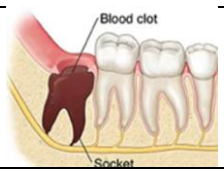
Impaction and Extraction Facts

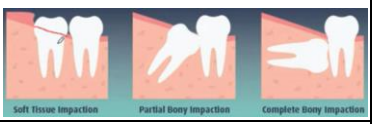
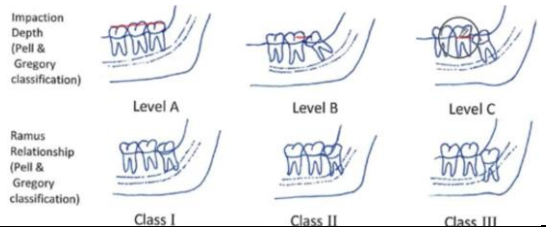
Indications for Exo	- Caries - Endo - Perio - Ortho - Cracked Tooth - Supernumerary - Pathology - Questionable teeth **before** Radiation
Contraindications (relative)	- Poorly controlled Diabetes - End Stage Renal Disease - Unstable Angina - Leukemia and Lymphoma - Hemophilia or Platelet disorders - Hx of Head and Neck Radiation - Hyperbaric Oxygen Before + After Exo - IV Bisphosphonates - Pericoronitis (Tx infection 1st)

Impacted Teeth	= Fail to erupt into the dental arch within the expected time - Mandibular 3rd Molars > Maxillary 3rd Molars > Maxillary Canines Primary Etiology: -> Inadequate arch length 
Congenitally Missing Teeth	= Teeth that have failed to form 3rd Molars (8) > Max Lateral (U2) > Mand 2nd Premolar (L5) 
Complications of Extractions	
Subperiosteal Abscess	= result of nidus of infection trapped under the periosteum layer (small pieces of bone or tooth left under a flap after surgical exo) - Possible whenever a flap is elevated - Irrigate thoroughly to ensure nothing is left behind!

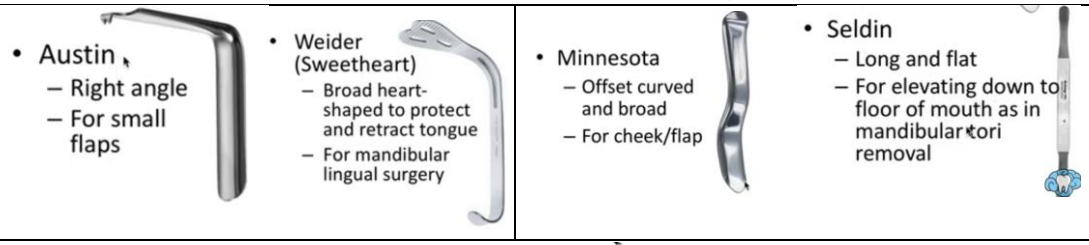
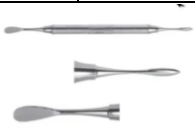
Oro-Antral Communication (OAC)	= Most common with Max. 1st molars (Palatal Root)
	- Prevent w/ good pre-op radiograph and avoid excessive apical pressure
	
	Tx:
	- If <2mm = Do nothing , Sinus precautions
	- If 2-6mm = 4As and figure 8 suture
	  - **Antibiotics**
	  - **Analgesics**
	  - **Antihistamines**
	  - **Afrin Nasal Spray 2x per day**
	- If >6mm flap surgery 

Alveolar Osteitis (Dry Socket)	= Occurs when blood clot dislodges or dissolves before wound heals following exo - NOT and infection, no antibiotics required Tx: Irrigate and local pain control - Pack in Alveogel! -> Eugenol helps with pain 
Nerve Injury	= Most common with Lower 3rd molars (IAN nerve proximity) Tx: Medrol Dosepak - Methylprednisolone -> Steroid to ↓ inflammation - Numbness lasting >4 weeks = referral to micro-neurosurgeon for evaluation
Tooth Displacement	Maxillary 1st/2nd molar = Maxillary Sinus Maxillary 3rd molar = Infratemporal fossa Mandibular 3rd molar = Submandibular space If tooth is lost into the oropharynx -> send to ER for Chest and abdominal x-rays

Classifications of Impaction

Nature of Overlying Tissue	*Soft Tissue Impaction*: Height of Contour is above the bone and gingiva is completely or partially covering the tooth - Easiest *Hard Tissue Impaction*: - Partial Bony = Height of contour is below the bone level - Full Bony = Tooth is entirely encased in bone (most difficult) 
Winters Classification	= For only 3rd molars - Based on the position of the long axis of the 3rd molar in relation to the 2nd molar **Mandibular** (Mama Has Violet Daisies): - Mesioangular = Easiest - Horizontal = 2nd easiest - Vertical = 2nd hardest - Distoangular = most difficult
Pell and Gregory	= Only for Lower 3rd molars **Class A**: Same plane as other molars **Class B**: Halfway down other molars **Class C**: Below cervical line of 2nd molar -> Most difficult **Class I**: Crown anterior to ramus **Class II**: Crown ½ into ramus **Class III**: Crown completely in the ramus -> Most difficult 

