

OFFICE ORAL SURGERY MADE SIMPLE AND FUN

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“Practice is the best of all instructors” Publilius Syrus Maxim 439

Disclaimer: This program is offered as an educational tool only. Attendees are referred to oral surgery textbooks for additional information and the enrollment in an advanced educational program for additional and more through experiences. Attendance at this program does not reflect specialty status, advanced training, specific skills or educational status. The opinions expressed today should be combined with additional educational experiences before considering them in your practice

PLEASE READ THIS CAREFULLY, BE SURE TO COMPLETE FULLY AND SIGN
 payable at the time of treatment. If you have any questions concerning this or any
 other matter, please do not hesitate to discuss them with us.

Please Print

Date _____

Zip _____ Family Dentist _____

Work Tel# _____

Work Address _____

Social Security # _____

of Visit _____

Medical History

Circle Answer

Yes No

Yes No

Yes No

you in good health?

you receiving any medical treatment now?

you taking any medication now?

answer to 2 or 3 is Yes, please list treatment and/or medication(s)

a physician ever informed you that you had

- any heart ailment Yes No
- high blood pressure Yes No
- Diabetes Yes No
- lung disease or asthma Yes No
- rheumatic fever Yes No
- any blood disease Yes No
- hepatitis or liver disease Yes No
- kidney disease Yes No
- jaundice Yes No
- any bleeding tendency Yes No
- tuberculosis Yes No
- any other medical problems or treatment not listed Yes No

to 4 is Yes, please add pertinent information:

allergic to any medications? Yes No

please list

- 6. Have you ever received radiation TREATMENT to the head or neck? Yes No
- 7. Do you take aspirin daily? Yes No
- 8. Have you been ill or hospitalized recently? Yes No
- 9. Have you ever had a fractured jaw? Yes No
- 10. (Women) Are you pregnant or nursing? Yes No
- 11. Please enter your physician's name and address: _____

12. When did you eat last? _____

13. Are you accompanied or have you made arrangements to be escorted home? Yes No

14. Do you wear contact lenses? Yes No

My medical history is accurate and complete.

Patient Signature _____

We will gladly complete any pertinent insurance forms for you, but inasmuch as there are many differences in the benefits and in the services covered by various plans, office policy is to have any benefit payments sent directly from the insurance company to the patient.

INFORMED CONSENT

Occasional complications may arise from oral surgery. These include swelling, discomfort, bleeding, infection, chipped teeth, bone fracture, jaw joint discomfort, inability to open the mouth fully and discoloration of the skin.

Some oral surgery procedures including the administration of local anesthesia can cause a numbness to the lips, tongue, teeth, gums or chin. In the vast majority of cases, this numbness is temporary. However, in rare cases it can be permanent.

Patient signature _____

Witness _____ Date _____

INTRAVENOUS SEDATION ONLY CONSENT

If I elect to receive intravenous sedation during surgery, I have been informed of the rare complications of allergic reaction, pain or swelling at the injection site and unexpected lung or cardiovascular effects.

Patient signature _____

Witness _____ Date _____

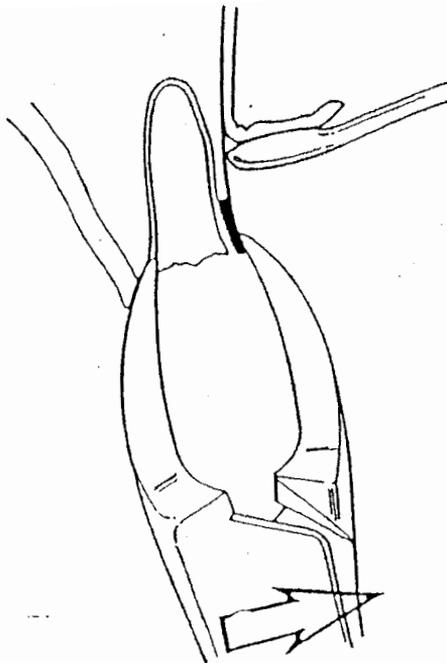


Fig. 8-34. If root is fractured at level of bone, buccal beak of forceps can be used to remove small portion of bone at same time that it grasps root.

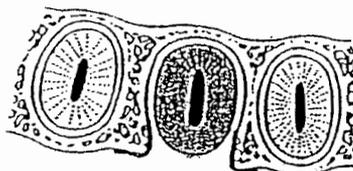


Fig. 8-36. When removing bone from buccal surface of tooth or tooth root to facilitate removal of that root, mesiodistal width of bone removal should be approximately same as mesiodistal dimension of tooth root itself. This allows unimpeded path for removal of root in buccal direction.

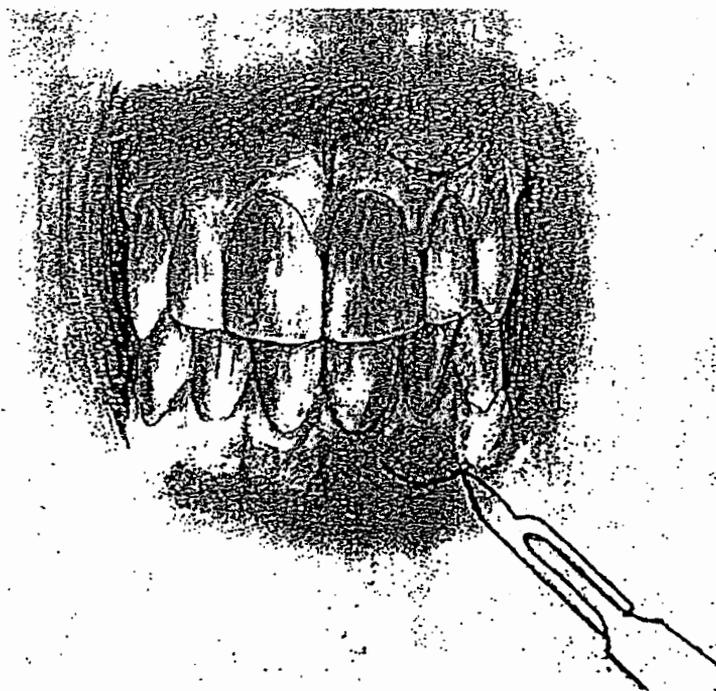


FIG. 82. Correct incisions being made at most dependent portion of swelling

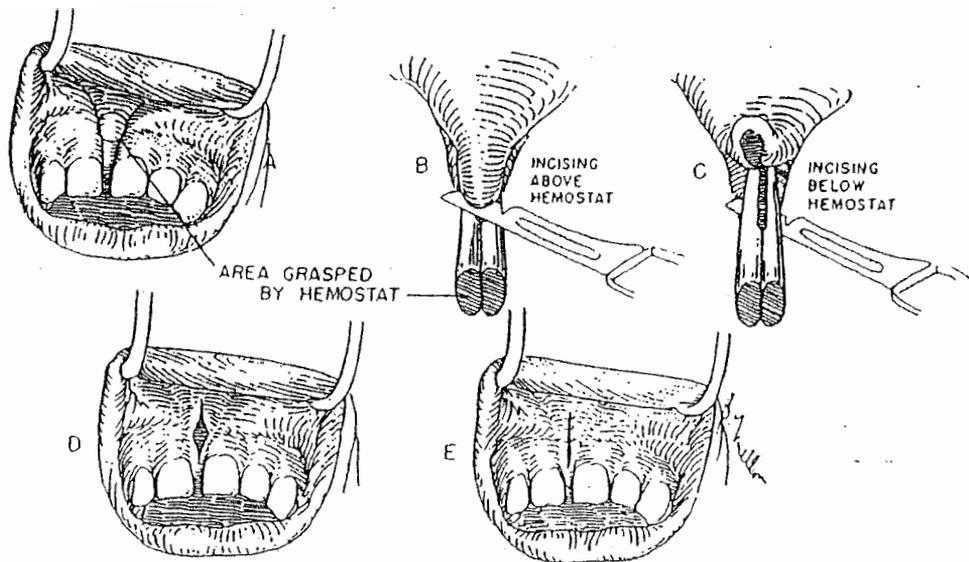


Fig. 7-20. Cross-diamond excision of labial frenum. A, Area grasped by hemostat. B and C, Incision above and below hemostat. D, Surgical defect produced by excision of fibrous band. E, Closure.

