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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

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**TODAY'S TOPICS**

- ▶ Pre-surgical evaluation
- ▶ Pre-Op preparation
- ▶ Extractions
  - Non-Surgical
  - Surgical
- ▶ Intraoperative complications
- ▶ Site preparation for implants

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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

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**MONDAY'S TOPICS**

- ▶ Impacted Teeth
- ▶ Post-Extraction site management
  - Complications
- ▶ Odontogenic Infections
- ▶ Pathology/ Biopsy techniques

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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

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**LEVELS OF TRAINING/ EXPERIENCE**

- ▶ Typical GP's training in Oral Surgery consists of:
  - Lecture course in 2<sup>nd</sup> year
  - 1-3 weeks in Dental School Clinic
  - 1 week Hospital rotation
- ▶ GPR?
- ▶ Military?

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**OMFS TRAINING**

- 4 YEARS DENTAL SCHOOL
- 4 YEARS HOSPITAL RESIDENCY
  - Anesthesia
  - Surgery (General and Subspecialties)
  - Internal Medicine
  - Oral and Maxillofacial Surgery
- MEDICAL DEGREE
- >10,000 HOURS

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## GOAL OF THIS COURSE

I CANNOT MAKE YOU AN  
ORAL AND MAXILLOFACIAL SURGEON  
IN ONE DAY...

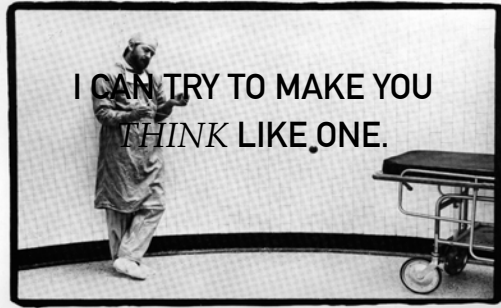
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In search of Good Clean Fun



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## UNDERSTANDING

THE TECHNICIAN UNDERSTANDS "THE HOW"

THE DOCTOR ALSO UNDERSTANDS...  
"THE WHY ... THE WHY NOT...  
AND THE WHAT IF..."

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IT'S NOT ENOUGH JUST TO RECOGNIZE A PROBLEM...

You have to know what to do about it!

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DON'T FORGET THIS...

ORAL SURGERY IS...

# SURGERY

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# STRATEGY "THINK LIKE A SURGEON"

- MENTALLY VISUALIZE THE PROCEDURE FROM START TO FINISH
- ANTICIPATE WHAT INSTRUMENTS WILL BE NEEDED, AND HAVE THEM READY/ READILY AVAILABLE
- ANTICIPATE COMPLICATIONS
- HEADLIGHT, LOUPES
- "MEASURE TWICE. CUT ONCE"



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# TO DO SURGERY?

- WHAT IS YOUR EXPERIENCE/ COMFORT LEVEL
- "HASSLE FACTOR"
- 30 - 60 MINUTE TIME LIMIT
- DEALING WITH COMPLICATIONS
  - ↳Backup
- GP DOING SURGERY IS HELD TO THE SAME STANDARD OF CARE AS A SPECIALIST



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# TO DO SURGERY?

- JUST BECAUSE YOU HAVE AN EMPTY DENTAL CHAIR, THAT DOESN'T MEAN YOU SHOULD **NOT** REFER THE PATIENT.
- EVERYTHING YOU DO IN YOUR OFFICE SHOULD BE A "PRACTICE BUILDER"
- REFERRING THE PATIENT TO THE RIGHT SPECIALIST MAKES YOU LOOK GREAT TO THE PATIENT
- STAY WITHIN YOUR TRAINING, EXPERIENCE AND COMFORT ZONE!

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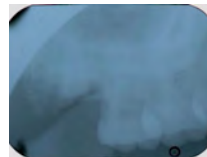
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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

## CASE 1

- ▶53 yr old woman
- ▶Pain in #1



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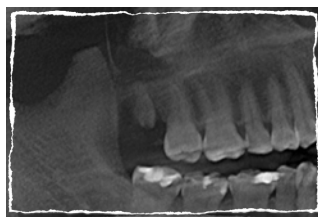
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### CASE 2

- ▶ 16 yo female
- ▶ Routine exam
- ▶ Impacted 3rd molars
- ▶ Scheduled with "specialist" in office

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## PRIMUM NON NOCERE

"FIRST DO NO HARM"



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### PRE-SURGICAL CONSIDERATIONS

- ▶ Get a thorough medical history
- ▶ Get a complete list of medications
- ▶ Prior surgery
- ▶ Allergies



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### PRE-SURGICAL EVALUATION

Be especially aware of:

- Diabetes - *impaired wound healing, infections*
- Heart conditions - *anticoagulants*
- Cancer treatment - *bisphosphonates*
- Osteoporosis - *bisphosphonates*
- Asthma - *inhalers (impaired wound healing)*
- Smoking - *impaired wound healing, infections*
- Chronic steroid use - *impaired wound healing*



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### MEDICATIONS

- ▶ How do they affect treatment?
- ▶ Which ones to stop
- ▶ Which ones not to stop
- ▶ Modifications of routine meds



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# ANTICOAGULANTS



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### CARDIOVASCULAR DISEASE

Anticoagulants:

- ▶ Dysrhythmias
- ▶ Valvulopathies
- ▶ Prosthetic valves
- ▶ DVT, PE



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### JADA NOVEMBER 2003

*It is now recommended that patients be left on anticoagulants for minor procedures if at risk of thrombosis*



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### COUMADIN THERAPY

For most oral surgery procedures coumadin therapy can usually be maintained, if INR is 3.5 or less



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### ANTIBIOTIC PROPHYLAXIS GUIDELINES- JOINTS

#### Management of patients with prosthetic joints undergoing dental procedures

**Clinical Recommendation:**  
 In general, for patients with prosthetic joint implants, prophylactic antibiotics are **not** recommended prior to dental procedures to prevent prosthetic joint infection.

For patients with a history of complications associated with their joint replacement surgery who are undergoing dental procedures, that include surgical manipulation of mucosal tissues, prophylactic antibiotics should only be considered after consultation with the patient and orthopedic surgeon. To assess a patient's medical status, a complete health history is always recommended when making that decision regarding the need for antibiotic prophylaxis.

**Clinical Reasoning for the Recommendation:**

- There is evidence that dental procedures are not associated with prosthetic joint implant infections.
- There is evidence that antibiotics provided before or after dental surgery prevent prosthetic joint implant infections.
- There are potential harms of antibiotics including risk for anaphylaxis, antibiotic resistance, and opportunistic infections like Clostridium difficile.
- The benefits of antibiotic prophylaxis may not exceed the harms for most patients.
- The individual patient's circumstances and preferences should be considered when deciding whether to prescribe prophylactic antibiotics prior to dental procedures.

ADA Center for Evidence-Based Dentistry



American Academy of Orthopaedic Surgeons/American Dental Association. Prevention of Orthopaedic Implant Infection in Patients Undergoing Dental Procedures: Evidence-based Guideline and Evidence Report. American Academy of Orthopaedic Surgeons 2012. <http://www.aaos.org/Research/guidelines/POI/POI2012-guideline.pdf>



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### ANTIBIOTIC PROPHYLAXIS GUIDELINES- IE

#### Patient Selection

- The current infective endocarditis guidelines state that use of preventive antibiotics before certain dental procedures is reasonable for patients with:
  - Prosthetic Cardiac Valve Or Prosthetic Material Used For Cardiac Valve Repair
  - A History Of Infective Endocarditis
  - A Cardiac Transplant That Develops Cardiac Valvulopathy



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### ANTIBIOTIC PROPHYLAXIS GUIDELINES- IE

a. Except for the conditions listed below, antibiotic prophylaxis is no longer recommended for any other form of congenital heart disease.

Congenital (present from birth) heart disease:

- unrepaired cyanotic congenital heart disease, including palliative shunts and conduits
- a completely repaired congenital heart defect with prosthetic material or device, whether placed by surgery or by catheter intervention, during the first six months after the procedure
- any repaired congenital heart defect with residual defect at the site or adjacent to the site of a prosthetic patch or a prosthetic device (that inhibits endothelialization)

b. Prophylaxis is reasonable because endothelialization of a prosthetic material occurs within six months after the procedure.



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## ANTIBIOTIC PROPHYLAXIS GUIDELINES- IE

### Dental Procedures

Prophylaxis is recommended for the patients identified in the previous section for all dental procedures that involve manipulation of gingival tissue or the periapical region of the teeth, or perforation of the oral mucosa.

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## AHA 2021 IE PROPHYLAXIS GUIDELINES

SITUATION	AGENT	RECOMMEN SINGLE DOSE 30-60 MINUTES BEFORE PROCEDURE	
		Adults	Children
Oral	Amoxicillin	2 grams	50 milligrams per kilogram
Unable to Take Oral Medication	Ampicillin	2 g IM* or IV†	50 mg/kg IM or IV
	Cefazolin or ceftriaxone‡	1 g IM or IV	50 mg/kg IM or IV
Allergic to Penicillins or Ampicillin Oral	Cephalexin§	2 g	50 mg/kg
	Clindamycin	600 mg	20 mg/kg
	Azithromycin or clarithromycin	500 mg	15 mg/kg
Allergic to penicillins or ampicillin and Unable to Take Oral Medication	Cefazolin or ceftriaxone¶	1 g IM or IV	50 mg/kg IM or IV
	Clindamycin	600 mg IM or IV	20 mg/kg IM or IV

\* IM: Intramuscular.  
 † IV: Intravenous.  
 ‡ Or other first- or second-generation oral cephalosporin in equivalent adult or pediatric dosage.  
 § Cephalexin should not be used in a person with a history of anaphylaxis, angioedema, or anaphylactoid reaction to ampicillin.

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## ADDITIONAL CONSIDERATIONS ABOUT INFECTIVE ENDOCARDITIS ANTIBIOTIC PROPHYLAXIS (WHEN INDICATED)

Sometimes patients forget to premedicate before their appointments. The recommendation is that the antibiotic be given before the procedure. This is important because it allows the antibiotic to reach adequate blood levels. However, the guidelines to prevent infective endocarditis state, "If the dosage of antibiotic is inadvertently not administered before the procedure, the dosage may be administered up to 2 hours after the procedure."

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## ADDITIONAL CONSIDERATIONS ABOUT INFECTIVE ENDOCARDITIS ANTIBIOTIC PROPHYLAXIS (WHEN INDICATED)

Another concern that dentists have expressed involves patients who require prophylaxis but are already taking antibiotics for another condition. In these cases, the guidelines for infective endocarditis recommend that the dentist select an antibiotic from a different class than the one the patient is already taking. For example, if the patient is taking amoxicillin, the dentist should select clindamycin, azithromycin or clarithromycin for prophylaxis.

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# HERBAL SUPPLEMENTS

•MANY OTC HERBAL SUPPLEMENTS INTERACT WITH COMMON MEDICATIONS, FOODS, OR AFFECT NORMAL PHYSIOLOGY

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### COMMON HERBALS

- ▶ Coenzyme Q10
  - Decreases warfarin effectiveness
- ▶ Cranberry
  - Enhances anticoagulants
- ▶ Valerian
  - May interact with pain medications, muscle relaxants, antidepressants
- ▶ St. John's Wort
  - Interacts with SSRIs, TCAs, warfarin, OCPs
- ▶ Saw Palmetto
  - Interacts with warfarin to prolong bleeding
- ▶ Melatonin
  - Interacts with benzodiazepines, opiates, muscle relaxants, raise blood sugar
- ▶ Fish Oil
  - Increased bleeding with Plavix, Lovenox, warfarin, ASA



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### COMMON HERBALS

- ▶ Ginseng
  - Decreases the efficacy of warfarin, affects insulin and hypoglycemics
- ▶ Ginkgo Biloba
  - Affects metabolism in liver, diabetes meds, seizure meds, anticoagulants, decreases antiviral drugs efficacy
- ▶ Garlic
  - Affects ASA, warfarin, Plavix
- ▶ Green Tea
  - May contain Vit. K, interfere with warfarin
- ▶ Ginger
  - Can prolong ASA, warfarin, other blood thinners
- ▶ Grapefruit
  - Decreases CYP450 activity- erythromycin, fentanyl, verapamil, amiodarone, carbamazepine, benzodiazepines, ED drugs, trazadone, warfarin.