Instrumentation for Extractions

Bite Blocks	Soft rubber block for patient to bite down on - Used to keep mouth open and ↑ Visualization - Stabilizes mandible during exo (good for the TMJ) 
Suction Tips	*Yankauer Suction* = Better for soft tissue (gentler) - The plastic piece *Frazier suction* = Good for hard and soft tissue - Can cover or uncover a hole on the tip to ↑ or ↓ the suction pressure 
Towel Clip	Hold drapes placed around the patient - Locking handle w/ finger and thumb ring - Careful not to pinch the patients skin! 
Tissue Retractors	• Austin – Right angle – For small flaps • Weider (Sweetheart) – Broad heart-shaped to protect and retract tongue – For mandibular lingual surgery • Minnesota – Offset curved and broad – For cheek/flap • Seldin – Long and flat – For elevating down to floor of mouth as in mandibular torii removal 
Periosteal Elevator	*Woodson Periosteal* = Small and delicate *#9 Molt Periosteal* = larger elevator 

Straight Elevator	• Straight Elevator (#301) – Most commonly used – Lever – Blade has concave surface towards the tooth to be elevated  • Triangular Elevator (Cryer) – Second most commonly used – Wheel & axle – Left and right pairs – Removing a broken root left in the socket  • Pick Elevator – Remove retained or broken root – Wedge – **Crane pick** is heavy version – **Root tip pick** is delicate version 
Extraction Forceps	**Maxillary** *#150 (Universal)* - A= Premolars - S=Primary Teeth *#88R/L (Upper Cowhorn)* - 2 Beaks -> Surround palatal root - 1 Beak -> Engages the buccal bifurcation *#65 – Upper root forceps* **Mandibular** *#151 (Universal)* - A = Premolar - S = Primary Teeth *#23 (Cowhorn)* - Lower Molars - Beaks engage the bifurcation of the lower molar *#74 (Ash)* - Mandibular Premolars
Blades	#15 – Most common for intraoral surgery  #10 – Large skin incisions  #11 – Stab incisions  #12 – Mucogingival surgery – Curved shape enhances ease of access to the sulcus 
Irrigation	= Use steady stream of sterile saline/water during bone removal - Prevents heat generation (may devitalize bone) - ↑ efficiency of bur
Curettes	= Spoon-shaped end for scraping away soft tissue - Always curette a socket! 
Bone Removers	Rongeurs – Double spring pliers – Trim interradicular bone  Bone File – For final smoothing before suturing – Removes bone with pull stroke Osteotome (Bone Chisel) – Flat end tapped with surgical mallet – Monobevel → remove torus – Bibevel → section teeth  Surgical Handpiece – Do NOT use air-driven handpiece – Straight fissure burs → section teeth – Round burs → remove bone  -> Air driven will lead to Air Emphysema!
Hemostat	= Designed for hemostasis -> Clamp blood vessels closed before suture and cauterizing - Useful also for blunt dissection of soft tissue was as in I&D - Curved or straight beaks - Serrated end allows for tissue grasping
Needle Driver	- Short stout beaks (compared to hemostat) - Face of beak is crosshatched (Vs hemostat) -> Allows for better grasp of needle
Suture	= Needle + Thread - Primary purpose is to immobilize a flap - Place from movable tissue to non-movable tissue (Flap First -> then bound tissue on other side) - Simple interrupted is the easiest and most common technique - Silk has **wicking** property -> allows bacteria to invade
Forceps	Adson Tissue Forceps – Toothed → periosteum, muscle, aponeurosis – Non-toothed → fascia, mucosa, pathological tissue for biopsy  Utility Forceps – Used for picking up items from tray or preparing packing materials – NOT for handling soft tissues 
Scissors	**Dean** - Used for cutting sutures - Blades angles up for easier access to suture thread **Mayo** - For cutting fascia and dissecting soft tissue

Simple Extraction

Preparation for Extraction

Check that you are removing the correct tooth!

- Check tooth condition (Deep caries, adjacent crown or resto etc)
- Check Radiograph (Pan or PA) -> Radiographs are absolutely necessary
- Informed consent -> don't get sued
- Comfortable positioning
- Profound anesthesia
- Throat screen (Malampati score)

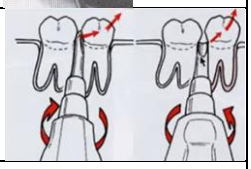
1. Sever Soft tissue attachment

Using a Periosteal elevator -> loosen gingival fibers and PDL attached to the tooth

- Confirms good anesthesia
- Allows apical placement of forceps

2. Luxate tooth with elevator

- Face of the blade against the tooth to be extracted
- Back of the blade (the rounded part) against the alveolar crest
- Find a purchase point
- *Lever* -> fulcrum is the alveolar bone, not 100% on the adjacent tooth
  = Expansion of bone and tearing of the PDL

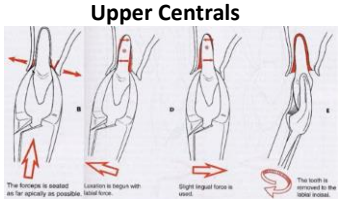


3. Deliver tooth with forceps

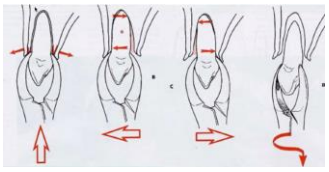
- Slow and deliberate force -> tooth should first be moved, then removed

Outward (Buccal/Labial) -> initial movement for most permanent teeth
Inward (Lingual/Palatal) -> Initial movement for most primary teeth
Rotation -> Initial movement for conical-rooted teeth
Apical -> Applied always, avoid excess pressure in max molars though (risk OAC with Max 1st molars)

Upper Centrals

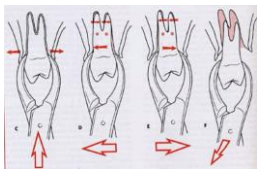


Upper Canines

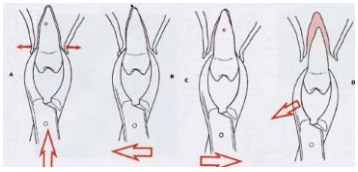


Upper 1st Premolar

- (Caution with the deep bifurcation)
- No rotation!