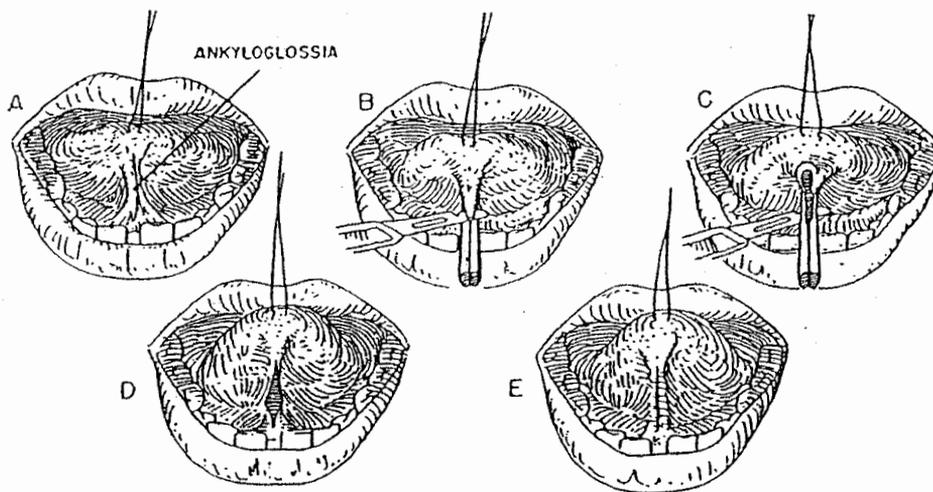


Fig. 7-21. Cross-diamond excision of lingual frenum for ankyloglossia. A, Area grasped by hemostat. B and C, Incisions above and below hemostat. D, Surgical defect prior to closure. E, Closure.

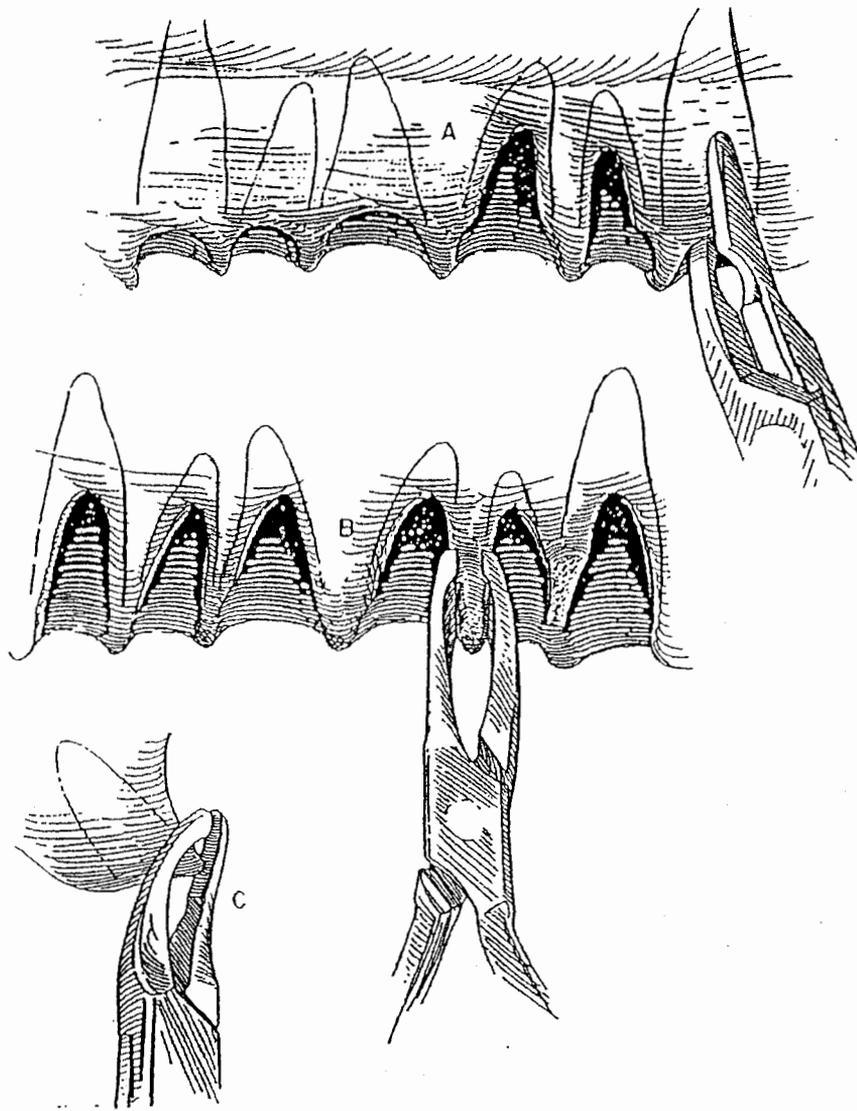


Fig. 5-1. Simple alveoloplasty. A, Rongeur removing labial plate. B, Removal of interseptal tip. C, Side view of interseptal tip removal.

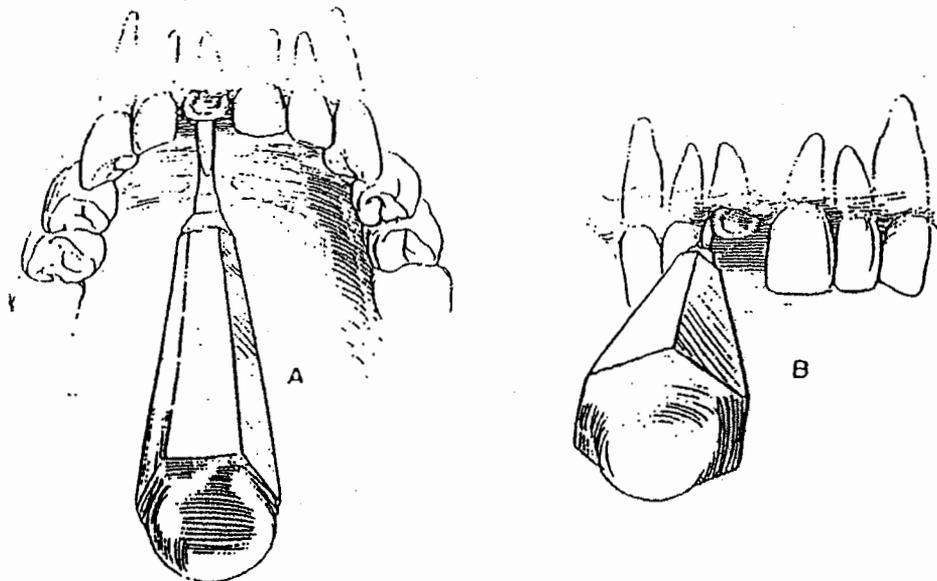


Fig. 5-8. Elevation of necrotic root remnant with straight-shank elevator. A, Palatal approach parallel with long axis of root. B, Labial-buccal approach at right angles to long axis of root.