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### CORTICOSTEROIDS

- ▶ Musculoskeletal and connective tissue diseases
  - rheumatoid arthritis, polymyositis, systemic lupus erythematosus, and vasculitis)
- ▶ Respiratory diseases
  - Asthma, sarcoidosis and chronic bronchitis
- ▶ Gastrointestinal diseases
  - ulcerative colitis and crohn's disease
- ▶ Allergic disorders
  - hay fever, and allergic rhinitis
- ▶ Skin conditions
  - pemphigus, eczema, and dermatitis
- ▶ Oral and maxillofacial diseases
  - lichen planus, keloid formation, and Bell's palsy



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### CORTICOSTEROIDS - SIDE EFFECTS OF CHRONIC USE

- ▶ Adrenal suppression
- ▶ Electrolyte abnormalities
- ▶ Increased infection risk
- ▶ Osteoporosis
- ▶ Hypertension
- ▶ Diabetes
- ▶ Peptic ulcers



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### PERIOPERATIVE CONSIDERATIONS

- ▶ Adrenal suppression should be suspected in those patients receiving the equivalent of
  - 20 mg prednisone/ day x 1 week
  - 7.5 mg prednisone/ day x 1 month within the past year.
- ▶ Adrenal suppression: body unable to appropriately manage the stresses of medical illness, surgery, and trauma.
- ▶ May precipitate adrenal crisis
  - fever, restlessness, flank and abdominal pain, vomiting, lethargy, hypotension, or coma.



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### CORTICOSTEROID COVERAGE FOR SURGICAL PROCEDURES

- ▶ Minor surgical stress (tooth extraction, biopsy, periodontal surgery)
  - 25 mg of hydrocortisone equivalent, the day of surgery
- ▶ Moderate surgical stress (panfacial fractures, 2 jaw surgery, etc)
  - 50-75 mg of hydrocortisone equivalent for 1 to 2 days.
- ▶ Major surgical stress
  - 100-150 mg of hydrocortisone equivalent for 2 to 3 days.
- ▶ CURRENTLY ON CHRONIC STEROIDS:
  - Every Day: double dose on the day of surgery
  - Every Other Day
    - ▶ Double normal dose on "on" day
    - ▶ Take normal dose on "off" day

Medication	Equivalent Dose
Cortisone	25 mg
Hydrocortisone	20 mg
Deltasone	6 mg
Prednisone or Prednisolone	5 mg
Methyl prednisone	4 mg
Triamcinolone	4 mg
Betamethasone	0.75 mg
Dexamethasone	0.75 mg

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### MEDICATION-RELATED OSSEONECROSIS OF THE JAWS (MRONJ)

- ▶ Formerly BRONJ
- ▶ Seen with:
  - Antiresorptive medications
    - ▶ IV Bisphosphonates
    - ▶ Oral Bisphosphonates
    - ▶ RANK Ligand Inhibitors (denosumab)
  - Antiangiogenic medications (Bevacizumab/Avastin)

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### BISPHOSPHONATES

- ▶ Decrease bone turnover by inhibiting bone resorption by osteoclasts.
- ▶ IV bisphosphonates used in patients with metastatic bone lesions in prostate, lung and breast CA, and multiple myeloma.
- ▶ Oral Bisphosphonates are used for reducing the risk of complications of osteoporosis, and for Paget Dz.

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## IV BISPHOSPHONATES

- AREDIA (PAMIDRONATE) - 2001
- ZOMETA (ZOLENDRONIC ACID) - 2002
- DECREASE PAIN AND HYPERCALCEMIA IN METASTATIC BONE DISEASE.
- VERY POTENT. ZOMETA > AREDIA
- ADMINISTERED MONTHLY

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### ORAL BISPHOSPHONATES

- ▶ Fosamax (alendronate) - 1995
- ▶ Actonel (risedronate)
- ▶ Boniva (ibandronate)
- ▶ Skelid (tiludronate)
- ▶ Didronel (etidronate)
- ▶ Given daily - weekly
- ▶ About 1/5 - 1/10 as potent as IV

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### RANK LIGAND INHIBITOR

- ▶ Denosumab
- ▶ Human monoclonal antibody against RANK ligand- inhibits osteoclastic function
  - Prolia- SQ q 6 mo for osteoporosis
  - Xgeva - administered monthly for metastatic bone disease (except MM)
- ▶ Does not bind to bone - effects minimal 6 mo after cessation

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### ANTI-ANGIOGENIC DRUGS

- Bevacizumab (Avastin)
  - Bevacizumab inhibits the growth of blood vessels, which is part of the body's normal healing and maintenance. The body grows new blood vessels in wound healing, and as collateral circulation around blocked or atherosclerotic blood vessels. One concern is that bevacizumab will interfere with these normal processes.

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### MECHANISM

- ▶ Inhibit bone resorption by osteoclasts
- ▶ Not metabolized
- ▶ High concentrations maintained over a prolonged period of time
- ▶ Adversely affect bone turnover and remodeling, especially at the site of dentoalveolar "trauma"

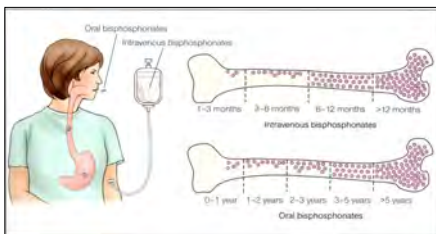
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### AAOMS CASE DEFINITION OF MRONJ

- ▶ Current or previous treatment with antiresorptive or antiangiogenic agents
- ▶ Exposed bone or bone that can be probed through an intraoral or extraoral fistula(e) in the maxillofacial region that has persisted for > 8 weeks
- ▶ No history of radiation therapy to the jaws or obvious metastatic diseases to the jaws

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### RISK OF BRONJ DEPENDS ON:

- ▶IV vs oral drug
- ▶Dosage
- ▶Duration of drug exposure
- ▶Time since last used
- ▶History of "trauma"



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### RELATIVE RISK AFTER DENTOALVEOLAR SURGERY

- ▶IV Bisphosphonates
  - 14.8 - 16.4%
  - If > 1 year
- ▶Oral Bisphosphonates
  - 0.1 - 0.5%
  - If > 3 years
- Newer antiresorptive, antiangiogenic agents
  - ??
- Mandible- 73%
- Maxilla- 22.5%
- Both - 4.5%



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### PATIENT MANAGEMENT

- ▶ Patient education- patient must be aware of and accept risk
- ▶ For oral bisphosphonate patients
  - "Drug holiday": benefit controversial- no evidence of effectiveness
  - Maybe if taking > 4 years
- RANK L Inhibitors
  - Antiresorptive effects dissipate after 6 mo. No data to support/refute cessation
- Antiangiogenic drugs - No data to support/refute cessation
- For IV bisphosphonate patients
  - AVOID elective procedures



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### PREVENTION OF BRONJ

- Patients Taking Oral Bisphosphonates
- Maintain good oral/dental health
  - Patient education
  - Assess risk based on dose/ duration
  - Thorough Informed Consent
  - Consider modification/ discontinuation of drug
    - 3 months before
    - 3 months after



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### RISK ASSESSMENT – ORAL BIPHOSPHONATES

- SERUM CTX (COLLAGEN TYPE I C-TELOPEPTIDE)
- 2006 QUEST DIAGNOSTICS
- CLEAVAGE FRAGMENT FROM TYPE I COLLAGEN DUE TO OSTEOCLASTIC ACTIVITY
- MARKER OF BONE REMODELING
- ASSESSES DEGREE OF BONE TURNOVER SUPPRESSION BY ORAL BIPHOSPHONATE USE -->>→ RISK OF BRONJ



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<100 pg/ml = High risk

100 - 150 pg/ml =  
Moderate risk

> 150 pg/ml = Low risk

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### SERUM CTX

Not even mentioned in most current  
AAOMS guidelines.

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### PREVENTION OF BRONJ

Patients on IV Bisphosphonates

- Maintain good oral/dental health
  - Patient education
  - Assess risk based on dose/ duration
  - Only urgent or emergent procedures
  - Thorough Informed Consent
  - Consider modification/ discontinuation of drug
    - 3 months before
    - 3 months after
- Management by Specialist

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# PRINCIPLES OF SURGERY

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### SURGICAL HANDPIECE

- ▶ Allow sectioning of tooth and removal of bone
- ▶ Does not allow air to vent into the surgical field
- ▶ Subcutaneous emphysema

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### SUBCUTANEOUS AIR EMPHYSEMA

- ▶ Can occur immediately or delayed
- ▶ Endodontic treatment, periodontal osseous surgery, surgical extraction - air under pressure (handpiece/ air-water syringe)
- ▶ Due to air forced in to subcutaneous tissues
- ▶ Delayed can be confused with angioedema, allergic reaction, hematoma, infection
- ▶ Swelling can be minimal or extensive
- ▶ Described as "rice krispies" or "pop rocks" crepitance
- ▶ Radiographs show air in tissues




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## SUBCUTANEOUS EMPHYSEMA




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### SUBCUTANEOUS AIR EMPHYSEMA

- ▶ Management
  - Reassurance
  - Moist heat
  - Antibiotics
  - Observation
  - Rarely
    - Hospital admission/ airway management
- ▶ Should resolve in days to weeks




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### SUBCUTANEOUS AIR EMPHYSEMA

- ▶ Most importantly-
  - Prevention
  - Surgical handpieces for surgical procedures
  - Avoid high pressure air in inflamed tissues




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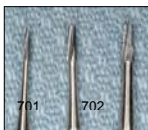
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## SURGICAL HANDPIECES

- ANGLED VS. STRAIGHT
- BURS- FISSURE VS. ROUND




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# ANGLED SURGICAL HANDPIECE

- SABRA OMS 45 / IMPACT-AIR 45
- 45 degree head
- Air exhausted to rear
- 400-500K RPM
- Fiberoptics
- \$799



# STRAIGHT SURGICAL HANDPIECE

- AIR/ N2 DRIVEN, REAR EXHAUST
- ELECTRIC
- 100K RPM
- HIGH TORQUE
- \$5000



# OTHER HANDPIECE SYSTEMS



## PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

### EXODONTIA SURGICAL SETUP

- ▶ Local anesthetic
- ▶ Retractor(s)
- ▶ Mouth prop
- ▶ Scalpel
- ▶ Periosteal elevator
- ▶ Tooth elevator(s)
- ▶ Universal forceps
- ▶ Curette
- ▶ Hemostat(s)
- ▶ Suction tip(s)
- ▶ Needle holder/ suture
- ▶ Scissors
- ▶ Gauze



# INFORMED CONSENT

- A DISCUSSION WITH THE PATIENT OF THE POTENTIAL/EXPECTED-
- Risks
- Benefits
- Complications
- Alternatives, including no treatment
- Options for Tooth Replacement
- Option of going to a Specialist



### SURGICAL EXTRACTIONS

- ▶ Flap design
- ▶ Handpiece
- ▶ Root sectioning
- ▶ Root retrieval
- ▶ Suturing the site



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### SURGICAL FLAPS

- ▶ Purpose of flap is to gain access to surgical site, to obtain adequate visualization of field and avoid trauma to soft tissues.
- ▶ Avoid doing surgery "blindly"



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### SURGICAL FLAP DESIGN

- ▶ Have a low threshold to lay a flap
- ▶ Should be based on anatomy, blood supply
- ▶ Base broader than apex