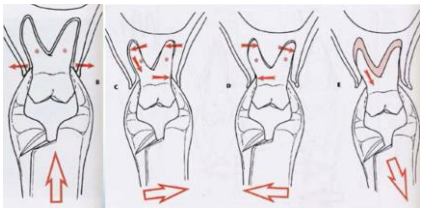


Upper 2nd Premolar

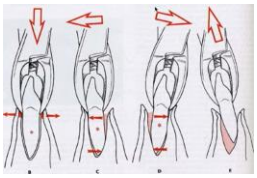


Upper Molars

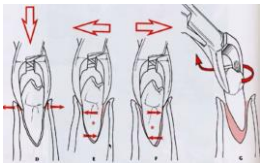
- Favor buccal pressure (Palatal may push palatal root into the sinus)



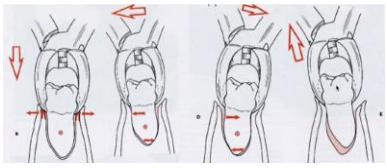
Lower Incisors and Canines



Lower Premolars



Lower Molars



4. Post Extraction

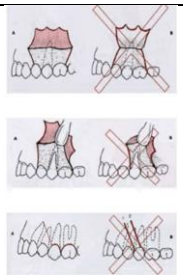
- Bend the B-L plates back in place (unless ortho and implants are planned in the future)
- Curettage
- Smooth the bone with bone file or rongeur
- Irrigate with Syringe

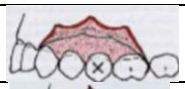
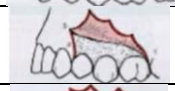
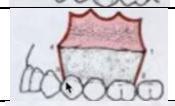
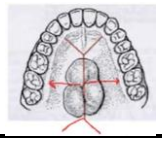
Surgical Extraction

- Involves access through mucoperiosteal flap
- If a surgical handpiece is used (remove bone or section the teeth) = Surgical
- Sutures are used to close flaps

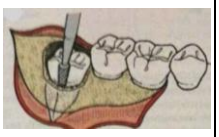
Factors predicting difficult exo	- Divergent and Dilacerated roots - Endo-treated teeth - Long Roots or resorbed roots - Dense Bone (Posterior mandible is the densest) - Root Fracture - Proximity to the floor of sinus or IAN - Limited opening - Bruxism - Exostoses or tori - Gross caries - Severe crowding

Flap Design	- Wider base -> ensures adequate blood supply - Incisions made over **intact** bone, not defects of eminences - Rounded corners - Vertical releases at **line angles** - Avoid vital structures - Post-op plaque control is the most important procedure after perio surgery

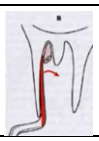


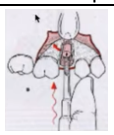
Envelope Flap	0 Vertical releases - 2 teeth anterior, 1 posterior	
3-cornered flap	1 vertical release - 1 tooth anterior and posterior	
Trapezoidal	2 vertical releases - 1 tooth anterior and posterior	
Semilunar Incision	Apical to mucogingival junction - For apicoectomy - Apically displaced flap is **not** possible in the maxillary palate	
Double Y Incision	Incision down the palatal midline - 2 vertical releases at each end - Used for Palatal torus removal	

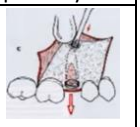
Surgical Handpieces	No Air! -> Air Emphysema risk
	
	<u>Uses</u>:
	- Remove buccal bone
	  - Create a ditch /trough to act as a purchase point and pathway for delivery
	  - Careful/probably don't do this if implant is planned
	- Remove interradicular bone
	  - Moves center of resistance apically and facilitates tooth removal
	  - Careful if an implant is planned
	- Section tooth
	  - Split the tooth in half, insert elevator to complete the break and extract each piece separately



Removal of root tip	- Gouge into the adjacent bone with the root tip pick - Remove facial bone and elevate it facially - Make a bone window at the apex to push the root out



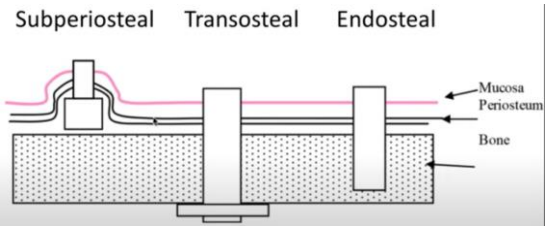




Implants

Indications	Replace Missing Teeth (obviously)
Relative Contraindications	- Uncontrolled Diabetes - Immunocompromised patients - Inadequate volume of bone and height - Bisphosphonate Therapy - Bruxism - Smoking - Hx of head/neck radiation - Cleft Palate - Adolescence *Old age is not a contraindication*