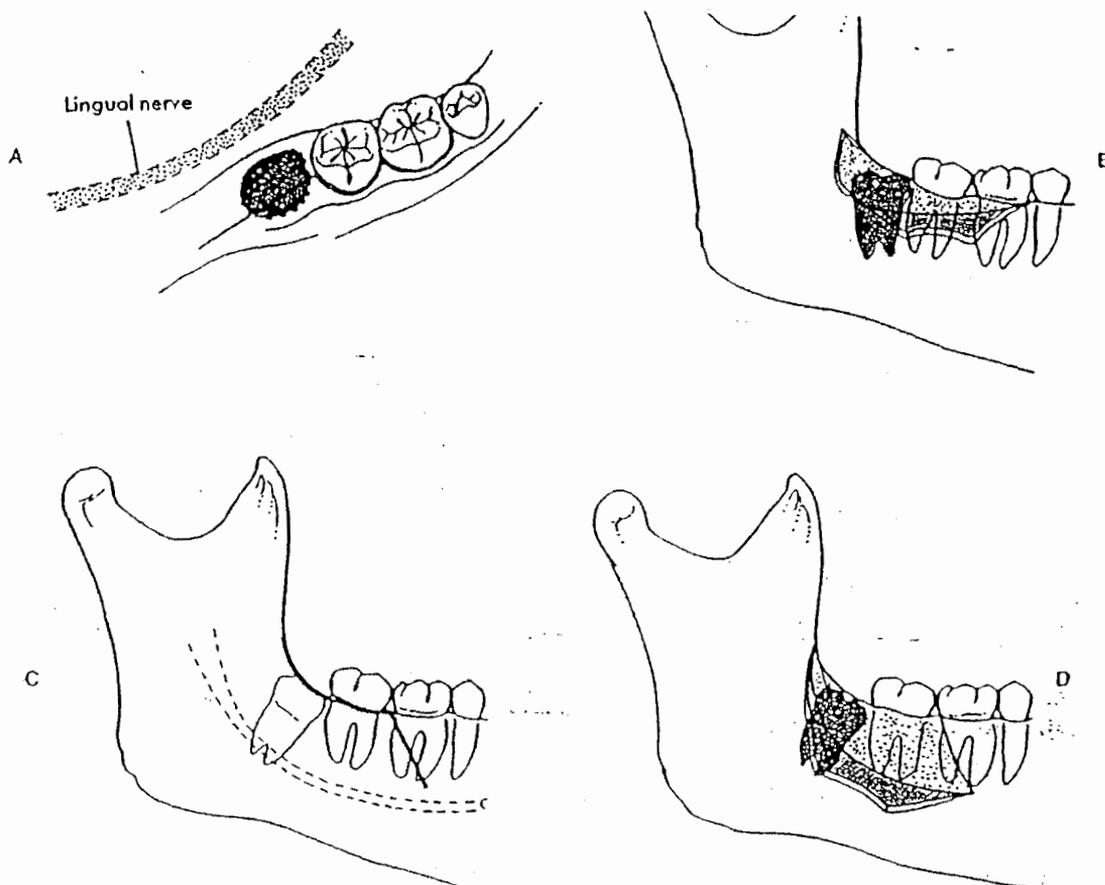
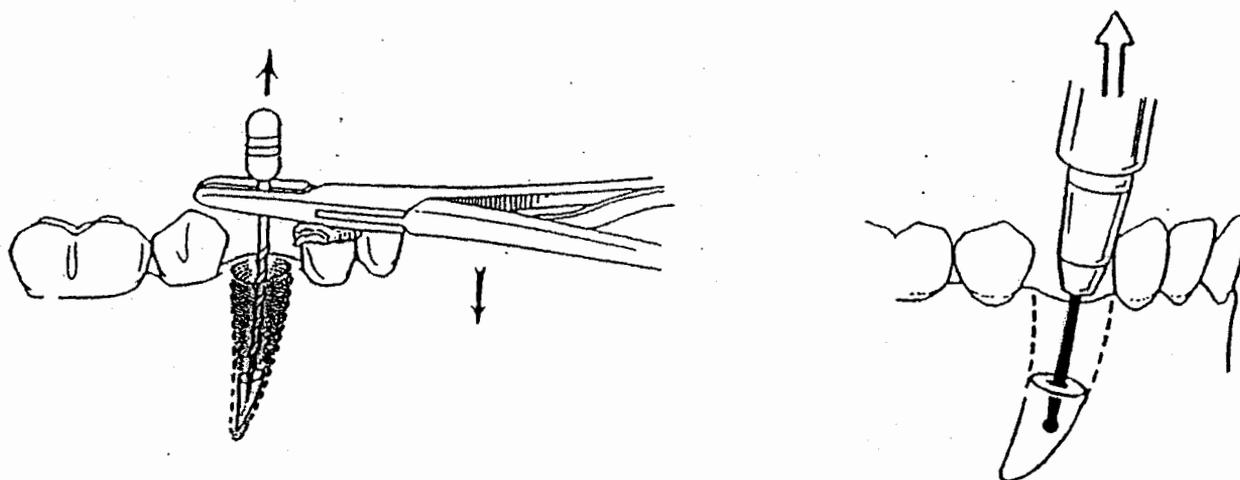


Fig. 9-43. A, Envelope incision, most commonly used to reflect soft tissue for removal of impacted third molar. Posterior extension of incision should diverge laterally to avoid injury to lingual nerve. B, Envelope incision is reflected laterally to expose bone overlying impacted tooth. C, When three-cornered flap is made, release incision is made at mesial aspect of second molar. D, When soft tissue flap is reflected by means of release incision, greater visibility is possible, especially at apical aspect of surgical field.



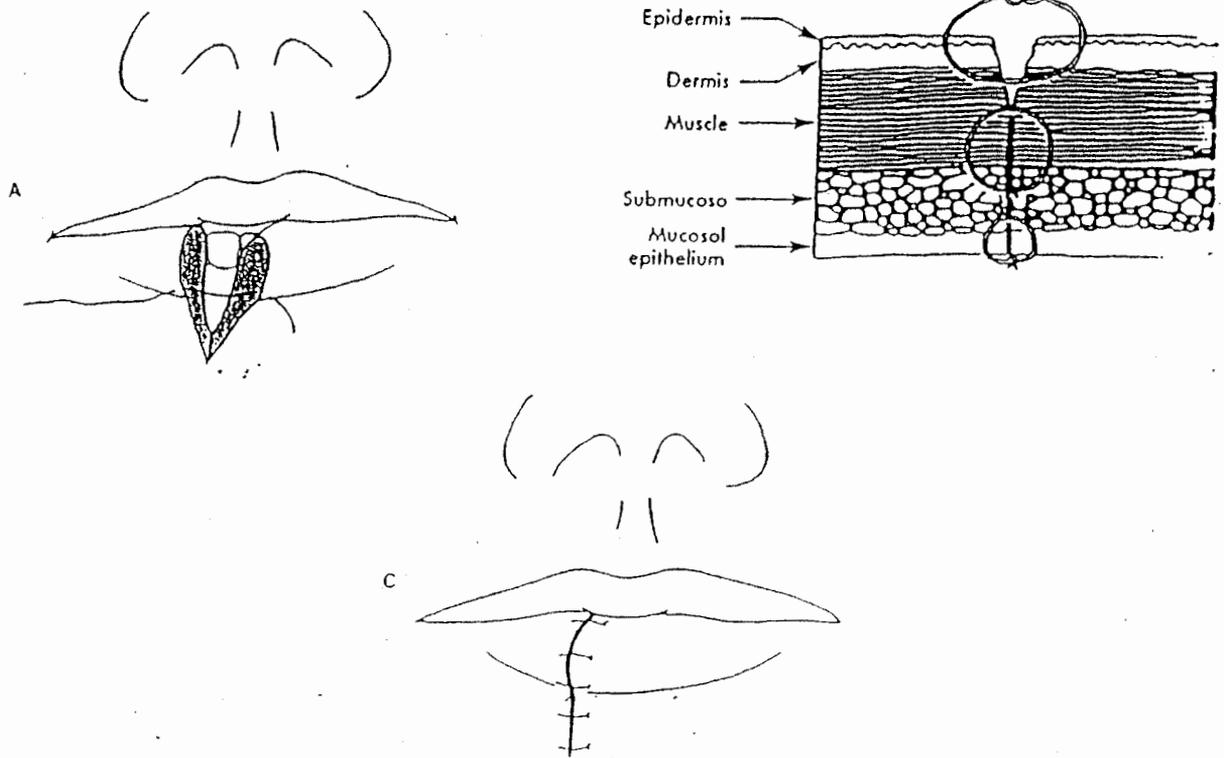


Fig. 23-25. Illustration showing closure of lip laceration or incision. A, First suture is placed at mucocutaneous junction. It is extremely important to realign this, or cosmetic deformity will be noticeable. Lip is then closed in three layers: oral mucosa, muscle, and dermal surface (B and C). Choice of suture for oral and dermal surfaces varies with surgeon; however, muscle layer should be closed with either chromic or plain catgut suture (resorbable).

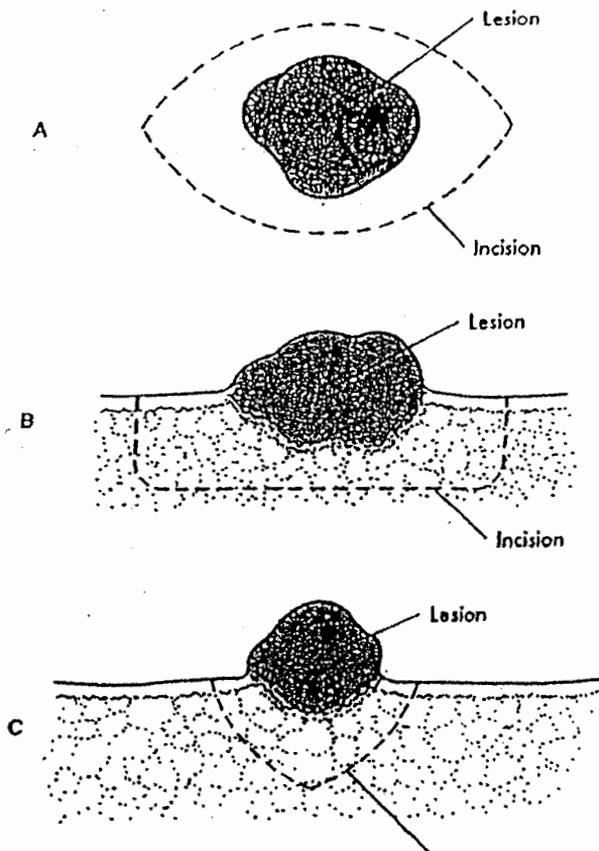


Fig. 21-6. Illustration of excisional biopsy of soft tissue lesion. A, Surface view. Elliptic incision is made around lesion, staying at least 3 mm away from lesion. B, Side view. Incision is made deep enough to remove lesion completely. C, End view. Incisions are made convergent to deep wound. If excision is made in this manner, closure is facilitated.