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## SURGICAL FLAP DESIGN

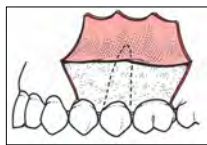
• Size of flap depends on purpose



• Releasing incision



FLAP SHOULD BE BROADER AT BASE



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### EXTRACTION INSTRUMENTS

- ▶ Elevators
- ▶ Periostomes/ X-Tool
- ▶ Forceps
- ▶ Handy-Dandy instruments



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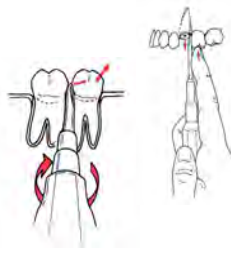
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### ELEVATORS

►Used to

- Luxate teeth
  - Try to luxate against bone
  - Avoid excessive pressure on adjacent crowns
- Elevate roots




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### ELEVATORS

- USED TO
  - Luxate Teeth
  - Elevate Roots
- MY FAVORITE: 46R
- Beveled Tip
- Serrated Edge




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### ELEVATORS

- SCOOP (#49)
- Upper 3rds
- Separate tuberosity from distal of tooth




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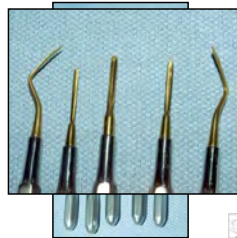
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### PERIOTOMES

- Very thin elevators used to sever the PDL attachment of the tooth.
- Atraumatic extractions in the "Esthetic Zone"
- Minimal flap




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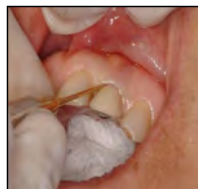
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### PERIOTOMES

- INSTRUMENT BLADE IS PLACED PARALLEL TO ROOT
- ADVANCED DOWN PDL SPACE
- SEVER PDL
- EXPAND THE SOCKET
- MAY TAKE TIME




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# LUXATORS



# X-TOOL



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# EXTRACTION FORCEPS

- UNIVERSAL FORCEPS (62, 151) WORKS 90% OF THE TIME
- GRASP THE TOOTH AS FAR APICALLY ON THE ROOT AS POSSIBLE
- Rotate
- Luxate
- Figure-8



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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

## XCISION FORCEPS

- ▶ Thin beaks
- ▶ Tapered profile
- ▶ Allow instrument to pass deeper onto root surface



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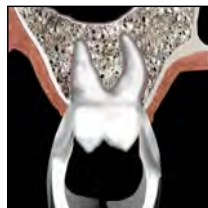
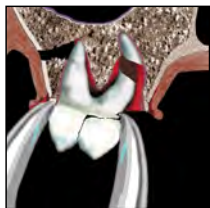
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## XCISION FORCEPS



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# TRAUMATIC TOOTH EXTRACTION



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# LOWER MOLAR FORCEPS - 222



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# COWHORN FORCEPS - 23



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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

## FORCEPS EXTRACTION

### TOOTH

- ▶ Max. Anterior
- ▶ Max. Premolar
- ▶ Max. Molar
- ▶ Mand. Incisor
- ▶ Mand. Canine/PM
- ▶ Mand Molar

### LUXATION MOVEMENT

- ➡B-L, Rotation
- ➡B-L
- ➡B
- ➡B-L
- ➡B-L, Rotation
- ➡B-L

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# TOOTH GRABBER



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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

## WHAT DID YOU NOTICE?

- Two maxillary wisdom teeth removed
- Surgical time (Injection → done) - 3:25
- Actual surgical time - 2:30
- Not talking during entire procedure
- My eyes rarely left the surgical field



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## MY STAFF KNOWS EXACTLY WHAT I WANT

- Scalpel
- Periosteal Elevator
- (Handpiece)
- Elevator (46R)
- Forceps
- Curette



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## BONY IMPACTION

- Scalpel
- Periosteal elevator
- Surgical handpiece
- Elevator
- Forceps/ hemostat
- Curette
- Bone file
- Suture



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## HOW DO THEY DO THAT?

- STAFF IS WELL-TRAINED
- WE DO THINGS THE SAME WAY... EVERY TIME



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## ASSISTANT

as·sis·tant noun \-tənt\  
: a person who helps someone; especially  
: a person whose job is to help another person to do work



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**Consistency is the Key  
to Efficiency**



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## BENEFITS OF SHORTER SURGICAL TIME

- Less surgical trauma
- Less post-op pain, swelling
- Increased productivity vs. increased free time

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## TOOTH EXTRACTION CATEGORIES

- ~~•NON-SURGICAL~~
- SURGICAL
- IMPACTIONS

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## SURGICAL EXTRACTIONS

- SINGLE-ROOTED TEETH
  - 2-ROOTED TEETH
  - 3-ROOTED TEETH
- IF THE TOOTH DOES NOT MOVE WITH AN ELEVATOR AND FORCEPS, GET OUT THE HANDPIECE!

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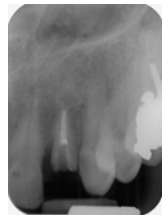
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## SINGLE-ROOTED TEETH

MAXILLARY/ MANDIBULAR ANTERIORS

- Atraumatic extraction desirable
- Want to minimize flap reflection and bone removal
- X-Tools are ideally suited for this task



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## ATRAUMATIC FLAPLESS EXTRACTION



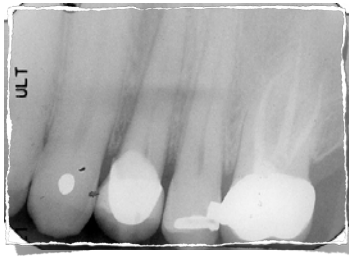
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# USE OF X-TOOL



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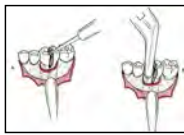
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# TWO-ROOTED TEETH

- BICUSPID/ PREMOLAR
- MANDIBULAR MOLARS



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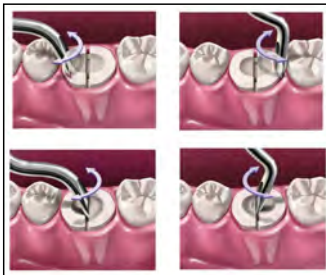
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# TWO-ROOTED TEETH



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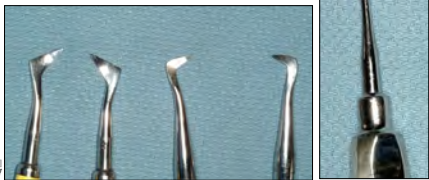
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# ROOT RETRIEVAL - MOLARS

- CRYER / EAST-WEST
- COGSWELL B



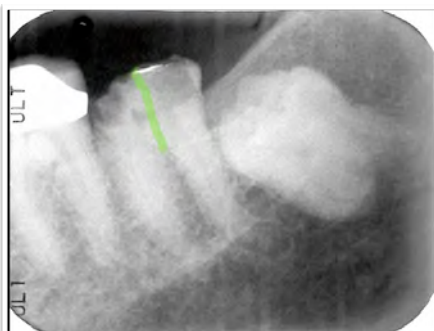
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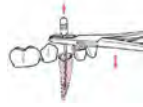
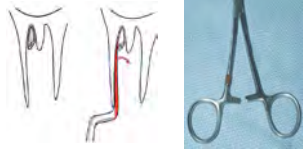
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# ROOT RETRIEVAL

- ROOT TIP ELEVATORS
  - Trough with 701
- ROOT TIP FORCEPS
  - Steiglitz
- A NEAT TRICK



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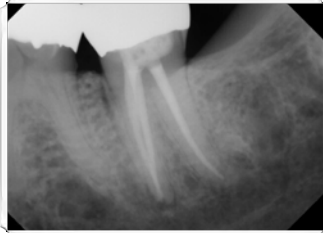
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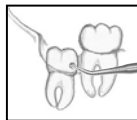
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# DEEP 3RD MOLAR

- COGSWELL B ELEVATOR
  - Purchase point is drilled into tooth
  - Tip placed into dimple



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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

## MAXILLARY MOLAR



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## MAXILLARY MOLAR FORCEPS

#67 RX/ LX



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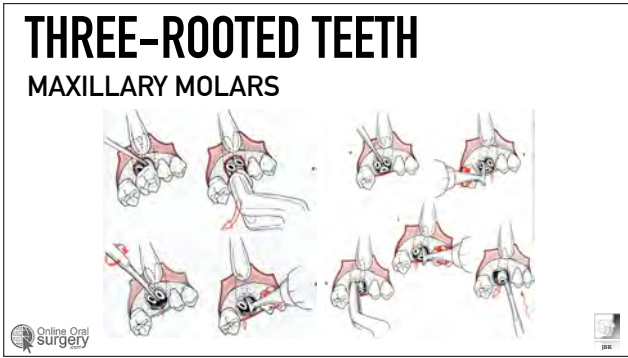
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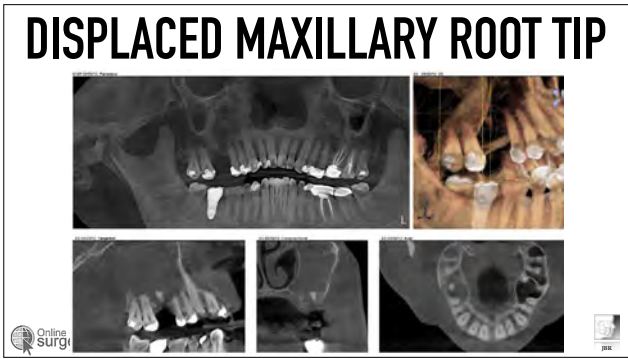
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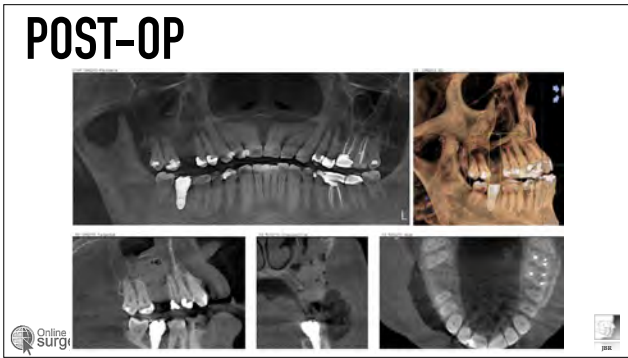
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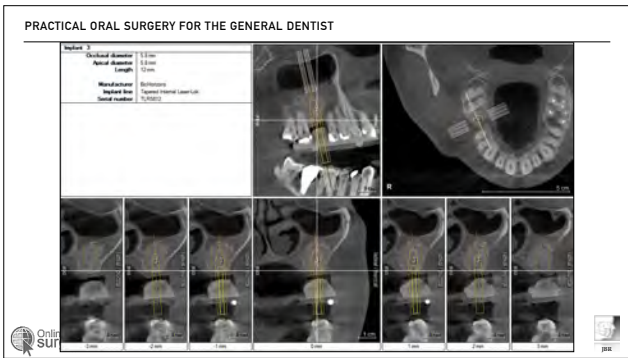
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### 4 MONTHS POST-IMPLANT



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### ALVEOLOPLASTY

- ▶ Multiple adjacent teeth
- ▶ Removal of interdental bone, and contouring of ridge
- ▶ Eliminate sharp edges, sore spots

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### ALVEOLOPLASTY

- ▶ Rongeur
- ▶ Bone File
- ▶ Rotary instruments

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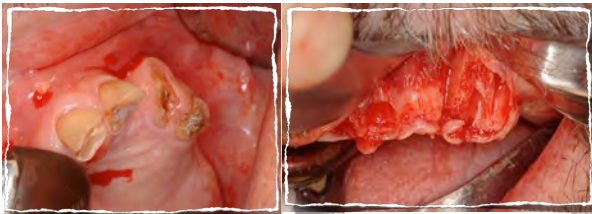
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### ALVEOLOPLASTY



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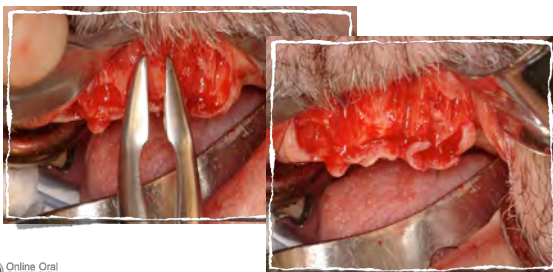
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### RONGEUR



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# ROTARY INSTRUMENT



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# SUTURE

- SIZE
  - 3-0: basic
  - 4-0: finer
- TYPE
  - Silk
  - Gut
    - ▀ PLAIN
    - ▀ CHROMIC
  - Vicryl (PGA)



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# SUTURING

- TO REAPPROXIMATE SURGICAL FLAPS
- TO HOLD PACKING IN PLACE
- A SUTURE ALONE DOES NOT HOLD THE BLOOD CLOT IN PLACE.