3 Categories of Implants (Generally)



Subperiosteal	Implant rests under the periosteum - No true osseointegration - Poor prognosis
Transosteal	Only Mandibular anterior - Extraoral approach! - Usually 4 needed to support a mandibular denture
Endosteal	Placed into the bone - Largest category these days - Usually these days we see "Root Form" shape

Endosteal Implants

Components

Implant Crown
Abutment Screw

Abutment

Implant Body

Implant Body 	= Implant/Fixture - Usually Axis-symmetric (symmetric around the long axis) ***Procedures***: - Sequentially enlarge an osteotomy (bone hole) - ↓ heat generation = keeps bone cells alive (needed for osseointegration) - Pilot Hole helps maintain axis w/ free-hand surgery - Usually inserted into tapped holes (kinda like a pilot hole, but with threads in the hole) -> Some implants are "self-tapping" and can cut their own threads into the bone as it is placed
Abutment	**One Piece** = Abutment + Abutment screw are 1 component - No antirotation component ☹  **Two Piece** = Abutment screw and abutment body are separate (more common) - Has an antitotational component 

Implant Crown

Screw Retained	Cement-Retained
= Screw through the crown into the implant - Crown and abutment are usually 1 piece and the abutment screw is separate ***Cons***: - Screw access hole ↓ esthetics - Sometimes not possible for angled implants ***Pros***: - Retrievable - Better for restoring restricted restorative space	= Abutment is attached to the implant separately (with cement) ***Cons***: - Cement trapping = Peri-implantitis - Non-retrievable - Needs ↑ restorable space ***Pros***: - Esthetics

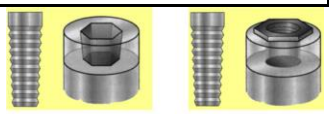
1 Piece vs 2 Piece Implants

**Different from 1 and 2 piece Abutments

One Piece	Two Piece
= Implant and abutment are attached together as 1 piece - Drilled into the bone as one unit **Cons**: - Cannot correct angle between implant and abutment	= Implant and abutment are separate components - Implant is placed, then the abutment is attached then the crown attached to abutments

Anti-rotational Component

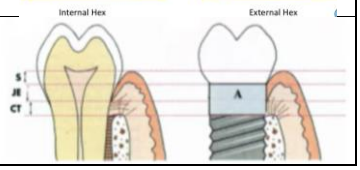
= Prevents rotation of the abutment in the implant -> Provides stabilization
- Different with each brand
- Internal or External Hex



Implant Surface

Rough Surface -> for bone integration
- No PDL for implants, ↓ ability to take heavy forces. Restore with light occlusion

Smooth surface -> for soft tissue
- Gingival fibers orient next to implant **Parallel to implant cuff**



Surgical Considerations

Socket Preservation

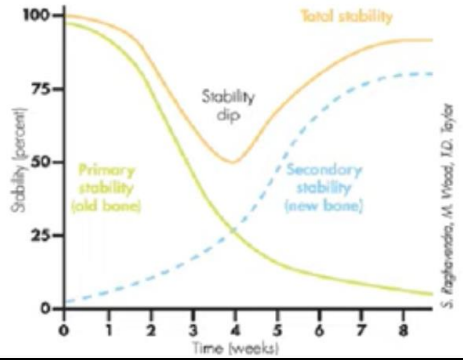
= Maintains height and width of alveolar ridge
- Essential to have an **atraumatic** exo -> No breaking of buccal plate
-

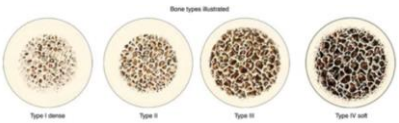
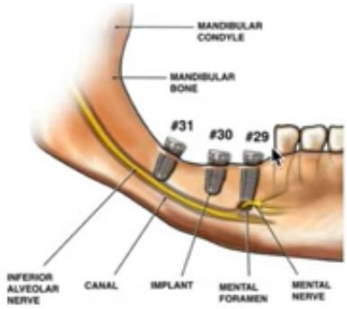
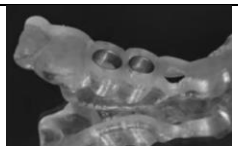
Integration and Stability

Osseointegration
- Direct histologic contact between bone and implant surface

Fibrous Integration
- Presence of fibrous tissue layer between implant and bone
- Will be mobile ☹ -> Considered a failure of osseointegration and implant placement

Primary Stability	Secondary Stability
= How stable the implant is when you first place it - How locked in the threads are	= Post-osseointegration, long term healing of bone to the titanium alloy



Bone Quality	Implant Success rate goes from High to low and you ↑ bone type **Type 1:** - Anterior Mandible - Lots of dense cortical bone, not a lot of trabecular bone for vascularity though **Type 2:** - Posterior Mandible - A good mix of cortical and trabecular bone **Type 3:** - Anterior Maxilla - Less cortical bone and more trabecular bone -> ↓ stability **Type 4:** - Posterior Maxilla - Worst type of bone, not a lot of cortical bone there 
Implant Placement Boundaries	*1mm Away from* - Buccal Plate - Lingual Plate - Inferior Border - Max Sinus - Nasal Cavity *1.5mm away from:* - Adjacent Teeth *2mm:* - IAN *3mm* - Adjacent Implant *5mm* - Mental Nerve (because of the anterior loop) 
1 Stage vs 2 Stage	**One Stage** = Implant and healing abutment are placed at the same appointment - Possible with good Primary Stability - Creates a good soft tissue emergency profile  **Two Stage** = Implant is placed and capped with a cover screw during osseointegration - Open up and place abutment at the next visit *Used if:* - Poor primary stability - Graft placement is indicated - Immunocompromised patient (closing it up ↓ infection risk) 
Impression	Once healing is complete, final impression is made so the crown and abutment are properly oriented - Impression coping is used to transfer the location and angulation of the implant to a master cast - **Open Tray** -> Hole in the tray for the coping to pop out of - **Closed tray** -> No hole in the tray - *Analog* = Implant replica that is set into the cast
Surgical Stent	= Used to help guide the implant drill as we deliver the implant **L – Location** **A – Angulation** **D - Depth** 