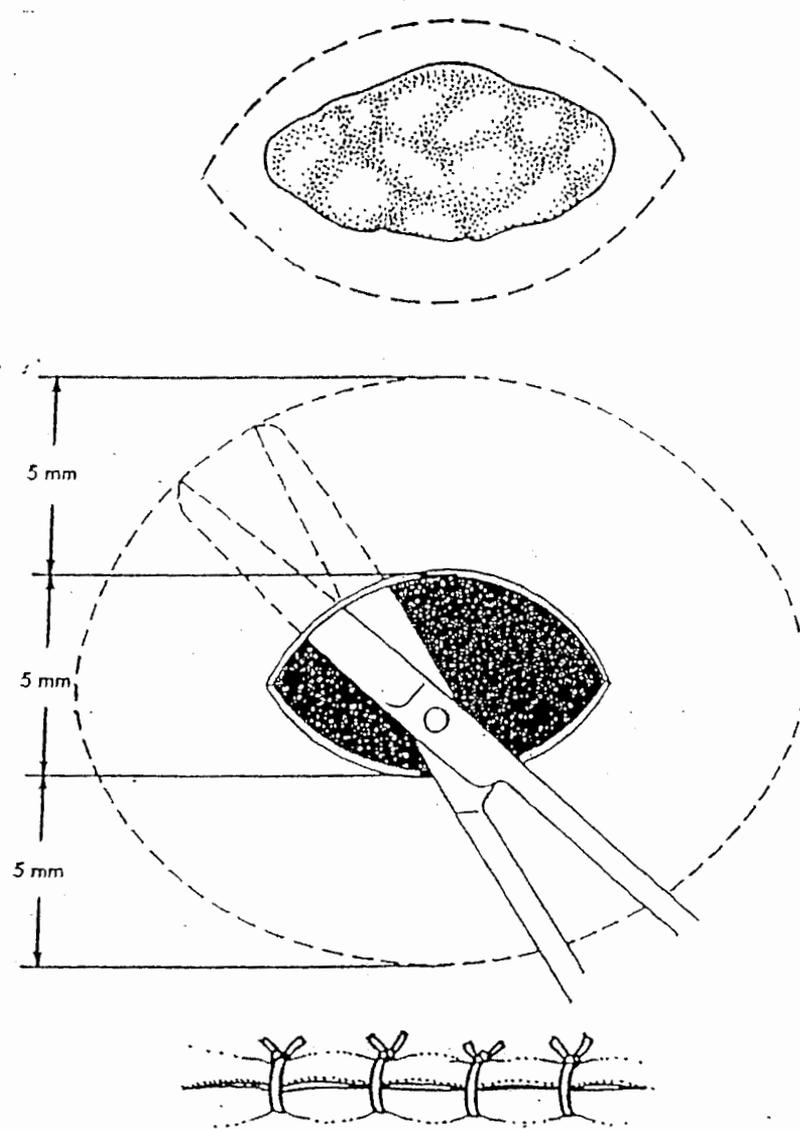


Fig. 21-10: Illustration showing principles used in closing an elliptic biopsy wound. Mucosa should be undermined bluntly with scissors to width of original ellipse in each direction. This allows approximation of wound margins without tension.

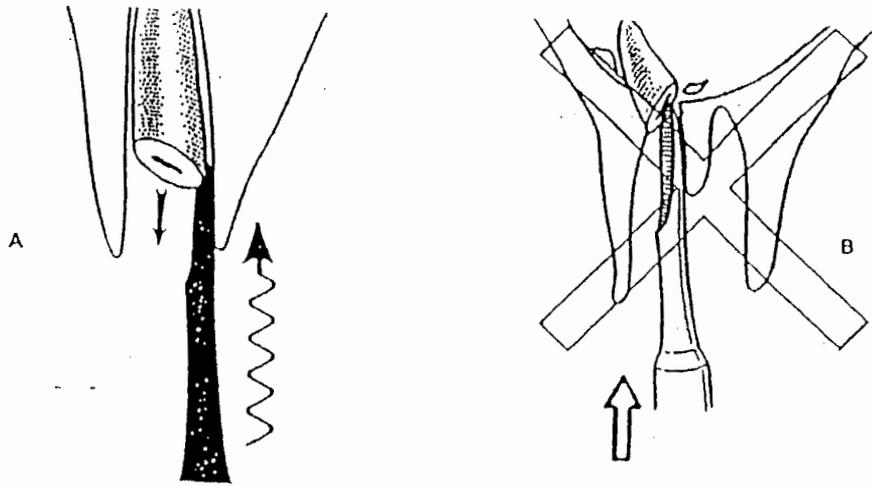


Fig. 8-51. A, When larger portion of tooth root is left behind after extraction of tooth, small straight elevator can sometimes be used as wedge, or shoehorn, to displace tooth in occlusal direction. It is important to remember that pressure applied in such fashion should be in gentle wiggling motions; excessive pressure should not be applied. B, Excessive pressure in apical direction results in displacement of tooth root into undesirable places, such as maxillary sinus.

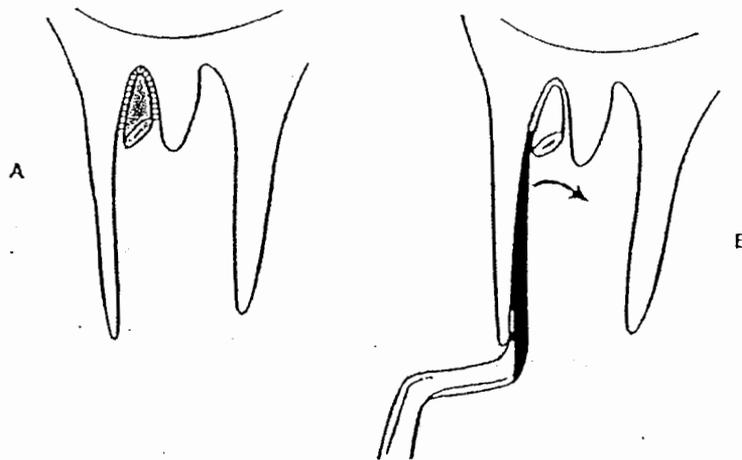


Fig. 8-48. A, When small (2 to 4 mm) portion of root apex is fractured from tooth, root tip pick can be used to retrieve it. B, Root tip pick is teased into periodontal ligament space and used to luxate root tip gently from its socket.

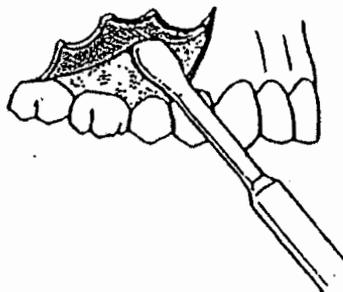


Fig. 8-13. When three-cornered flap is used, only anterior papilla is reflected with sharp end of elevator. Broad end is then used with push stroke to elevate posterosuperiorly.

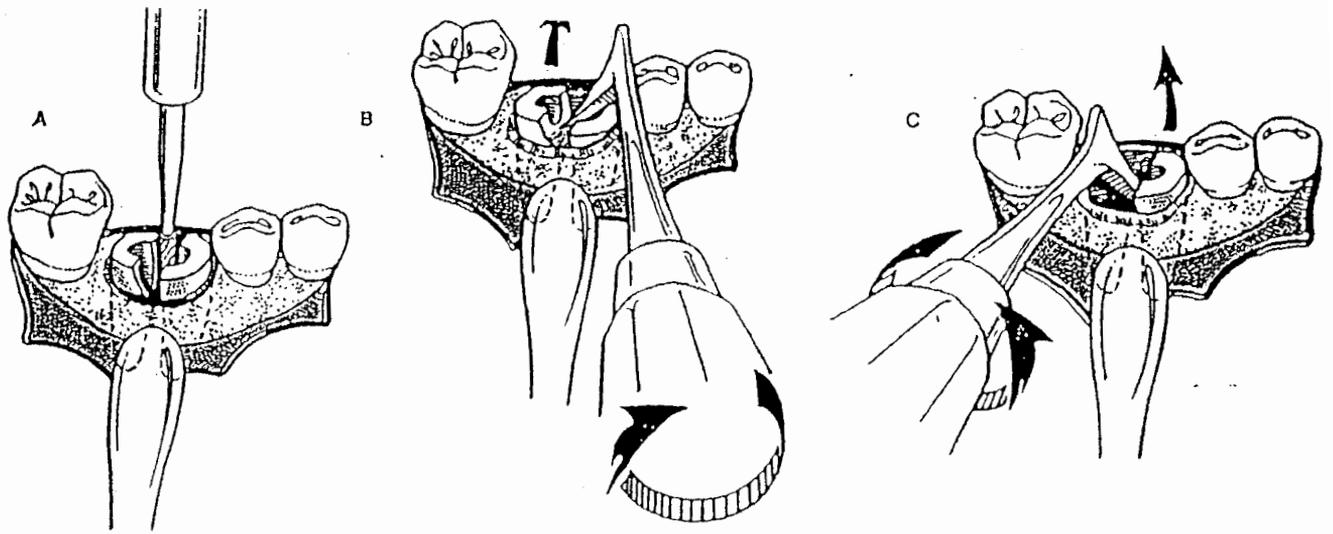


Fig. 8-45. A, When crown of lower molar is lost because of fracture or caries, small envelope flap is reflected, and small amount of crestal bone is removed. Bur is then used to section tooth into two individual roots. B, After small straight elevator has been used to mobilize roots, Cryer elevator is used to elevate distal root. Tip of elevator is placed into slot prepared by bur, and elevator is turned to deliver the root. C, Opposite member of paired Cryer elevators is then used to deliver remaining tooth root, using same type of rotational movement.