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# CLOSURE OF MULTIPLE ADJACENT EXTRACTION SITES TRANPOSED PAPILLAE CLOSURE



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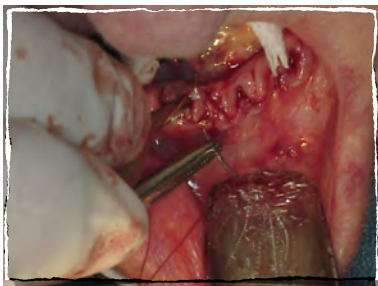
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# TRANPOSED PAPILLAE CLOSURE



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# TRANSPOSED PAPILLAE CLOSURE



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# PRE-IMPLANT SITE PREPARATION

- RIDGE PRESERVATION
- SINUS LIFT
  - Direct (open)
  - Indirect ("bump")
- BONE AUGMENTATION

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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

## RIDGE PRESERVATION GRAFTING

- Optimizes the amount of bone present at extraction site
- Reduces early (1<sup>st</sup> 6 months) ridge resorption by about 75%
- After extraction socket is debrided and irrigated, graft material is packed into socket
- Barrier membrane is placed over graft
- Sutured in place

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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

- MAJOR CHANGES TO EXTRACTION SITE OCCUR IN FIRST 12 MONTHS AFTER EXTRACTION.
- 2/3 OF THE RESORPTION OCCURS WITHIN THE FEW MONTHS

▶ Schropp L et al. Bone healing and soft tissue contour changes following single-tooth extraction: a clinical and radiographic 12-month prospective study. Int J Periodontics Restorative Dent 23(4): 313-23, 2003

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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

## RIDGE PRESERVATION GRAFTING

- ▶ Review of all English language dental literature
- ▶ 3954 titles / 238 abstracts → 104 full text article analysis
- ▶ 6 months after extraction
  - 3.79mm (29-63%) horizontal
  - 1.24mm (B)/ 0.84mm (L) vertical avg. bone loss (11-22%)

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### MY RIDGE PRESERVATION TECHNIQUE

- ❖ mineralized corticocancellous granules
  - ❖ PTFE membrane
  - ❖ Cytoplast suture
- ▶ Rule of Thumb: 0.5 cc per root\*



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### CORTICOCANCELLOUS GRANULES

- ▶ A combination of cortical human bone (80%) and cancellous human bone (20%)
- ▶ Large particle range
  - Mineralized: 1.0 mm - 2.0 mm
  - Demineralized: 0.5 mm - 3.0 mm
- ▶ Integrates in approximately 4-5 months
- ▶ 3-year shelf life



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### XENOGRAFT GRANULES

- ▶ Source
  - Porcine (carbonate apatite)
- ▶ Preparation
  - Low temperature chemical extraction of organic and cellular components
  - High temperature (>1500°C) to remove residual organic components
- ▶ Properties
  - Interconnecting macro- and microscopic pore structure
  - Highly porous- 88 to 95% empty space
  - Supports vascularization and nutrition
  - Rough surface texture- facilitates cell adhesion and bone ingrowth
  - Hydrophilic- granules cohesive when wet
  - Osteoconductive



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### XENOGRAFT GRANULES

- ▶ Indications
  - Ridge augmentation around implants
  - When patient refuses allograft
- ▶ Advantages
  - Ridge augmentation maintained longer than other bone grafts
- ▶ Disadvantages
  - Slow resorption through osteoclastic activity
- ▶ Limitations
  - May take >24 months to resorb
  - Particles adjacent to soft tissue become encapsulated
- ▶ Technique
  - Hydrate with sterile saline
  - Used alone or mixed with autogenous bone (1:1)



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### PTFE MEMBRANES

NON-RESORBABLE

- ▶ Proprietary 100% polytetrafluoroethylene sheet
- ▶ Biologically inert and tissue compatible
- ▶ Mesh appearance is "dimples", not holes - makes membrane virtually impervious to bacterial and soft tissue penetration (smooth side is placed on bone)
- ▶ 4-year shelf life



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## PTFE MEMBRANES

NON-RESORBABLE

Features	Benefits
Primary closure is not required	<ul style="list-style-type: none"><li>• By avoiding releasing incisions the membrane maintains soft tissue architecture and preserves keratinized mucosa</li><li>• Easily, non-surgical removal after 21-28 days</li></ul>
Medical grade PTFE	<ul style="list-style-type: none"><li>• Biocompatible and non-reactive</li><li>• Can be trimmed with sharp sterile scissors for easier handling</li></ul>
Micro-machined surface texture	<ul style="list-style-type: none"><li>• Facilitates cell adhesion</li><li>• Enhances membrane stability</li><li>• Reduces flap retraction</li><li>• Increases pull-out strength</li></ul>



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## PTFE MEMBRANES NON-RESORBABLE

Indications for use:

- Socket grafting
- When primary closure after grafting cannot be achieved
- Large bony defects
- Temporary implantable material for space-making barrier in periodontal defects



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## PTFE MEMBRANE NON-RESORBABLE



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## RIDGE PRESERVATION TECHNIQUE



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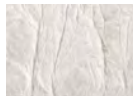
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## COLLAGEN MEMBRANE RESORBABLE

- ▶ Resorbable tissue matrix derived from highly-purified Type-I bovine Achilles tendon for safety and predictability
- ▶ GBR barrier function
- ▶ Integrates in approximately 6-9 months
- ▶ 3-year shelf life



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### COLLAGEN MEMBRANE RESORBABLE

Features	Benefits
Multi layer construction	Guides healing of bone and tissue – inner layers help prevent cellular and bacterial down growth
Unique fiber orientation	Provides tensile strength to accommodate sutures or tacks
Excellent wet handling characteristics and either side may be placed on site	Ease of use



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### COLLAGEN MEMBRANE RESORBABLE

Indications for use:

- Around dental implants
- Bony defects
- Ridge reconstruction
- GBR/GTR



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### RIDGE PRESERVATION

- ▶ 88 y.o. female
- ▶ HTN, hypothyroid
- ▶ Synthroid, Losartan (Cozaar)
- ▶ NKDA
- ▶ Lost crown, saw endo --> not restorable



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### RIDGE PRESERVATION



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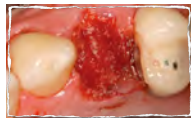
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### PERIACRYL

- ▶ Collaplug
- ▶ Gut Fig-8 suture
- ▶ PeriAcryl



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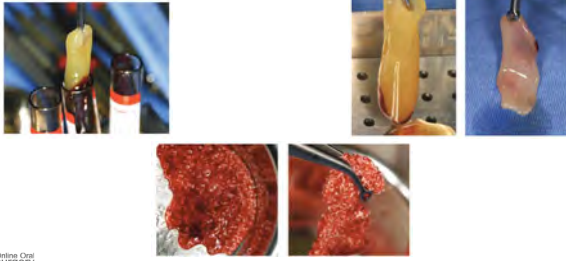
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## PLATELET-RICH FIBRIN (PRF)



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## IMPACTED TEETH

- ▶ Third Molars
- ▶ The Others (canine, premolar, incisor)

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## IMPACTED CANINE



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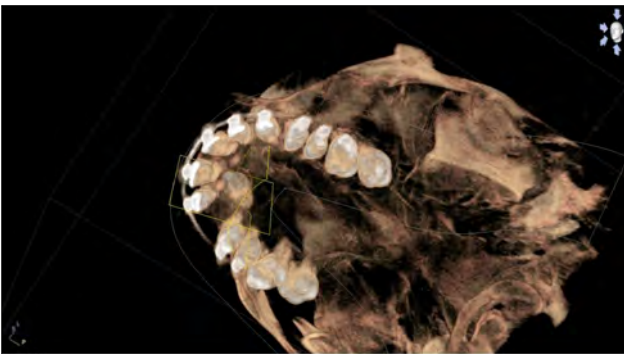
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# THIRD MOLARS

- LOTS OF CONTROVERSY
- PATIENT HEALTH ISSUES VS. \$\$\$
- MANY DIFFERENT VIEWPOINTS
- PERIODONTAL ISSUES
- IMPROVEMENT IN TECHNIQUES

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“ANY THIRD MOLAR THAT HAS NOT/WILL NOT COME INTO COMPLETE, FUNCTIONAL OCCLUSION, AND CAN NOT BE EASILY MAINTAINED BY THE PATIENT, SHOULD BE REMOVED.”

- Best time: roots 50%-75% developed
- Earlier is better than later - “It’s downhill after 25”
- > 35 years old, the benefits must outweigh the risks

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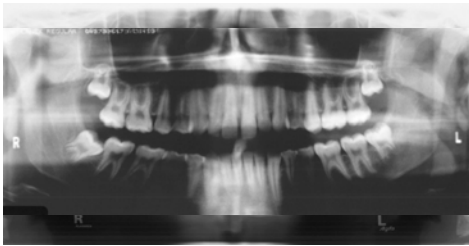
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# WISDOM TEETH



**Just Right!**

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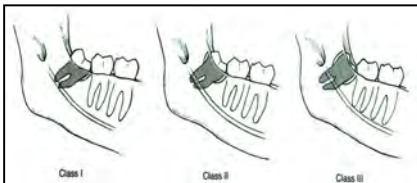
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# THIRD MOLARS

- CLASSIFICATION- GREGORY AND PELL



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# CLASSIFICATION- BY POSITION

Mesioangular



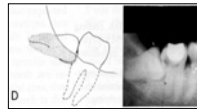
Vertical



Distoangular



Horizontal



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### CLASSIFICATION- PROCEDURE CODE

- ▶ **Surgical** - fully erupted, *may* need flap elevation, bone removal and/or sectioning
- ▶ **Soft Tissue Impaction** - covered only by gingiva, *will* need flap elevation, *may* need bone removal and/or sectioning
- ▶ **Partial Bony Impaction** - bone covering crown up to 50% (radiographically), *will* need flap elevation, *will* require bone removal and/or sectioning
- ▶ **Full Bony Impaction** - bone covering crown greater than 50% (radiographically), *will* need flap elevation, *will* require bone removal and/or sectioning



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### RADIOGRAPHS- 3<sup>RD</sup> MOLARS

- Should show present clinical condition
- Must show roots completely
- Must show relationship of roots to sinus (upper)
- Must show relationship of roots to IAN
- Panoramic- ideal