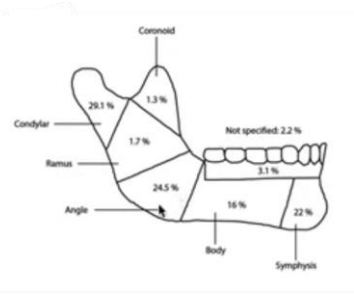
Implant Success	4 Characteristics of a successful implant: 1. **Immobile** 2. **No Peri-implant RL** 3. **Peri-implant bone loss <0.2mm per year after the 1st year** 4. **Absence of symptoms (pain)**
Implant Failure	Associated with Gram –'ve anaerobic rods and Filaments *Temperature*: 47°C for 1 minute, or 40° for 7 minutes is enough to compromise osseointegration If any of the above 4 keys for success are not present, it is considered an implant failure

Trauma and Orthognathic Surgery

Mandibular Fractures

* Best evaluated using a Pan Radiograph*

Condylar Fractures > Angle Fractures > Symphysis Fractures > Body > Alveolus > Ramus > Coronoid



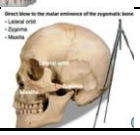
Typically the Condyle is fractured on the contralateral side of the blow

Greenstick Fracture	= Incomplete (not all the way through)
Comminuted	= Crushed into multiple fragements
Simple	= Closed to the oral cavity
Compound	= Open to oral cavity, bone exposed through the mucosa

**Ideally treated with Open Reduction + Internal Fixation (ORIF)*

Midface Fractures

Best evaluated with CBCT

Le Fort I	Horizontal across the maxilla	
Le Fort II	Pyramidal - Involves medial orbit and nasal bone	
Le Fort III	= Complete cranial fracture disjunction	
Zygomaticomaxillary Complex fracture	= Caused by direct blow to the malar eminence (check bone) - Involves bleeding under the conjunctiva of the eye	

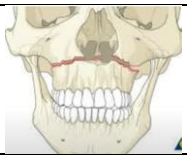
Trauma Surgery		
Reduction	= Fracture fragments are returned to their normal position	
	Open Reduction	**Closed Reduction**
	= Fragments are exposed surgically by dissecting the tissues	= Fragments are manipulated without surgical exposure
Fixation	= Holding the bone together for healing	
	Internal Fixation	**Intermaxillary Fixation (MMF)**
	= Using titanium plates and screws to hold the bone together	= Wiring the jaws closed, archbars, and elastics

Skeletal Discrepancies

Retrognathic Mandible	Class II
Prognathic Mandible	Class III
Apertognathic	Anterior Open Bite
Vertical Maxillary Excess	Maxilla is too long - Gummy smile
Horizontal transverse Discrepancy	Posterior crossbite
Macrogenia	Chin is too big
Microgenia	Chin is too small

Orthognathic Surgery

- Correction of severe skeletal discrepancies
- Need Lateral Cephs! CBCT is also becoming more common
- Use Acrylic splint intraoperatively -> Occlusion is used to guide the surgical outcome

Le Fort I Surgery	= Move the Maxilla  *Indicated*: - Retrusive maxilla - Vertical maxillary excess
Bisagittal Split Osteotomy (BSSO)	= Move Mandible  *Indication*: - Retrusive Mandible - Protrusive Mandible *Nerve damage = most common post-op complication
Genioplasty	= Move chin
Distraction Osteogenesis (DO)	= Bone deposition between 2 bone surfaces that are separated by gradual traction - Bone lengthening (not width though)  *Phase 1:* - Osteotomy -> Split the bone in 2 pieces *Phase 2:* - Latency Phase -> appliance is mounted to the bone but not activated for 1 week *Phase 3:* - Distraction Phase -> Appliance is activated to gradually separate the 2 pieces as bone fills in the gap

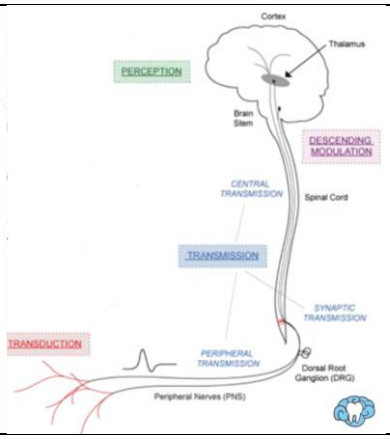
---

Orofacial Pain

Biopsychosocial Model of Pain	
Axis I - **Bio**	Nociceptive input from somatic tissue - Acute
Axis II - **Psychosocial**	Influence of interaction between **Thalamus, Cortex and Limbic** structures - Chronic (>6 months) *Its not just about the tooth (Axis I) but also the person with the tooth (Axis II)