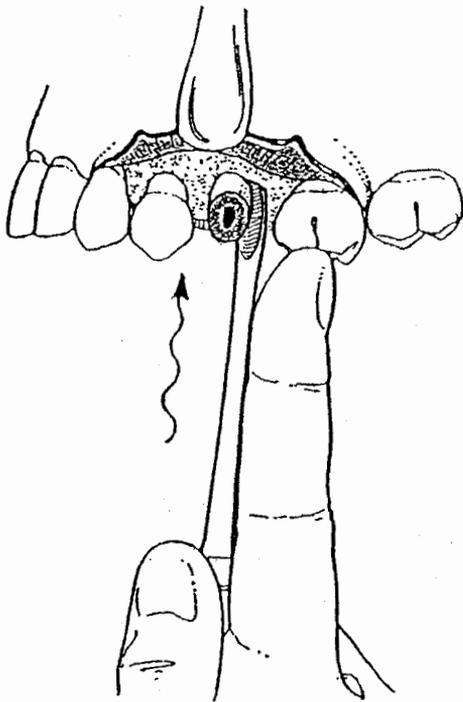


Fig. 8-35. Small straight elevator can be used as shoehorn to luxate broken root. When straight elevator is used in this position, hand must be securely supported on adjacent teeth to prevent inadvertent slippage of instrument from tooth and subsequent injury to adjacent tissue.

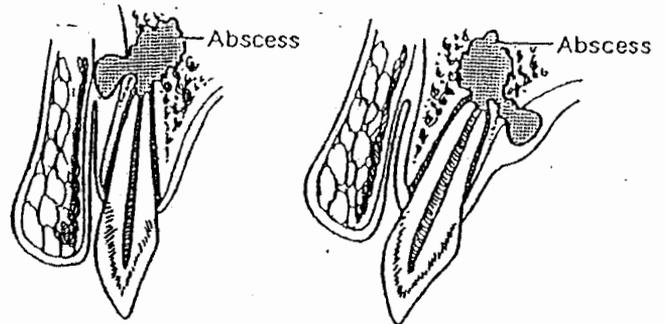


Fig. 16-1. When infection erodes through bone, it will enter soft tissue through thinnest bone. A, Tooth apex is near thin labial bone, so infection erodes labially. B, Apex is near palatal aspect, so bone will be perforated.

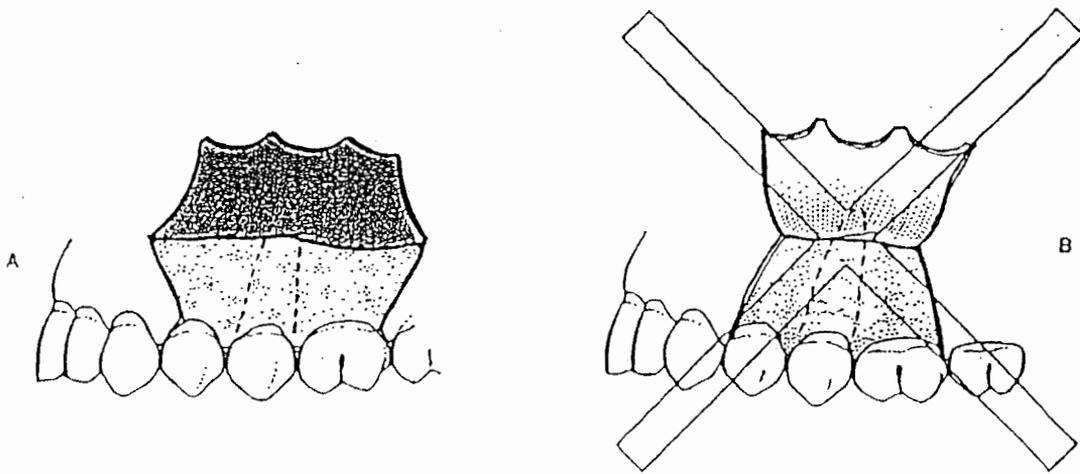


Fig. 8-1. A, Flap must have base that is broader than free gingival margin. B, If flap is too narrow at base, blood supply may be inadequate, leading to flap necrosis.

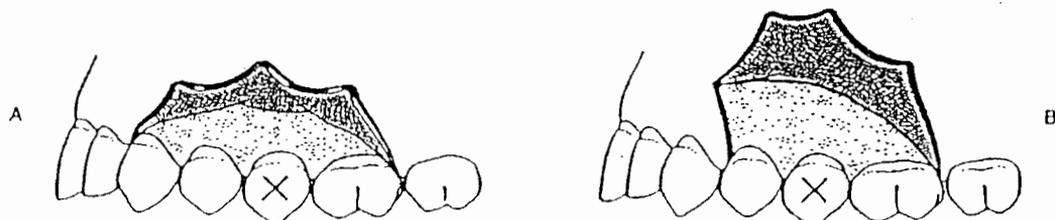


Fig. 8-2. A, To have sufficient access to root of second premolar, envelope flap should extend anteriorly, mesial to canine, and posteriorly, distal to first molar. B, If release incision (three-cornered flap) is used, flap extends mesial to first premolar.

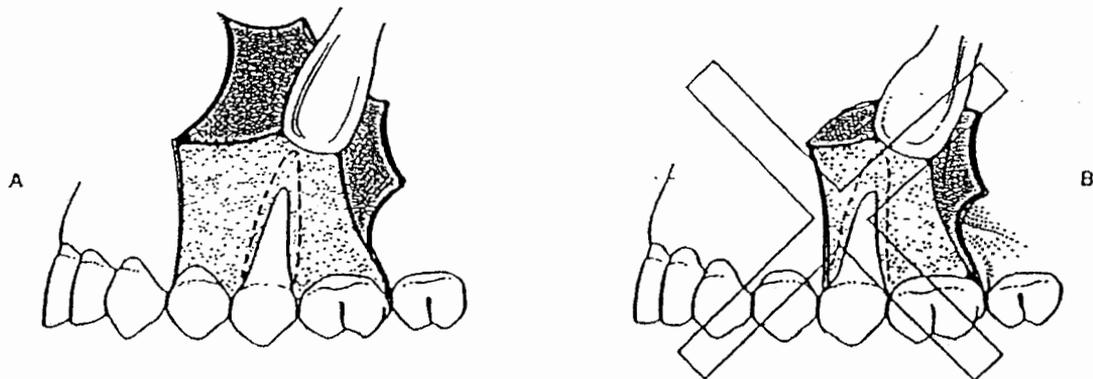


Fig. 8-3. A, When designing flap, it is necessary to anticipate how much bone will be removed so that, after surgery is complete, incision rests over sound bone. In this situation, vertical release was one tooth anterior to bone removal, leaving an adequate margin of sound bone. B, When release incision is made too close to bone removal, delayed healing results.

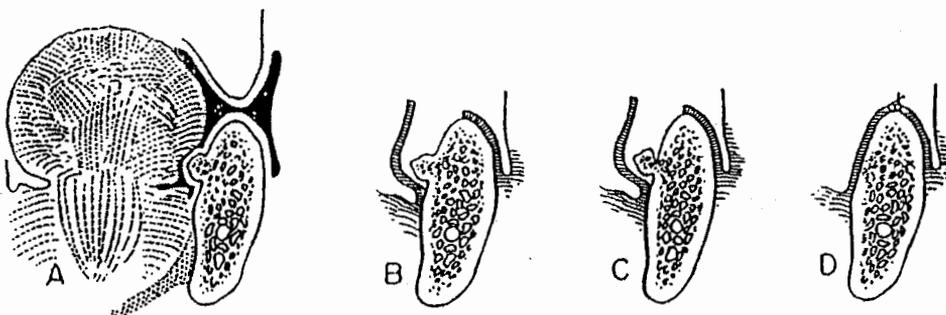


Fig. 7-8. A, Cross section of mandibular torus. B, Lingual periosteum reflected, exposing torus but leaving lateral periosteum attached. C, Superior grooving on torus. D, Incision

