 4-6 times / day
- NSAIDS
- Soft diet
- Benzodiazepines for muscle relaxation
- For refractory cases refer to Oral maxillofacial surgeon

## Pericoronitis

Eruption of wisdom teeth causing trauma and inflammation of surrounding gingiva

- Warm Saline irrigation +/- hydrogen peroxide rinses
- Antibiotics (strep viridans and anaerobes) Pen / Doxy / Metronidazole
- I&D abscess PRN \*WATCH out for big red: Internal carotid is close to this area\*
- Oral maxillofacial referral



## **Aphthous Stomatitis**

Usually self limiting condition, but make sure you don't miss systemic causes of oral ulcerations: Hand-foot-mouth / Herpetic stomatitis/ HIV / Syphilis / TB / Wegner's / Scleroderma / Lupus / to name a few

- Symptomatic care
- Saline and Hydrogen peroxide rinses
- Mix of Benzocaine and diphenhydramine gel
- Rx for steroid - antibiotic ointments (Kenalog or orabase)
- F/U with GP to ensure resolution

## **WiseCracks**

### **Case 1: Spot Diagnosis!**

32yo male with obvious right sided deep space neck infection and chest pain, SOB and severe septic shock.

Remember: Deep fascial layers of neck extend into the mediastinum!!!!

This is a case of necrotising mediastinitis, and is a known complication of odontogenic infections.

Intubate, resuscitate, and get those antibiotics in early (think 3rd gen Ceph, Vanco, Clinda. Consider Antifungal or Amikacin and if not responding or from area of high pseudomonas resistance.)

These patients need an EFAST of their chest and pericardium, and a CT of their Head/Neck/Chest to characterise the infection and for pre-op planning for your surgical colleagues

**Check out this great case report:**

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3289106/>