Pain Pathway

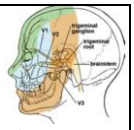
1. Transduction	Pain info travels from the Peripheral NS to the Central NS
2. Transmission	Pain info travels from the CNS to the Thalamus and higher cortical centers
3. Modulation	Limitation of the flow of pain info
4. Perception	Human experience of pain -> Sum total of these 3 above steps + Psychologic factors of higher though and emotion



Pains

Somatic Pain	↑ Stimulus yields ↑ Pain - This is the typical dental pain - Dependent on magnitude of the stimulus *Musculoskeletal* - TMJ - Periodontal - Myofascial (muscles) *Visceral* - Salivary Glands - Pulpal

<table>
<tr><td>Neuropathic Pain</td><td>= Independent of stimulus intensity
- Caused by damage to the pain pathways -> Trigeminal Neuralgia, Trauma, Stroke

<table>
<tr><td>Trigeminal Neuralgia (TN)
- Tic Douloureux</td><td>Affects postmenopausal women (>50) most frequently
 
<u>Symptoms</u>:
- Typically a specific location trigger point
- Electrical Sharp, Shooting and Episodic followed by refractory periods
- Unilateral, can affect any of the 3 branches
<u>Tx</u>:
- Anticonvulsants (Carbamazepine)
- Surgery</td></tr>
<tr><td>Atypical Odontalgia (AO)</td><td>= Secondary to de-afferentation (removal of part of the neural pathway) as a result of RCT or Exo
 
- Localized Phantom toothache</td></tr>
<tr><td>Postherpetic Neuralgia (PHN)</td><td>= Potential sequela of Herpes Zoster infection

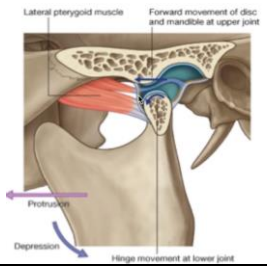
<u>Symptoms</u>:
- Burning, Aching, Shock-like
<u>Tx</u>:
- Anticonvulsants
- Antidepressants
- Sympathetic blockers</td></tr>
<tr><td>Burning Mouth Syndrome (BMS)</td><td>Affects postmenopausal women (>50) usually

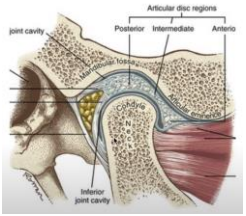
<u>Associations</u>:
- Type II Diabetes, Malnutrition, Xerostomia
<u>Characteristics</u>:
- Burning pain, dryness, possible altered taste</td></tr>
<tr><td>Chronic Headache (CH)
- Neurovascular Pain</td><td>Migraine
- Unilateral, pulsating, nausea and vomiting
- Photophobia and Phonophobia (↓ ability to withstand sound and light)

Tx: Tryptan (Selective Serotonin receptor agonist)

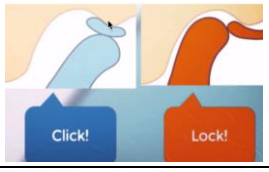
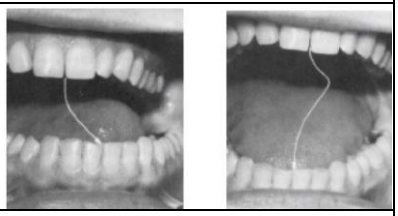
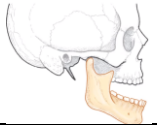
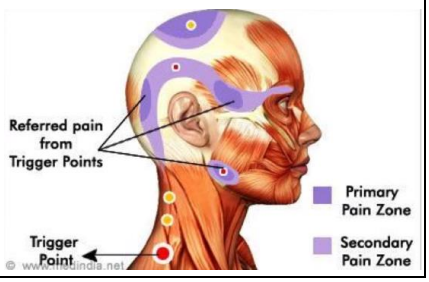
Tension Type
- Bilateral, non-pulsating, not aggravated by routine activity
Cluster
- Intense pain near one eye</td></tr>
</table></td></tr>
<tr><td>Psychogenic Pain</td><td>Intrapsychic Disturbance
- Conversion Reaction
- Psychotic delusion
- Malingering</td></tr>
<tr><td>Atypical Pain</td><td>Facial pain of unknown cause/diagnosis is pending</td></tr>
</table>

Temporomandibular Joint Disorder (TMD)

<table>
<tr><th colspan="2">Anatomy</th></tr>
<tr><td>TMJ Anatomy</td><td>Consists of:
- Condylar Head
- Mandibular (glenoid) fossa
- Articular eminence
- Articular Disc
 

Lower Joint Space (Inferior to the disc) = Rotational movement
Upper Joint Space (Superior to the disc) = Translation
 
</td></tr>
</table>

TMJ Muscles	*Opening*: - Lateral Pterygoid *Closing*: - Masseter - Temporalis - Medial Pterygoid
Ligaments	= Limit movement of the mandible from overextending - ***Capsular Ligament*** -> Completely covers the TMJ - ***Discal/collateral ligament*** -> Attaches to the medial and lateral poles of the condyle, keeps the disc attached during movement - ***Posterior Ligament*** -> From articular disc to back of condyle (prevents anterior disc displacement) - ***Lateral Ligament*** -> Wraps around condyle from the disc (prevents posterior displacement)
Blood Supply to TMJ	**M** – Maxillary artery **A** – Ascending Pharyngeal **D** – Deep Articular artery **S** – Superficial Temporal 