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### CONE BEAM CT IMAGING



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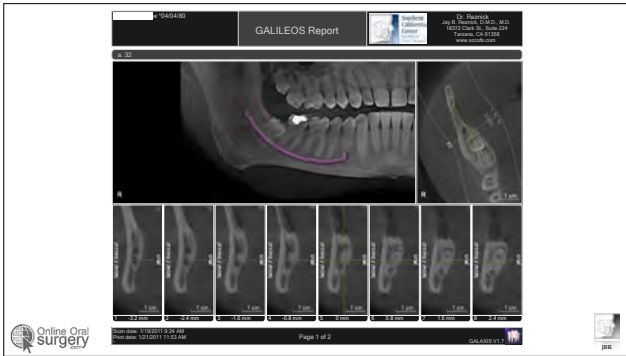
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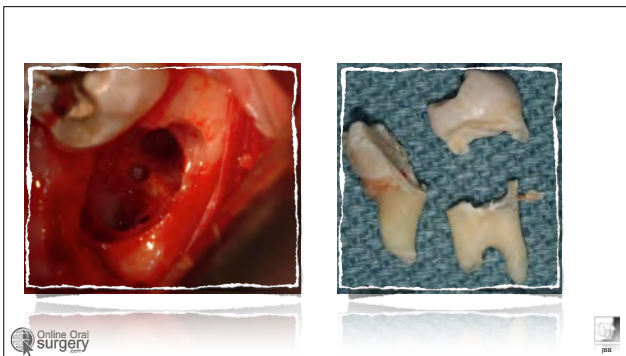
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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

### FACTORS THAT MAKE IMPACTION SURGERY . . .

<p><b>Less Difficult:</b></p> <ul style="list-style-type: none"> <li>- Mesioangular impaction</li> <li>- Soft tissue impaction</li> <li>- Adequate A-P room</li> <li>- Superficial depth</li> <li>- Fused conical roots</li> <li>- Separated from 2nd molar</li> <li>- Separated from IAN</li> <li>- Roots 1/3 to 2/3 formed</li> <li>- Wide PDL</li> <li>- Large follicle</li> <li>- Elastic bone</li> </ul>	<p><b>More Difficult:</b></p> <ul style="list-style-type: none"> <li>• Distoangular impaction</li> <li>• Full bony impaction</li> <li>• Tight A-P space</li> <li>• Deep</li> <li>• Curved, divergent roots</li> <li>• Contact with 2nd molar</li> <li>• Close to IAN</li> <li>• Long, thin roots</li> <li>• Fully-formed roots</li> <li>• Narrow PDL</li> <li>• Thin follicle</li> <li>• Dense, inelastic bone</li> </ul>
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### RISKS OF THIRD MOLAR REMOVAL

<p><b>•THE USUAL</b></p> <ul style="list-style-type: none"> <li>-Bleeding</li> <li>-Swelling</li> <li>-Pain</li> <li>-Infection</li> <li>-Dry socket</li> <li>-Delayed healing</li> </ul>	<ul style="list-style-type: none"> <li>•Nerve Injury- “numbness”</li> <li>•Mandible Fracture</li> <li>•Oral-Antral Fistula</li> </ul>
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## MANDIBULAR NERVE

- 2D RADIOGRAPHIC RELATIONSHIP OF MANDIBULAR CANAL TO TOOTH ROOTS
- Risk of paresthesia/ nerve injury
  - SUPERIMPOSITION (NO CONTACT)
  - GROOVING OF ROOT BY IAN
  - PERFORATION OF ROOT BY IAN



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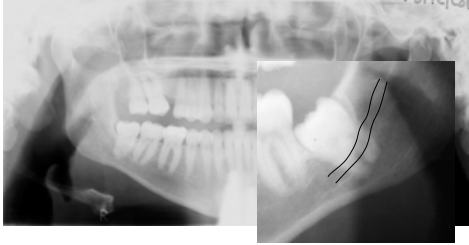
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## MANDIBULAR NERVE



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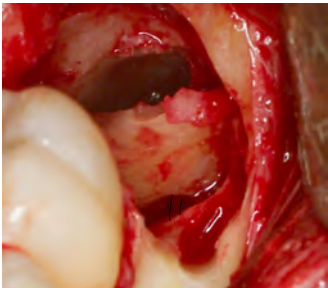
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## MANDIBULAR NERVE



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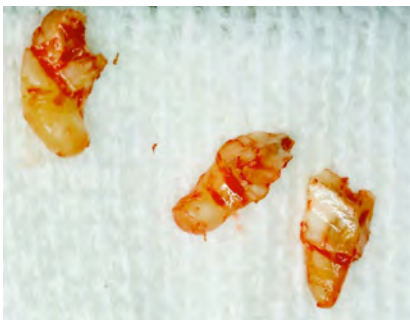
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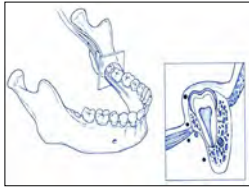
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# LINGUAL NERVE

- VERY VARIABLE LOCATION
- MAY BE ABOVE OR BELOW THE MYLOHYOID MUSCLE
- AVOID LINGUAL RETRACTION AND INSTRUMENTATION



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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

## MANDIBLE FRACTURE

- ▶Most frequent when:
  - Patient is a male, > 35 years old
  - Deep impaction
  - Infection present before surgery
  - Impaired healing potential
- ▶Usually occurs 1-3 weeks *after* surgery
- ▶Refer immediately
- ▶Treatment: Closed vs. Open Reduction

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## MANDIBLE FRACTURE

HEALTHY 36 Y.O. WOMAN  
#17 EXTRACTED BY DDS – DIFFICULT  
DEVELOPED INCREASING PAIN AND SWELLING OF LEFT MANDIBLE STARTING 1 WEEK AFTER PROCEDURE  
SAW LOCAL GP



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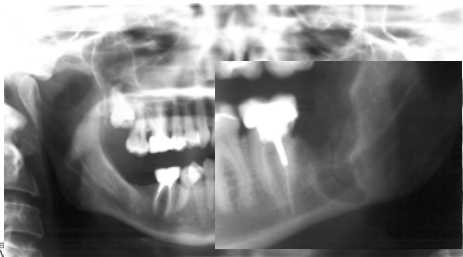
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## MANDIBLE FRACTURE



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## TREATMENT



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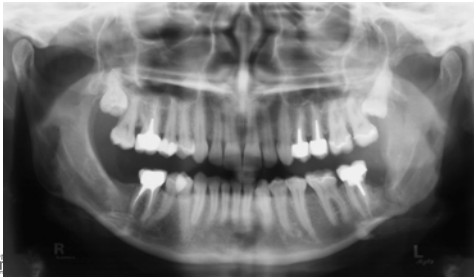
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# POST-TREATMENT (7 WEEKS)



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## PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

### 43 YEAR OLD MALE

- ▶ Tooth painful, infected
- ▶ Non-Insulin Dependent Diabetes
- ▶ WPW Syndrome -postablation



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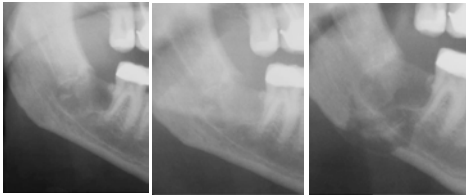
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# POST-OP



1 week postop

2 weeks postop

6 weeks postop

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# SINUS PROBLEMS

- **SINUSITIS:**
  - Amoxicillin 500mg TID x 14 days
  - Decongestant
- **ORAL-ANTRAL FISTULA**
  - Will probably close by itself
  - If not closed by 2 weeks → Refer



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**ORAL-ANTRAL COMMUNICATION**

- ▶Most common with maxillary first molars.
- ▶Best treatment is avoidance.
- ▶Be careful of divergent roots- section.

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**ORAL-ANTRAL COMMUNICATION**

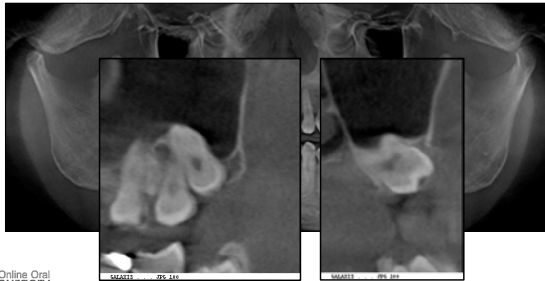
- ▶If small:
  - Careful curettage
  - Gelfoam/ CollaPlug
  - Bone graft??
  - “Sinus Instructions”
  - Will probably close by itself
  - If not closed by 2 weeks→ Refer

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**4 WEEKS POST-OP**

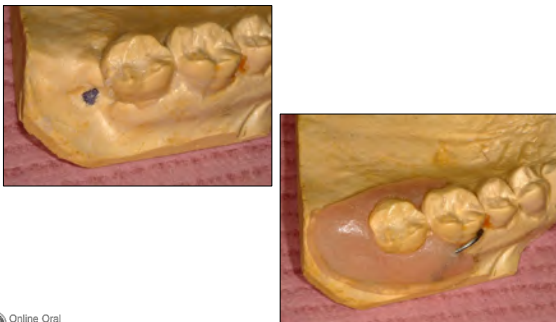


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## SPEAKING OF UPPER 3RDS...



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### RISKS OF NOT REMOVING 3RDS

- ▶ Pericoronitis
- ▶ Severe infection
- ▶ Damage to bone and/or adjacent teeth
- ▶ Cysts/ Tumors
- ▶ Jaw fracture
- ▶ It may need to be removed later

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## PERICORONITIS



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### PERICORONITIS

- ▶ Infection is in the soft tissue, not the tooth (usually)
- ▶ Treat soft tissue infection *before* taking out tooth
  - Warm saline rinses
  - Irrigation under flap
  - Antibiotics

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...OR WORSE!



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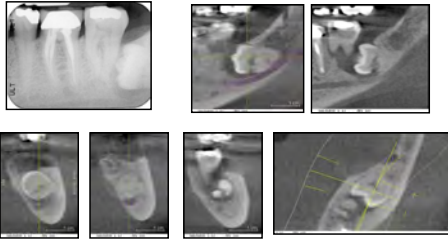
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### DAMAGE TO BONE AND ADJACENT TEETH



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### CYSTS/ TUMORS



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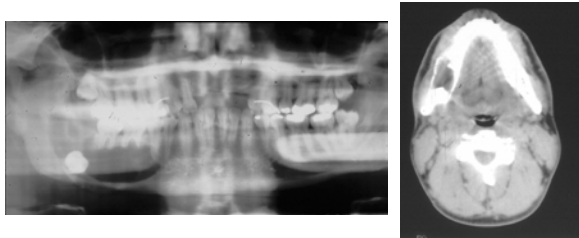
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### CYSTS/ TUMORS



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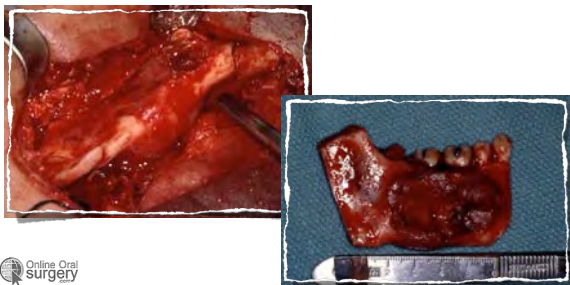
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### AMELOBLASTOMA



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# MANDIBLE FRACTURE



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It may need to be removed later!



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# IT MAY NEED TO BE REMOVED LATER!