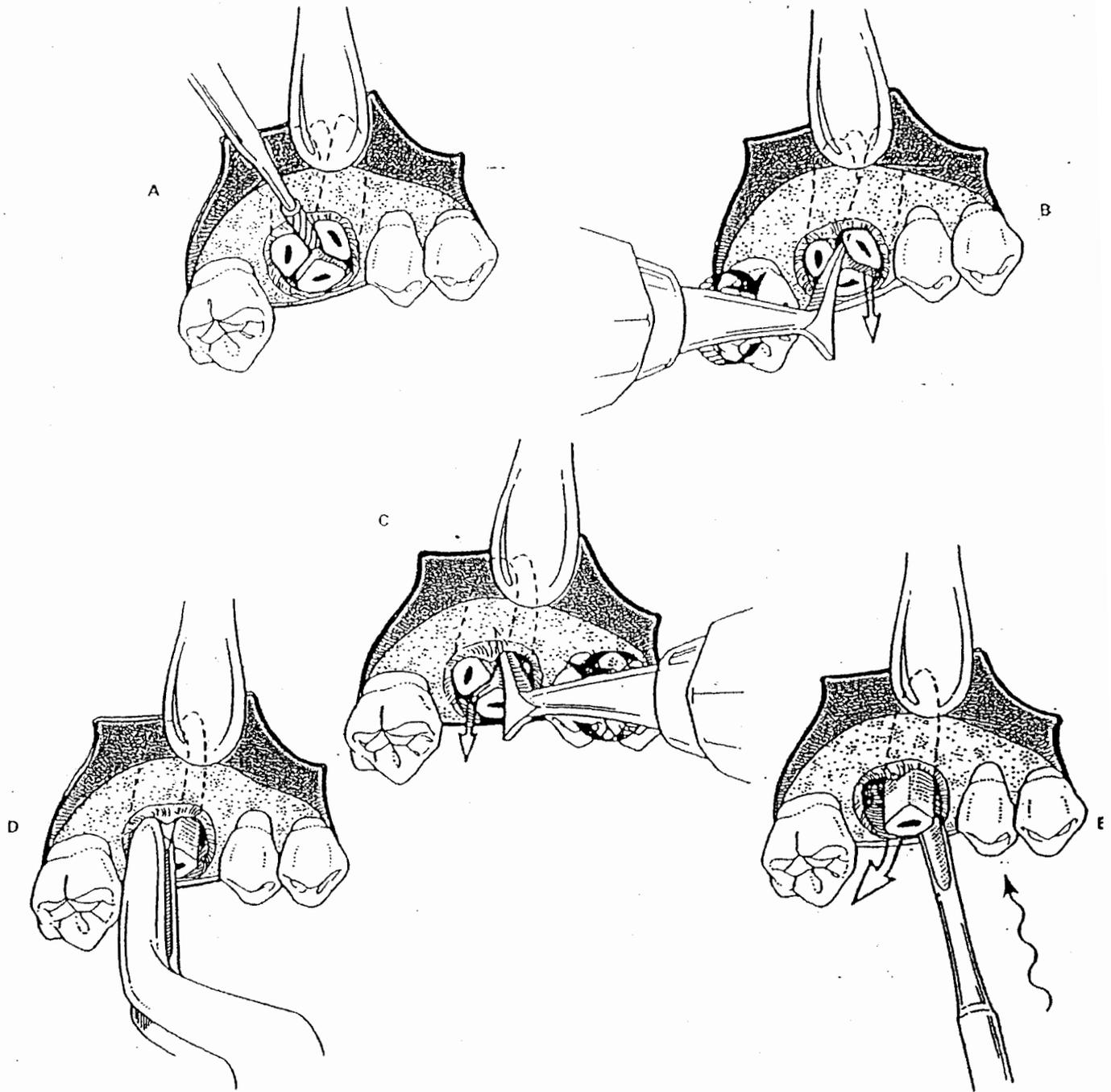


Fig. 8-47. A, If crown of upper molar has been lost to caries or has been fractured from roots, small envelope incision is reflected and small amount of crestal bone is removed. Bur is then used to section three roots into independent portions. B, After roots have been luxated with small straight elevator, mesiobuccal root is delivered with Cryer elevator placed into slot prepared by bur. C, Once mesiobuccal root has been removed, Cryer elevator is again used to deliver distobuccal root. Tip of Cryer elevator is placed into empty socket of mesiobuccal root and turned in usual fashion to deliver tooth root. D, Maxillary root forceps can occasionally be used to grasp and deliver remaining root. Palatal root can then be delivered either with straight elevator or with Cryer elevator. If straight elevator is used, it is placed between root and palatal bone and gently wiggled in effort to displace palatal root in buccal-occlusal direction. E, Small straight elevator can be used to elevate remaining root of maxillary third molar with gentle wiggling pressures, displacing root in buccal-occlusal direction.

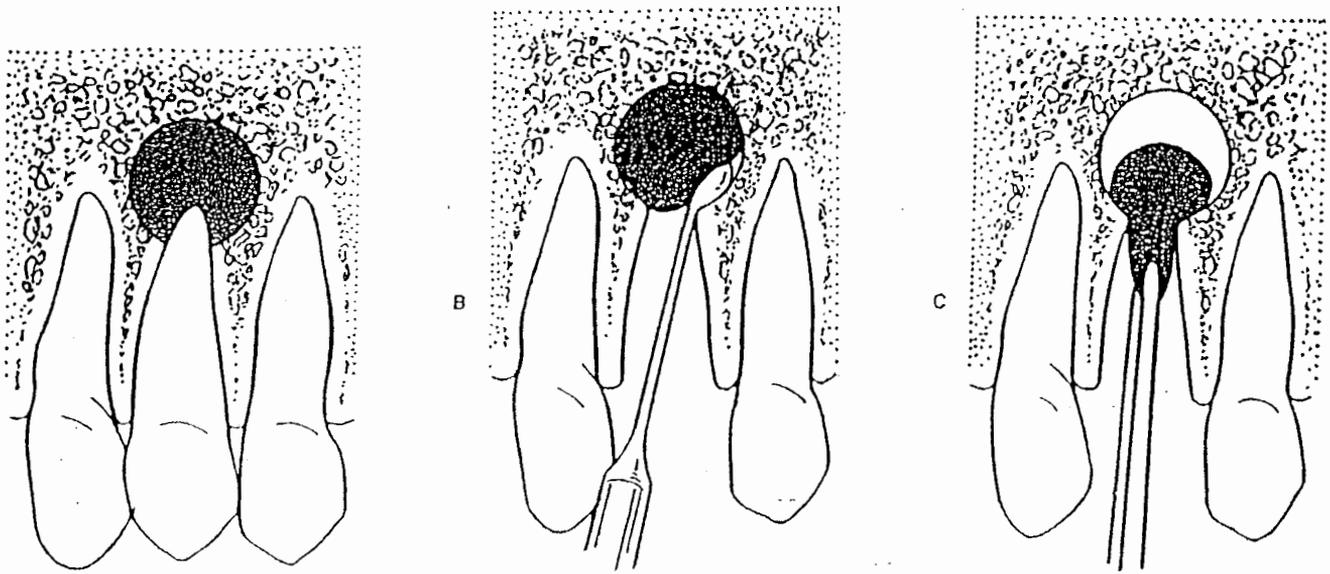


Fig. 22-4. Apical cystectomy performed at time of tooth removal. A to C, Removal with curette via tooth socket. This must be performed with care because of proximity of apices of teeth to other structures, such as maxillary sinus and inferior alveolar canal.

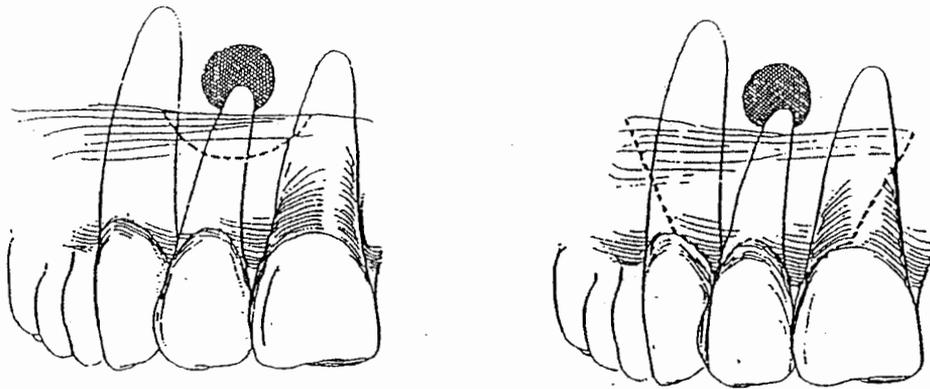


Fig. 12-4. Two types of incision for apicoectomy.