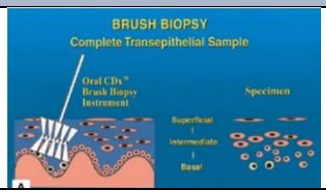
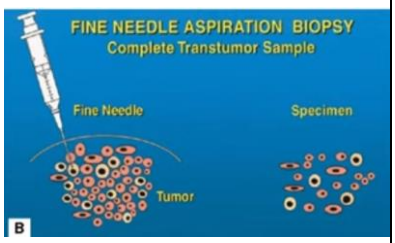
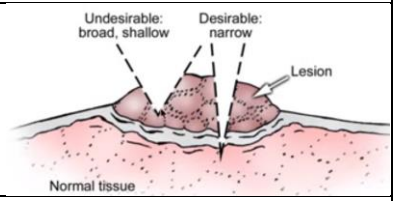
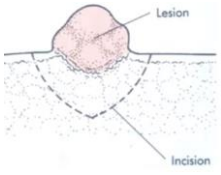
TMJ Disfunctions	
Disc Displacement/Internal Derangement	*With Reduction:* - Clicking - Condyle pops over the anteriorly displaced disc and pops on the way back into the fossa *Without Reduction:* - Locked - Condyle stuck behind the disc = ↓ range of motion with ipsilateral deviation on opening - Deviation to the side with the issue 
Opening Patterns	*Deflection* = Deflects towards the side that is stuck at maximum opening - This condyle can only rotate, but it cannot translate *Deviation* = Deviates towards 1 side and returns back to midline at max. opening - Could be a variation of normal - Have a "V" in the name, and forms a V pattern 
Recurrent Dislocation	= Mandibular condyle translates anterior to the articular eminence and needs mechanical manipulation to reduce back into the fossa - Move Jaw Down and Back to get over the hump of the eminence *Tx*: - Botox injection of the lateral pterygoid, or surgery 
Ankylosis	= Union between condyle and skull -> severely restricted range of motion - Commonly caused by Trauma (surgery, radiation and infection can also cause)
Bruxism	= Clenching/grinding teeth - Can be daytime or nocturnal - Caused often by stress *Tx*: - Occlusal guard (distributes the occlusal forces evenly and relax the muscles of mastication)
Myofascial Pain Syndrome (MPS)	= Chronic muscular pain disorder -> Diffuse pain in the preauricular area - Considered Somatic pain - Pain can occur at rest - Most common cause of masticatory pain - Trigger points are present in the muscles of mastication *Tx*: - Physical Therapy - Tress management - Splint therapy - Medications 

Treatments:

Non-Surgical	*Counselling* - Address parafunctional habits (grinding, nail biting etc) *Medical Therapy* - NSAIDS, Steroids, Analgesics, Antidepressants, Muscle relaxants *Physical Therapy* - Transcutaneous electrical nerve stims, massage, thermal Tx, Exercise *Occlusion* - Splint therapy to ↓ intra-articular pressure *Arthrocentesis* - 2 needles flush out superior joint space 
Surgery	*Arthroscopy* - 2 cannulas + instrumentation within the superior joint space *Arthroplasty* - Disc is surgically repositioned - Indicated for persistent painful clicking or closed lock *Discectomy* - Disc/removal if it is severely damaged *Condylotomy* - Vertical ramus osteotomy -> bone is **not** fixated, allows the soft tissues to reposition the condyle where they are happiest *Total joint replacement* - Reserved for severely pathologic joints (Osteo or Rheumatoid Arthritis) **Careful of the Facial nerve for any of these surgeries**

Biopsy Technique

= Indicated after 2 weeks observation of Red/White Lesion

4 Types	
Cytology (Brush Biopsy)	= Scrape the lesion with a kit brush or tongue depressor - Cells are smeared on a glass slide and fixed immediately *Indications* - Monitoring large tissue areas for dysplastic changes *Cons*: - Many false positives 
Fine Needle Aspiration	= use of needle + syringe to suck up contents of a lesion - Fluid expelled onto a slide and fixed *Indications*: - Fluid filled lesions - Ascertaining the type of fluid (rule out vascular lesions before cutting into them!) - Exploration of intraosseous lesions *Pros*: - Good at differentiating Benign vs Malignant 
Incisional	Deep, Narrow Wedge cut *Indications*: - Large lesions (>1cm diameter) - Malignant suspicion 
Excisional	= Complete excision of the lesion - 2-3mm margin - Elliptical incision used (easier to close) *Indications*: - Small <1cm - Benign suspicion 

Techniques

1. Form a DDx list -> this will help determine the type of biopsy indication
2. Identify the lesion margin with an indelible ink marker
3. Use **Block Anesthesia** when you can -> Local infiltration can distort the architecture of the lesion
4. Don't handle tissue directly (will crush the cells) -> Use tissue forceps!
5. Sample stored in 10% Formalin (H%E Staining) or Michaels Medium (Direct Immunofluorescence if pemphigoid/pemphigus is suspect_