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## THIRD MOLAR IMPACTIONS

- Visualize procedure from start to finish
- Have instruments available
- Adequate flap to visualize target and minimize soft tissue trauma



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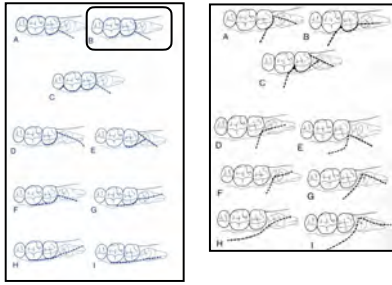
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# LOWER 3RD MOLAR INCISIONS



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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

## BONY EXPOSURE

- ▶ Sweep away bone
- ▶ The tooth crown is harder than bone
- ▶ Light pressure
- ▶ Let the bur "drive" itself
- ▶ Fully expose furcation to facilitate sectioning



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# THIRD MOLAR EXTRACTIONS

- VERTICAL IMPACTIONS
  - Expose crown
  - Try elevating



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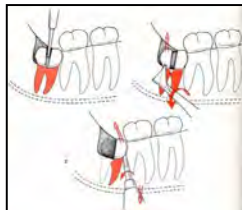
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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

## THIRD MOLAR EXTRACTIONS

- ▶ Vertical impactions
  - Expose crown
  - Try elevating
  - Bisect crown
  - Deliver
    - ▶ Distal half
    - ▶ Mesial half



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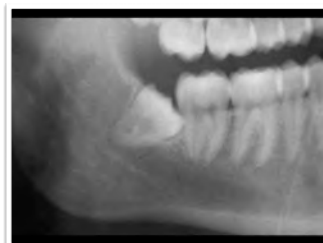
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# THIRD MOLAR EXTRACTIONS

- MESIOANGULAR IMPACTIONS
  - Expose crown
  - Bisect crown/ roots
  - Deliver
    - ▶ DISTAL HALF
    - ▶ MESIAL HALF



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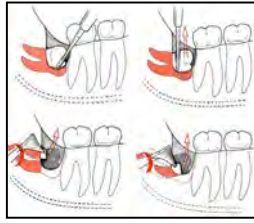
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### THIRD MOLAR EXTRACTIONS

►Horizontal Impactions

- Expose crown
- Section/ remove crown
- Section/ deliver roots



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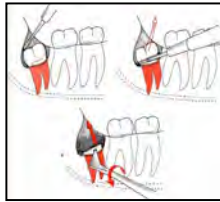
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### THIRD MOLAR EXTRACTIONS

•DISTOANGULAR IMPACTIONS

- Most difficult impaction
- Section/ remove crown
- Deliver roots
  - CRANE PICK
  - CRYER
  - COGSWELL B
- Pray a little



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### AMELIA

- HEALTHY 26 YEAR OLD WOMAN
- TENDER #17 AREA
- NO MEDICAL ISSUES OR PRIOR SURGERY

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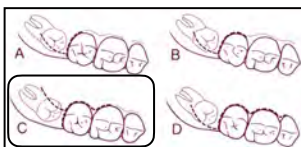
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### UPPER 3<sup>RD</sup> MOLAR INCISIONS



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TYPICAL CASE: 4- 3<sup>RD</sup> MOLARS

- ▶ Peridex BID, starting 2 days before surgery
- ▶ Ibuprofen 400mg (APAP 1000mg)
- ▶ No routine antibiotics
- ▶ General Anesthesia
- ▶ Tramadol 50mg



# PRE-OP PATIENT INSTRUCTIONS

Southern California Center for Oral and Facial Surgery  
Dr. B. Marcus, D.M.D., M.D., M.S.  
818-996-1210

Your appointment for \_\_\_\_\_ is scheduled on \_\_\_\_\_ at \_\_\_\_\_ office.  
This case is covered generally by your insurance. Please call us about 10 business days prior to your scheduled appointment to verify your policy and provide a completed pre-authorization form to our office. Payment in full is required at time of service if your insurance does not cover the procedure.

**PRE-OPERATIVE INSTRUCTIONS FOR PATIENTS HAVING INTRAVENOUS SEDATION OR GENERAL ANESTHESIA FOR SURGERY**

1. Do not eat or drink anything (including water) for at least eight (8) hours prior to your appointment. Patients who use daily medications (such as blood pressure, heart, or diabetes medication, or antipsychotics) should take their medications as scheduled (usually 30 minutes prior to your appointment) unless otherwise instructed by your physician.
2. Please bring the name and dosage of any medicine you are currently taking.
3. Have a responsible person (someone you know) to drive you home. Patients must be accompanied by a parent, who must drive patients to home after the procedure.
4. Do not drink any alcoholic beverages for 24 hours before your surgery.
5. Please discontinue the use of tobacco for 48 hours before your appointment. Smoking may delay healing, will create increased discomfort following surgery, and increase the risk of infection.
6. Please abstain from sexual intercourse, including vaginal intercourse, for 48 hours before your surgery. Patients who use daily medications (such as blood pressure, heart, or other heart) should take their medications as scheduled (usually 30 minutes prior to your appointment) unless otherwise instructed by your physician.
7. Contact before, not after, these instructions, special labors, perfumes, and make-up should not be worn to your appointment.

The estimated fee for surgery is \_\_\_\_\_.  
Due at Surgery: \_\_\_\_\_  
We must have a signed financial agreement and assignment of benefits prior to surgery or you will be unable to receive your insurance benefits. Please notify the office at least 24 hours prior to your appointment. If you have any questions regarding your insurance, please contact your insurance company.

Thank You!  
Dr. B. Marcus, D.M.D., M.D., M.S.  
818-996-1210 / FAX 818-996-1210



Southern California Center for Oral and Facial Surgery  
Dr. B. Marcus, D.M.D., M.D., M.S.  
818-996-1210

Your appointment for \_\_\_\_\_ is scheduled on \_\_\_\_\_ at \_\_\_\_\_ office.  
This case is covered generally by your insurance. Please call us about 10 business days prior to your scheduled appointment. If you are late, we may need to reschedule your surgery so that our other patients can be treated at their scheduled times.

**PRE-OPERATIVE INSTRUCTIONS FOR PATIENTS HAVING INTRAVENOUS SEDATION OR GENERAL ANESTHESIA FOR SURGERY**

1. Do not eat or drink anything (including water) for at least eight (8) hours prior to your appointment. Patients who use daily medications (such as blood pressure, heart, or diabetes medication, or antipsychotics) should take their medications as scheduled (usually 30 minutes prior to your appointment) unless otherwise instructed by your physician.
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Thank You!  
Dr. B. Marcus, D.M.D., M.D., M.S.  
818-996-1210 / FAX 818-996-1210



## POST-OP ROUTINE

- ▶ Ice
- ▶ Ibuprofen/ Acetaminophen
  - 400 mg/ 1000 mg q6h
- ▶ Tramadol
  - 50 mg q6h
- ▶ Soft diet

### Effect of a Single Dose of Oral Opioid and Nonopioid Analgesics on Acute Extremity Pain in the Emergency Department: A Randomized Clinical Trial

Andrew K. Chang, MD, MS; Polly E. Bijur, PhD; David Esses, MD; et al  
Douglas P. Barnaby, MD, MS; Jesse Baer, MD  
JAMA. 2017;318(17):1661-1667. doi:10.1001/jama.2017.16190



## POST-SURGICAL ANALGESIA

- ▶ 650 - 1000 mg Acetaminophen
- ▶ 400 mg Ibuprofen
- ▶ More effective analgesic than opioid or opioid-combination
  - Oral surgery
  - Orthopedics
  - Emergency Me



**Advil Dual Action**  
Acetaminophen 250 mg and Ibuprofen (NSAID) 125 mg Tablets  
Pain Reliever

**Checklist: Considerations**  
Cover Story  
Benefits and harms associated with analgesic medications used in the management of acute dental pain  
An overview of systematic reviews

**Background** The management of acute dental pain is a common clinical challenge. The most commonly used analgesic medications are acetaminophen, ibuprofen, and opioids. However, the use of these medications is often limited by their side effects. This review summarizes the benefits and harms associated with these medications in the management of acute dental pain.

**Types of Studies Reviewed** We searched for systematic reviews published between 2000 and 2017. We included reviews that compared acetaminophen, ibuprofen, or opioids to placebo or to each other in the management of acute dental pain.

**Results** We identified 10 systematic reviews. The most commonly used analgesic medications were acetaminophen, ibuprofen, and opioids. Acetaminophen and ibuprofen were found to be more effective than placebo and less harmful than opioids. Opioids were found to be more effective than acetaminophen and ibuprofen but also associated with more side effects.

**Conclusions** Acetaminophen and ibuprofen are more effective and less harmful than opioids for the management of acute dental pain. Opioids should be reserved for patients who do not respond to acetaminophen and ibuprofen.

JADA 2018;149(4):256-268





### "ROUTINE ANTIBIOTICS"

- ▶ Antibiotics are over-prescribed for routine oral surgery.
- ▶ Risks of over-use:
  - Allergic reactions
  - Resistance
  - *C. difficile* colitis



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### MANAGEMENT OF BLEEDING

Bleeding from surgical sites can usually be controlled by local measures



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### LOCAL MEASURES TO CONTROL BLEEDING

- GAUZE PRESSURE
- FIRM
- 10-15 MIN
- REPEAT PRN



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### LOCAL MEASURES TO CONTROL BLEEDING

- ▶ Gauze pressure
- ▶ Pack site- gelatin sponge (Gelfoam), absorbable oxycellulose (Surgicel)
- ▶ Suturing
- ▶ Topical thrombin
- ▶ Local anesthetic



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### LOCAL MEASURES TO CONTROL BLEEDING

- Rinse with 5% amino-caproic acid (Amicar) or tranexamic acid (Lysteda)
- 10 ml
  - Hold in mouth for 2 min, 30 min pre-op, then q2h for 6-10 doses



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# LIVER CLOT

- It represents incomplete fibrin clotting and manifests as a slowly developing, red-brown clot.
- May occur days after extraction
- It is usually due to venous hemorrhage.
- The patient may have difficulty controlling the bleeding with pressure alone

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## JUST REMEMBER...

*ALL BLEEDING  
EVENTUALLY STOPS!*

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### PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST



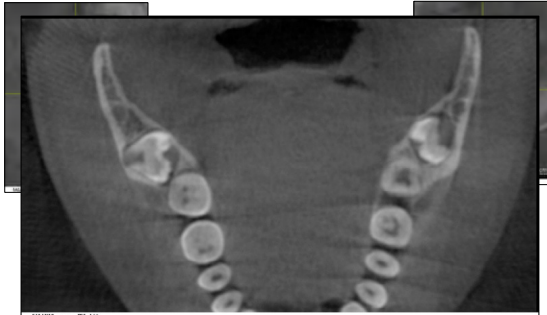
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## THINK!



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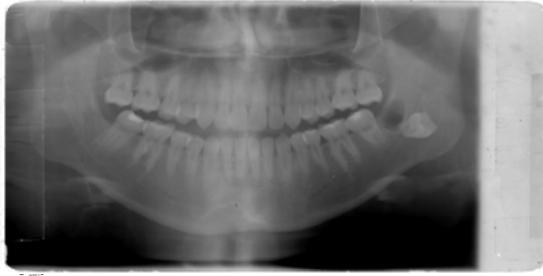
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# WHAT HAPPENED?



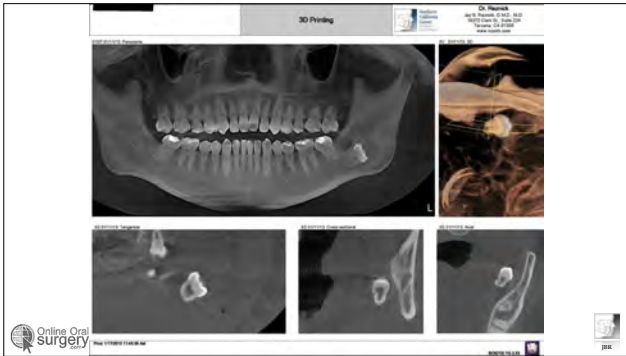
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# FACTORS AFFECTING POSTOP RECOVERY

- AMOUNT OF FLAP REFLECTION
- SURGICAL TIME
- INSTRUMENTATION
- IRRIGATION
- CORTICOSTEROIDS
- PRE-OPERATIVE SYMPTOMS
- Surgeon experience
- Patient age
- Bone density
- Root development
- Tooth position
- Individual variation

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## PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

### POST-OP INSTRUCTIONS

- ▶ Ice
- ▶ Soft Diet
- ▶ Rest
- ▶ Analgesia
  - 1000mg APAP + 400 mg Ibuprofen
  - Tramadol 50 mg

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# POST-OPERATIVE INSTRUCTIONS

**Non-surgical Extraction of Upper and Lower Teeth**  
Dr. Namik, D.D.S., M.D.  
10000 Wilshire Blvd, Suite 1000  
Beverly Hills, CA 90210  
Tel: 310.274.1111

**POST-OPERATIVE INSTRUCTIONS AND MEDICATIONS FOR EXTRACTS**

These instructions are intended to help you understand what to expect after your procedure. Please read these instructions carefully and follow them exactly. If you have any questions, please call our office at 310.274.1111.