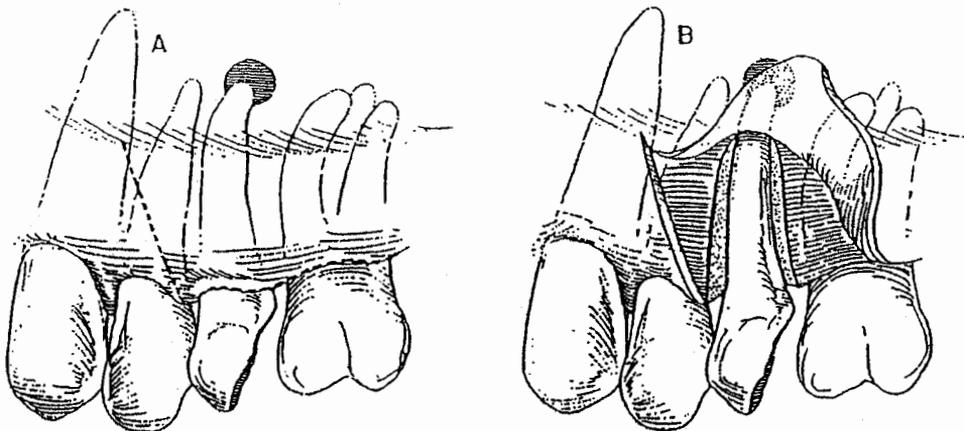


Fig. 5.5. Surgical flap. A, Incision. B, Retraction of flap and removal of labial bone to greatest width of tooth. Note that the edge of the flap, which will be sutured, will be supported by undissected bone.

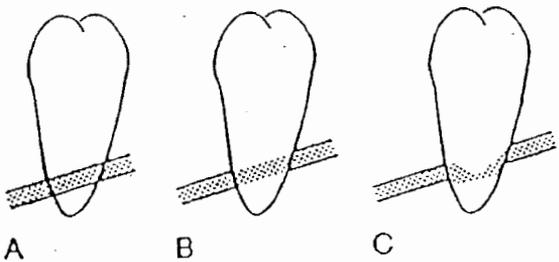


Figure 1. Radiographic relations of the inferior alveolar nerve and the lower third molar. A, Cortical outline of the canal is intact. This probably represents superimposition only. B, There is loss of the cortical outline of the nerve canal. The nerve may be grooving the tooth. C, There is loss of cortical outline and narrowing and deviation of the nerve canal, denoting an intimate relation with the tooth and possible perforation of the tooth roots by the nerve.

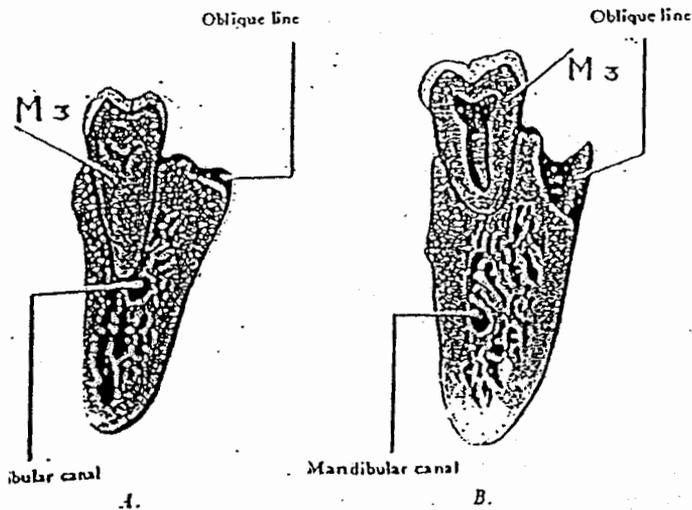
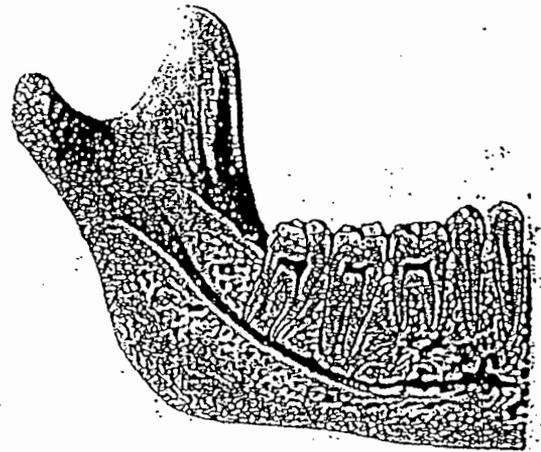


Figure 3. Buccally placed incision suitable for removal of a lower third molar. Incision goes down the external oblique ridge to the distobuccal angle of the second molar and down into the buccal sulcus.

DATE _____

TIME _____

MICHAEL SOLE, D.D.S.
ROBERT EDWAB, D.D.S.

Oral and Maxillofacial
Surgery and Implant Surgery

EMERGENCY NUMBER
1-800-225-0256
Give Operator This Code #82577
Plus Your Name & Phone #

2124 Ocean Avenue
Brooklyn, NY 11229
(718) 376-7700

Helpful Tips Following Oral Surgery

Bleeding

Oozing and staining are normal after surgery. Bite down on a damp, sterile gauze pad for half an hour. If the bleeding does not subside, use a fresh pad for an additional 45 minutes. Repeat as necessary.

Pain

Some discomfort may be experienced following oral surgical procedures. The medication I have recommended, taken as directed, should relieve the pain.

Cleansing

Do not *rinse* your mouth today. Tomorrow, use a glass of salt solution (1/2 teaspoon of salt dissolved in a glass of warm water) after meals to cleanse the affected area.

Swelling

Some swelling of the jaw may occur. Do not be alarmed as this is a normal reaction after surgery. Apply an ice bag or towel wrapped around cracked ice to the affected area for ten minutes. Remove for ten minutes. Repeat this procedure for 2 hours.

Eating

To aid the healing process, it is important to obtain adequate nutrition and calories. If chewing is difficult, try blended, smooth and creamy foods such as eggs, soup, and casseroles, and sip on juices and other fluids throughout the day. Avoid extremely hot or cold foods. Also, food should not be too salty, spicy, or acidic.

Basic Instruments Described Buy only name-brand carbide instruments, i.e. Hu-Friedy, etc.

6 Surgical Round Bur

Highspeed handpiece with air exiting through rear, not into surgical site

#15 scapel blade and handle

Dean surgical scissor non serrated- Tenotomy scissor, straight 4"

Seldin #23 tissue retractor

Wax carver instead of molt periosteal elevator

Various size surgical double ended curettes

mouth props small for children-medium for adults-large for edentulous patients

universal upper forcep #150- bicuspid and molars

#1 Straight for maxillary anterior teeth

Mead MD3- mandibular anterior and bicuspid teeth

#23 cowhorn posterior mandibular teeth-(straight or curved handles by preference)

tissue forcep (one or two teeth)

two small curved hemostats-frenectomy 5" or 6"

needle holder-Mayo 5" -7" your preference

Allis tissue clamp-biopsies

bone file- carbide-crosscut -double ended-different size

#301 small straight elevator

Cryer, crane pick, Miller, Potts, Seldin elevators various sizes

rongeur-small curved beaks side and end cutting- 30 degree Blumenthal

ostotome 4mm and 5mm for tori

suction tips- various widths to reach bottom of socket 1mm-5mm

iodoform gauze- I & D

socket packing material, surgical, oxycel, gelfoam, etc. (your choice of many)

Heidbrink root tip pick double ended, apical picks

3-0 silk on cutting needle; for skin- nylon; for children- gut

American Society of Anesthesiologists Physical Status Classification

- I Normal healthy individual
- II Patient with mild to moderate systemic disease
- III Patient with severe systemic disease that limits activity but is not incapacitating
- IV Patient with severe systemic disease that limits activity and is a constant threat to life
- V Moribund patient not expecting to survive 24 hours with or without an operation
- VI Clinically dead patient being maintained for harvesting of organs

Activity of Human Insulin Preparations

Insulin Type	Onset	Peak Activity (hours)	Duration (hours)
Lispro	15 minutes	0.5 - 1.5	5
Regular	30 - 60 minutes	2 - 3	4 - 12
NPH	2 - 4 hours	4 - 10	14 - 18
Lente	3 - 4 hours	4 - 12	16 - 20
Ultralente	6 - 10 hours	12 - 16	20 - 30

Beef and pork preparations may have slightly longer onset; peak, and duration of activity.