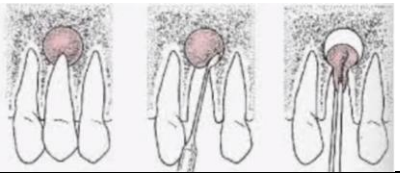
Clinical Examples

Case	Biopsy type
Large white patch on buccal mucosa that wipes off w/ gauze presumed to be candidiasis	- Cytology brush biopsy
Firm rough 2x3cm white lesion on lateral tongue that does not wipe off with gauze	- Incisional Biopsy
Denture wearer presents w/ red swelling in the buccal vestibule	- No biopsy -> adjust the denture and follow up in 2 weeks

Cysts and Tumors

Cysts -> Enucleation, Marsupialization, Curettage

Tumors -> Enucleation, Curettage, Resection

Enucleation	= Surgical removal of mass w/o cutting into it or rupturing it 
Marsupialization	= Cut a slit into an abscess or cyst and suture the edges of the slip to keep it open so it can drain freely - Used when cyst is close to vital structures - Can be used for I&D techniques
Curettage	= Removal of tissue by scraping or scooping to remove granulation/infectious tissue
Resection	= Surgical removal of cyst or tumor + normal tissue around it

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Medical Emergencies

S – Stop Tx

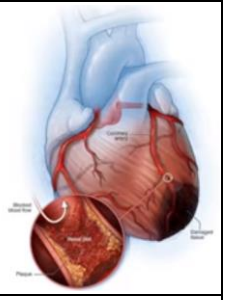
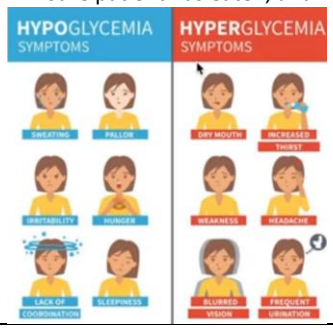
P – Position Patient

O – Oxygen*

R - Reassure (staff and patient)

T – Take Vitals

Syncope	= Most common emergency in dental chair *Vasovagal syncope* -> Most common form, related to needle anxiety *Orthostatic Hypotension* -> 2nd most common, BP drops when standing suddenly Tx: - Place in Trendelenburg position (Supine) - If Pregnant: Left Lateral Decubitus to relieve inferior vena cava 
Epinephrine OD	= Rapid, Intravascular injection - Make sure you aspirate! *SS*: - ↑ BP and HR - Thumping heart palpitations

Angina	= Chest pain from coronary arteries not being able to provide enough blood to the cardiac tissues - Ischemia w/o necrosis - Stable: Predictable with activity and stress - Unstable: Spontaneous, no precipitating factors, at rest **Tx:** **O** - Oxygen **N** – Nitroglycerin (0.4mg) -> 5 mins -> NTG -> 5 mins -> NTG **A** – Aspirin (with 3rd dose of NTG + call 911) 
Myocardial Infarction (Heart attack)	= Angina caused by ischemia w/ necrosis - Sudden occlusion of major coronary vessel (often, Left Anterior Descending Artery, LAD) **Tx:** **M** - Morphine **O** - Oxygen **N** – Nitroglycerin (0.4mg) -> 5 mins -> NTG -> 5 mins -> NTG **A** – Aspirin (with 3rd dose of NTG + call 911) 
Hypoglycemic Emergency	*Ensure patient has eaten, and has had adequate insulin*  **Tx Hypoglycemia:** If Conscious -> Glucose Tab, Orange juice In Unconscious -> IV Dextrose, or IM Glucagon
Hyperventilation	↑ O_2 ↓ CO_2 in blood ****Do not give O_2, It will make it worse*** *Tx*: - Position Pt upright - Get them to breathe into a paper bag (they rebreathe their CO_2) 
Asthma	= Constriction + Inflammation of bronchioles - Wheezing = high pitch on exhale (Cardinal sign) - Avoid NSAIDs and narcotics *Tx* - 2 puffs from inhaler (Albuterol, relaxes smooth muscle in bronchioles) 
Airway Obstruction	*Tx*: - Clear the pharynx of any food, vomit or foreign objects - Check for breathing (rise and fall of chest, sounds in mouth/nose) - Chin Tilt head lift -> Protrudes tongue and mandible forward
Seizure/Convulsions	**Do not restrain, just clear hazards to protect from injury** *Tx*: - IV/IM Benzos (Diazepam) - ***Grand Mal Seizure (Tonic, Clonic)*** -> Dilantin/Phenytoin - ***Status epilepticus (>5 mins)*** -> Valium/Diazepam
Stroke	TIA = Transient Ischemic Accident (Mini stroke, only a few minutes of blockage of blood to the brain) CVA = Cerebrovascular Accident, can be either Thrombotic (blockage), or Hemorrhagic (rupture) **Causes**: - Hyponatremia is one of a few causes **Signs**: - Facial droop, arm lift, slur **Tx**: - O_2 + Call 911 immediately

Anaphylactic Shock	= Severe allergic Reaction *Tx*: **AEIOU** - **A**: Albuterol - **E**: Epinephrine (0.3mg 1:1000) - **I**: IM Antihistamine - **O**: Oxygen - **U**: U call 911
Anticoagulation	*Check blood tests:* - CBC -> Anemia, leukopenia, thrombocytopenia - Bleeding Time -> Platelet function - PT -> Anticoagulants, liver damage, Vit K -> Extrinsic clotting Pathway - INR -> Warfarin/Coumadin, INR = 2-3 ideally - PTT -> Heparin, Renal dialysis, hemophilia -> Intrinsic clotting pathway *Herbal anticoagulants:* - Garlic - Ginger - Ginko - Ginseng