**1. Bleeding:** Some bleeding is normal after the procedure. To control bleeding, bite on the gauze pad for 30-45 minutes. If bleeding continues, replace the gauze pad with a clean one. Do not use aspirin or other blood thinners for at least 24 hours after the procedure.

**2. Pain:** Pain is normal after the procedure. Take the pain medication as directed. Do not take more than the recommended dose. Do not take aspirin or other blood thinners for at least 24 hours after the procedure.

**3. Swelling:** Swelling is normal after the procedure. Apply ice packs to the outside of your face for the first 24-48 hours. Do not use heat for the first 48 hours.

**4. Diet:** Eat soft foods for the first 24-48 hours. Avoid hot, spicy, or hard foods. Drink plenty of fluids.

**5. Oral Hygiene:** Brush your teeth gently. Avoid brushing the extraction site for the first 24-48 hours. Rinse your mouth with warm salt water (1/2 tsp salt in 8 oz water) after meals and before bed.

**6. Activity:** Avoid strenuous activity for the first 24-48 hours. Avoid driving for the first 24 hours.

**7. Medications:** Take the pain medication as directed. Do not take aspirin or other blood thinners for at least 24 hours after the procedure.

**8. Follow-up:** Return to our office for a follow-up appointment in 7-10 days.

**9. Contact Us:** If you have any questions or concerns, please call our office at 310.274.1111.

**10. Disclaimer:** These instructions are not a substitute for professional medical advice. Please consult your dentist for more information.

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SOUTHERN CALIFORNIA CENTER FOR ORAL AND FACIAL SURGERY  
110 B. RIVERS, D.D.M.D., M.D., INC.  
818-963-1200

**ADDITIONAL POST-OPERATIVE INSTRUCTIONS  
FOLLOWING THE REMOVAL OF IMPACTED WISDOM TEETH**

1. Following the removal of wisdom teeth, small oral hygiene swabs may be removed. However, the area immediately adjacent to the 1st molar wisdom tooth socket must be treated and monitored, should be treated carefully. Gentle brushing will not injure the healing tissue.
2. Special care must be given to the healing area of the lower impacted wisdom tooth. The use of a plastic syringe, as demonstrated by the notes, is suggested as an aid to keeping this area clean. A Water Pik, with minimal pressure, may be used in place of the syringe. A diluted solution of any popular brand mouthwash may be used or warm salt water (1 teaspoon salt to an 8 ounce glass of warm water) may be used as a substitute. This routine, in conjunction with regular brushing of the teeth, should be practiced each time immediately after local anesthetic.
3. The use of the syringe for the lower wisdom tooth must be maintained for at least 3 weeks. Improper oral hygiene in this area may result in complications and a postoperative infection, which can occur many weeks following the initial surgical procedure.
4. In the event of any complication, especially pain or swelling, or if there is any question regarding your postoperative progress, please telephone this office immediately.


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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

**MAKE SURE PATIENTS UNDERSTAND YOUR INSTRUCTIONS!**


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**MANAGEMENT OF COMMON POSTOPERATIVE COMPLICATIONS**

- INFECTION
- SINUSITIS
- "DRY SOCKET"
- SEQUESTRATION
- LINGUAL MANDIBULAR SEQUESTRATION
- FRACTURE
- NUMBNESS





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**POSTOP INFECTION**

- OCCURS AFTER 3<sup>RD</sup> POSTOP DAY
- INCREASED SWELLING, PAIN
- SKIN ERYTHEMA
- FOUL OR SOUR TASTE
- FEVER


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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

**POSTOP INFECTION**

- ▶ Treat initially with "standard" antibiotics
- ▶ May require debridement of extraction socket
- ▶ Place drain if involves soft tissues


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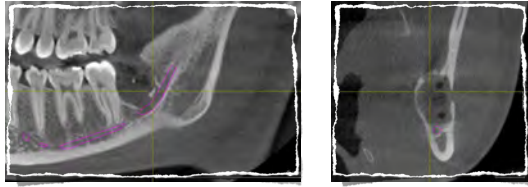
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## DRY SOCKET

- LOCALIZED ALVEOLAR OSTEITIS
- LOSS OF THE BLOOD CLOT
- ETIOLOGY??
- "SCHMOOTZY" SOCKET
- "REZNICK'S SIGN" (CHANDELIER SIGN)
- TREATMENT



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## DRY SOCKET

- LOCALIZED ALVEOLAR OSTEITIS
- LOSS OF THE BLOOD CLOT
- ETIOLOGY??
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- TREATMENT



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## DRY SOCKET

- LOCALIZED ALVEOLAR OSTEITIS
- LOSS OF THE BLOOD CLOT
- ETIOLOGY??
- "SCHMOOTZY" SOCKET
- "REZNICK'S SIGN" (CHANDELIER SIGN)
- TREATMENT



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## DRY SOCKET

- LOCALIZED ALVEOLAR OSTEITIS
- LOSS OF THE BLOOD CLOT
- ETIOLOGY??
- "SCHMOOTZY" SOCKET
- "REZNICK'S SIGN" (CHANDELIER SIGN)
- TREATMENT
- PREVENTION



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# DRY SOCKET

A TRUE DRY SOCKET SHOULD NOT LAST MORE THAN A FEW DAYS. IF IT DOES, LOOK FOR ANOTHER CAUSE OF THE PATIENT'S SYMPTOMS.

"WHEN THINGS DON'T SEEM RIGHT, THERE'S A GOOD CHANCE THAT SOMETHING'S WRONG"

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# ORAL-ANTRAL COMMUNICATION

- SINUS EXPOSURE AT SURGERY
- IMMEDIATE MANAGEMENT



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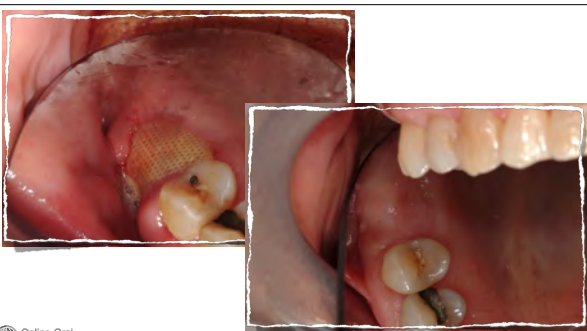
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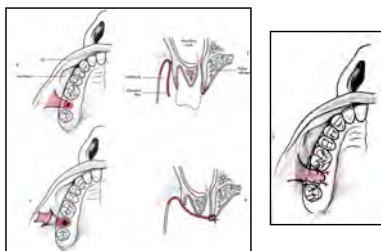
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# Oral-Antral Fistula Closure



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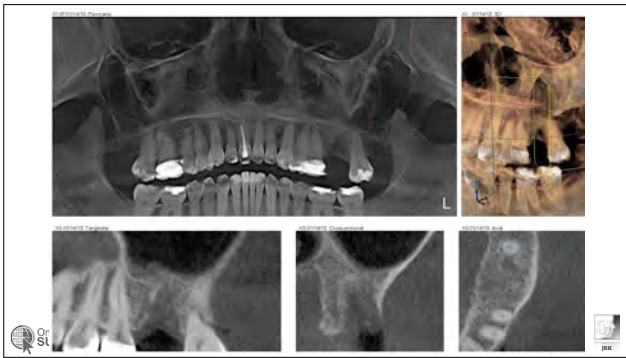
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## BONY SEQUESTRATION

- SMALL PIECES OF BONE MAY BECOME OBVIOUS AT THE EXTRACTION AREA UP TO MANY MONTHS AFTER SURGERY
- MOST WILL SLOUGH WITHOUT TREATMENT
- CAN BE REMOVED WITH A HEMOSTAT OR SMALL RONGEUR

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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

### POST-SURGICAL COMPLICATIONS

#### ›Lingual bony spicule

- Can develop anytime after surgery for mandibular 3<sup>rd</sup> molars, even years later.
- Painful, radiates to ear, throat, headache
- Can occur spontaneously.
- Bony spicule is visible along mylohyoid ridge, penetrating lingual mucosa.




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## LINGUAL BONY SPICULE

- MAY BE SELF-LIMITED
  - Exposed bone becomes necrotic
  - May slough, leaving a smooth surface underneath
  - Mucosa will heal spontaneously
- MAY NEED INTERVENTION




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## DENTAL INFECTIONS

- A TOOTH SHOULD NOT BE REMOVED IN THE FACE OF ACTIVE INFECTION.
- YOU MUST PUT THE PATIENT ON ANTIBIOTICS FIRST, THEN TAKE OUT THE TOOTH WHEN THE INFECTION IS BETTER.

**No!**  
**No!**  
**No!**

## ODONTOGENIC INFECTIONS

- PERIO/ENDO INFECTIONS
  - Remove the source of the infection
  - I & D
  - Antibiotics
- PERICORONITIS
  - Usually cellulitis
  - Begin treatment for soft tissue infection before removing tooth



## ANTIBIOTIC USE

- INDICATED FOR:
  - Acute onset infection
  - Diffuse swelling
  - Compromised host defenses
  - Involvement of fascial spaces
  - Severe pericoronitis
  - Osteomyelitis
- NOT INDICATED FOR:
  - Chronic well-localized abscess
  - Minor vestibular abscess
  - Dry socket
  - Mild pericoronitis

## ANTIBIOTIC USE

MOST ODONTOGENIC INFECTIONS RESPOND READILY TO THE "STANDARD" ANTIBIOTICS

- Penicillin
- Amoxicillin
- Erythromycin
- Clindamycin
- Zithromycin
- Cephalexin
- Ceclor
- Cefdinir
- Metronidazole
- Tetracycline

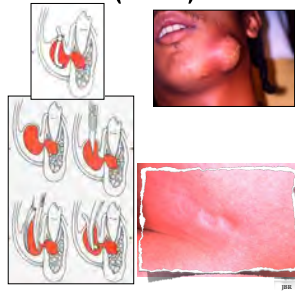
## INDICATIONS FOR C & S:

- Rapidly spreading infection
- Postoperative infection
- Nonresponsive infection
- Recurrent infection
- Compromised host defenses
- Osteomyelitis
- Suspected actinomycosis



# INCISION & DRAINAGE (I&D)

- FLUCTUANT VS. INDURATED
  - Pus
  - Cellulitis
- LETTING OUT THE PUS
  - Incision and Drainage



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# INCISION & DRAINAGE (I&D)

- FLUCTUANT VS. INDURATED
  - Pus
  - Cellulitis
- LETTING OUT THE PUS
  - Incision and Drainage
- DRAINING CELLULITIS

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# I & D

- ANTIBIOTICS
- WARM SALINE RINSES
- MOIST HEAT
- DEFINITIVE TREATMENT
- FOLLOW-UP: 1 – 2 DAYS

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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

## REASONS FOR TREATMENT FAILURE

- Inadequate surgery
- Depressed host defenses
- Foreign body
- Antibiotic problems
  - ▶ Patient noncompliance
  - ▶ Drug not reaching site
  - ▶ Drug dosage too low
  - ▶ Wrong bacterial diagnosis
  - ▶ Wrong antibiotic

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## CRITERIA FOR REFERRAL TO A SPECIALIST

- RAPIDLY PROGRESSING INFECTION
- DIFFICULTY IN BREATHING
- DIFFICULTY IN SWALLOWING
- FASCIAL SPACE INVOLVEMENT



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## CRITERIA FOR REFERRAL TO A SPECIALIST



- Elevated temperature (> 101.5° F)
- Severe jaw trismus (< 20 mm)
- Toxic appearance
- Compromised host defenses

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## PATHOLOGY IN A NUTSHELL (AS LEARNED IN DERMATOLOGY)

### • IF IT IS RAISED:

- Cut it off
- Biopsy

### IF IT IS FLAT:

- Try topical steroids
- If it doesn't go away
- Cut it off
- Biopsy

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## BIOPSY REQUEST FORM

- GIVE AS MUCH INFORMATION AS POSSIBLE
- BE CONCISE



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## BIOPSY

### Incisional vs. Excisional

#### • INCISIONAL:

- Large lesion
- Generalized condition
- Possibly malignant
- Diagnosis not definitive

#### • EXCISIONAL

- Small lesion
- Most likely benign
- Can be completely excised
- Will not require further treatment



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## INCISIONAL VS. EXCISIONAL??



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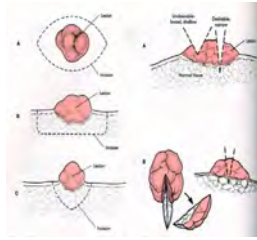
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### BIOPSY GUIDELINES

- ▶ Excise down to connective tissue layer
- ▶ If ulcerative, biopsy near edge
- ▶ If suspect malignancy, biopsy "worst" area
- ▶ If excising, excise completely, consider closure



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### DIFFERENTIAL DIAGNOSIS

- FIBROMA
- HEMANGIOMA
- PLEOMORPHIC ADENOMA (BENIGN MIXED TUMOR)
- MUCOUS RETENTION CYST (MUCOCOELE)



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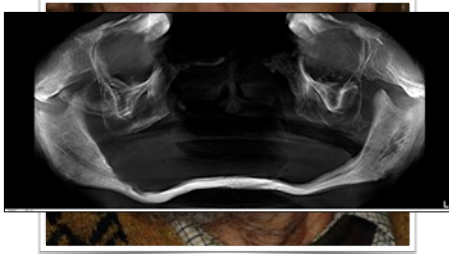
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### INCISIONAL OR EXCISIONAL BIOPSY?



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### INCISIONAL OR EXCISIONAL BIOPSY?



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### BIOPSY DOS AND DON'TS

- ▶ Do submit an accurate and complete history
- ▶ Do remove sufficient tissue to ensure having representative material
- ▶ Do submit x-rays of all bony lesions
- ▶ Do immerse the lesion immediately in sufficient volume of fixative
- ▶ Do handle the lesion gently -- crushing may render the specimen useless

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### BIOPSY DOS AND DON'TS

- ▶ Don't incise a small lesion -- excise it instead
- ▶ Don't inject local anesthetic solution into the immediate area -- it distorts the tissue making microscopic examination difficult
- ▶ Don't use cautery or lasers -- they cook tissues rendering specimens useless
- ▶ Don't allow the tissue to dry out before fixation -- place it in formalin immediately
- ▶ Don't remove a sample from an ulcer or necrotic area as they may be difficult to interpret on microscopic examination



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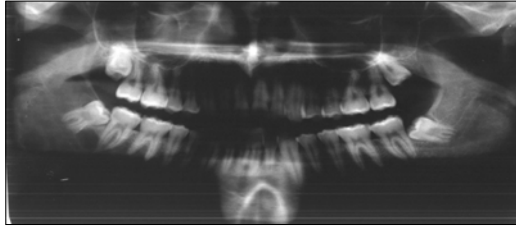
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### HEALTHY 19 YEAR OLD MALE



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### CBCT PANORAMIC



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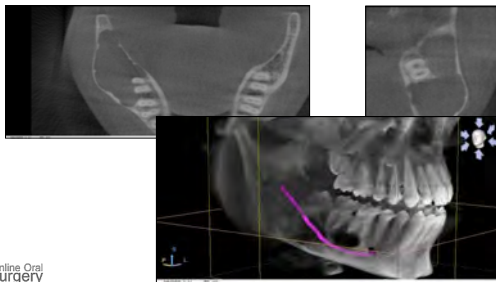
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### ADDITIONAL VIEWS



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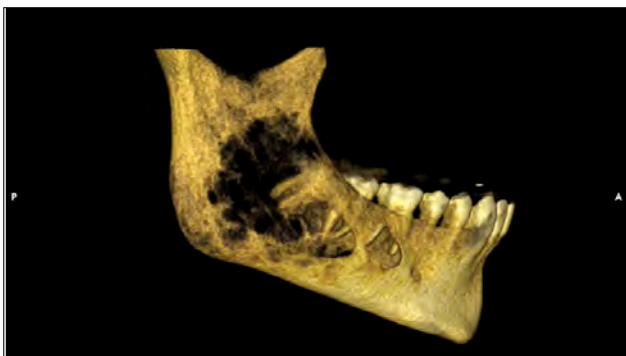
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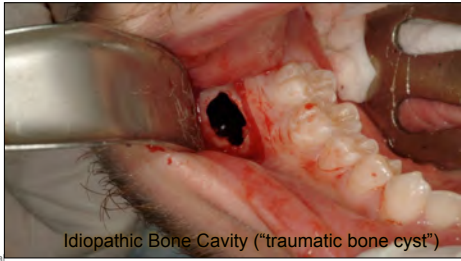
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# EXPLORATION/ BIOPSY



Idiopathic Bone Cavity ("traumatic bone cyst")

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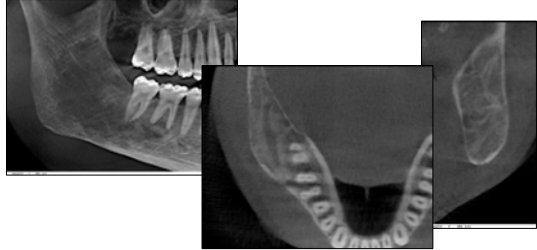
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# 4 MONTHS POSTOP



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# 1 YEAR FOLLOW-UP



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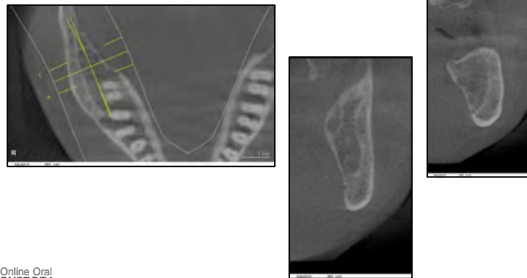
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# 1 YEAR FOLLOW-UP



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# RETREAT ENDO - #19



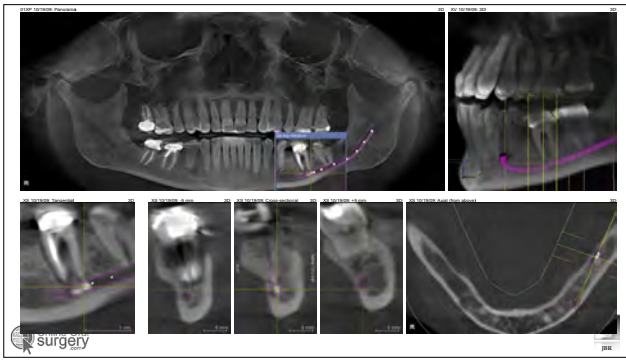
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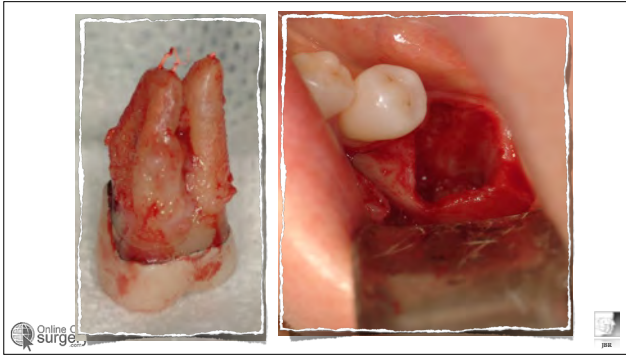
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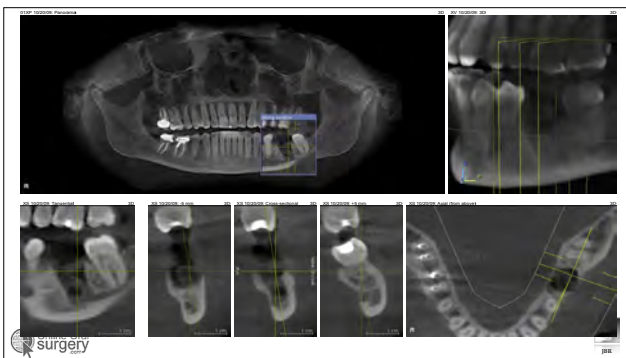
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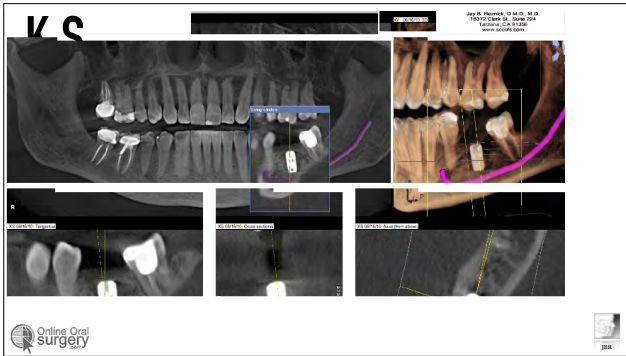
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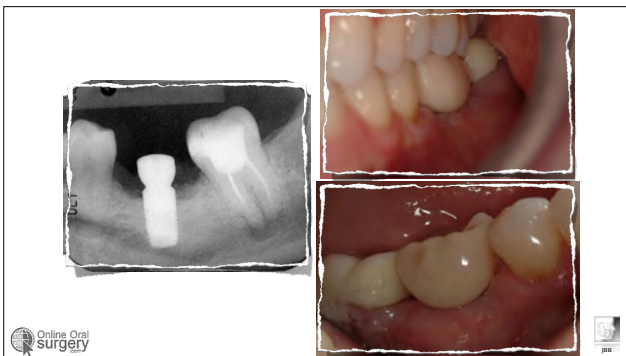
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PRACTICAL ORAL SURGERY FOR THE GENERAL DENTIST

**PITFALLS- PROCEDURAL**

- ▶ "I've got time on my schedule"
- ▶ "It looks easy"
- ▶ Not having the correct instruments
- ▶ Not laying a flap/ big enough flap
- ▶ Not planning/ being prepared
- ▶ Not referring the patient to the OS to begin with!
  - Offer patient options: GP or OS

In the bottom left corner, there is a logo for 'Online Oral surgery' and a small profile icon in the bottom right corner.

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**HELP!**

- DEVELOP A WORKING RELATIONSHIP WITH A LOCAL ORAL AND MAXILLOFACIAL SURGEON
- YOU NEED HIM/HER
- HE/SHE NEEDS YOU!

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### PITFALLS- MEDICOLEGAL

- ▶ Inadequate informed consent
- ▶ Inadequate radiographs
- ▶ Poor records
- ▶ Failure to call for help/ refer to specialist
- ▶ Failure to inform patient of complication
- ▶ Ignoring a patient's complaint of a complication
- ▶ Failure to give patient option of seeing a specialist



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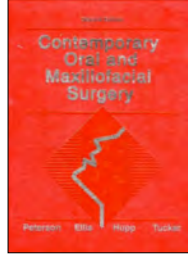
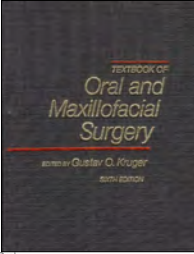
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### REFERENCES- BASIC



Mosby



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### REFERENCES



W B Saunders



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