BASIC EMERGENCY DRUG KIT FOR THE DENTAL GENERAL PRACTITIONER

An emergency kit should only contain the drugs that a dentist is trained to use in an emergency. American Heart Association basic CPR certification for you and your staff should also be required. All equipment should be maintained in good working order. Drugs should be inspected for their expiration dates and replaced if necessary. Mock emergency drills should be practiced and evaluated. **The information on this page is a brief outline. The practitioner is referred to recent publications for the management of emergencies in the dental office.**

EQUIPMENT

Oxygen – stationary and portable E cylinders

Different sized masks

Ambu Bag

Various size oral airways

Yankauer Tonsillar suction

Blood pressure cuff and stethoscope

Syringes 1cc 5/8 needle and 1 1/2 inch needle

Mouth to mouth breather

Glucometer

DRUGS

Oxygen

Diphenhydramine “Benedryl” - antihistamine

Epinephrine “Adrenalin” – vasoconstrictor – vasopressor – bronchial dilator

Glucose “sugar”

Nitroglycerine – vasodilator

Hydrocortisone – anti-inflammatory-steroid

Albuterol – bronchial dilator – “Proventil” – “Ventolin”

Aromatic Ammonia – Spirits “Smelling salts” – respiratory stimulant

Aspirin

Comparison Across Age Groups of Resuscitation Interventions

CPR/Rescue Breathing	Adult and Older Child	Child (≈1-8 y old)	Infant (≤1 y old)	Newly Born
Establish unresponsiveness; activate EMS				
Open airway (Head tilt–chin lift or jaw thrust)	Head tilt–chin lift (If trauma is present, use jaw thrust)	Head tilt–chin lift (If trauma is present, use jaw thrust)	Head tilt–chin lift (If trauma is present, use jaw thrust)	Head tilt–chin lift (If trauma is present, use jaw thrust)
Check for breathing: (Look, listen, feel) If victim is breathing: place in recovery position If victim is not breathing: give 2 effective slow breaths				
Initial	2 effective breaths at 2 sec/breath (unless oxygen available)	2 effective breaths at 1 to 1½ sec/breath	2 effective breaths at 1 to 1½ sec/breath	2 effective breaths at ≈1 sec/breath
Subsequent	12 breaths/min (approximate)	20 breaths/min (approximate)	20 breaths/min (approximate)	30 to 60 breaths/min (approximate)
Foreign-body airway obstruction	Abdominal thrusts	Abdominal thrusts	Back blows and chest thrusts (no abdominal thrusts)	Back blows and chest thrusts (no abdominal thrusts)
Signs of circulation: Check for breathing, coughing, movement, or pulse If signs of circulation are present: provide airway and breathing support If signs of circulation are absent: begin chest compressions interposed with breaths	Pulse check (healthcare providers)* Carotid	(Healthcare providers)* Carotid	(Healthcare providers)* Brachial	(Healthcare providers)* Umbilical
Compression landmarks	Lower half of sternum	Lower half of sternum	Lower half of sternum (1 finger's width below intermammary line)	Lower half of sternum (1 finger's width below intermammary line)
Compression method	Heel of one hand, other hand on top	Heel of one hand	2 fingers or 2 thumb–encircling hands for 2-rescuer trained providers	2 fingers or 2 thumb–encircling hands for 2-rescuer trained providers
Compression depth	≈1½ to 2 in (4 to 5 cm)	≈½ to ½ the depth of the chest	≈½ to ½ the depth of the chest	≈½ the depth of the chest for newly born
Compression rate	≈100/min	≈100/min	≥100/min	≈120 events/min (90 compressions/ 30 breaths)
Compression-ventilation ratio	15:2 (1 or 2 rescuers, unprotected airway) 12 to 15 breaths/min asynchronous with compressions (2 rescuers, protected airway)	5:1 (1 or 2 rescuers)	5:1 (1 or 2 rescuers)	3:1 (1 or 2 rescuers)

*Pulse check is performed as one of the signs of circulation assessed by healthcare providers. Lay rescuers check for other signs of circulation (breathing, coughing, movement).

LOCAL ANESTHESIA

1. Calculations:

1% solution = 10 mg./cc

2% solution = 20 mg./cc

3% solution = 30 mg./cc

1 carpule of Lidocaine 2% contains 1.8cc x 20mg. = 36 mg.

1 carpule of Carbocaine 3% contains 1.8cc x 30mg = 54 mg.

2. My Maximum Dosage:

2 mg. per pound of either Lidocaine or Carbocaine for an adult or child never to exceed 300 mg. which is 8.33 carpules of Lidocaine or 5.56 carpules of Carbocaine

50 lb. child = 50 x 2mg = 100 mg maximum divide by either 36 for Lidocaine or 54 for Carbocaine

$$\frac{100}{36} = 2.78 \text{ carpules of Lidocaine}$$

$$\frac{100}{54} = 1.85 \text{ carpules of Carbocaine}$$

175 lb adult = 175 x 2mg = 350 mg. - Only give 300mg. of Lidocaine or Carbocaine

3. Epinephrine (SAFETY- antagonistic to vasodilation effect)

Healthy patient can receive up to .2 mg.

Carpule contains Epinephrine 1:100,000 or .01mg/cc

or .01mg x 1.8cc = .018mg epinephrine per carpule

$$\frac{.2\text{mg (maximum dose)}}{.018\text{mg/carpule}} = 11.11 \text{ carpules}$$

Already decided maximum is 8.33 carpules- Never reach maximum dose

Cardiac patient can receive up to .04 mg.

.04mg. = 2.2 carpules. I only give ONE after taking a very good history!

.018mg/carpule

3. Toxic Dose or Overdose - occurs a majority of time in children

-low - stimulation, anxiety, confusion - stop- monitor & observe for 1 hour

-intermed.-tremors, headache, dizziness, drowsiness - monitor and observe for 90 min.

-high-depression, seizure, cardiac irreg.- arrest- CV collapse- CPR-Emergency assist.

4. Other Complications: nerve damage; hematoma; muscle trismus

Oral Piercing and Health

Procedure Related Risks

- Infection
- Prolonged Bleeding
- Swelling and Possible Nerve Damage
- Bloodborne Disease Transmission
i.e. Hepatitis, Tetanus
- Endocarditis

Jewelry Related Complications

- Injury to Gingiva
- Damage to Teeth
- Interference with Oral Health Evaluation
- Aspiration

source ADA

Suturing Information

Nonresorbable Sutures

- Silk – popular, intraoral usage, reactive to tissue, tears tissue if left too long, memory
- Nylon- skin usage, non reactive
- Polytetra Fluoroethylene (PTFE)
Gortex, non reactive, used with implant surgery, membranes, can remain weeks

Resorbable Sutures (natural)

- Plain Gut- sheep gut, resorbs within one week, no memory, pointed ends painful
- Chromic Gut-chromium salts treated gut, lasts up to two weeks, same properties as gut

Resorbable Sutures (synthetic)

- Dexon; polyglycolic acid
- Vicryl; polyglactin 910
non reactive, resorbs 21 days, used for implant surgery & layered closures

Numbering system is based on width; the higher the number the thinner the suture material.

- 2-0 used for muscle layer closure
- 3-0 most commonly used in oral cavity
- 4-0 apicoectomy and periodontal surgery
- 5-0 skin

Needles

- shape- 3/8 better (most common) than 1/2 round
- reverse cutting (most common) doesn't rip through tissue
- cutting rips tissue
- tapered- rounded; difficult for mucosa suturing

Hints: grab needle midway to stop needle bending; suture through movable tissue first then immoveable tissue; too tight sutures rips through tissue; not enough knots unravels; don't oversuture.

Oral Piercing and Health

Procedure Related Risks

- Infection
- Prolonged Bleeding
- Swelling and Possible Nerve Damage
- Bloodborne Disease Transmission
i.e. Hepatitis, Tetanus
- Endocarditis

Jewelry Related Complications

- Injury to Gingiva
- Damage to Teeth
- Interference with Oral Health Evaluation
- Aspiration

source ADA

Suturing Information

Nonresorbable Sutures

- Silk – popular, intraoral usage, reactive to tissue, tears tissue if left too long, memory
- Nylon- skin usage, non reactive
- Polytetra Fluoroethylene (PTFE)
Gortex, non reactive, used with implant surgery, membranes, can remain weeks

Resorbable Sutures (natural)

- Plain Gut- sheep gut, resorbs within one week, no memory, pointed ends painful
- Chromic Gut-chromium salts treated gut, lasts up to two weeks, same properties as gut

Resorbable Sutures (synthetic)

- Dexon; polyglycolic acid
- Vicryl; polyglactin 910
non reactive, resorbs 21 days, used for implant surgery & layered closures

Numbering system is based on width; the higher the number the thinner the suture material.

- 2-0 used for muscle layer closure
- 3-0 most commonly used in oral cavity
- 4-0 apicoectomy and periodontal surgery
- 5-0 skin

Needles

- shape- 3/8 better (most common) than 1/2 round
- reverse cutting (most common) doesn't rip through tissue
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Hints: grab needle midway to stop needle bending; suture through movable tissue first then immovable tissue; too tight sutures rips through tissue; not enough knots unravels; don't oversuture.

MAXIMUM DOSES

	Max. Dose mg/kg	Max. Dose mg
Articaine	7.0	500
Mepivacaine	6.6(4.5)	400(300)
Etidocaine	8.0	400
Lidocaine	7.0 (4.4)	500(300)
Prilocaine	8.0(6.0)	600(400)
Bupivacaine	1.3	90

Figure 4: Dosages given are for healthy adults taken from officially approved product information¹⁴. Values in parentheses are more conservative values¹⁵. Note that all cartridges contain 1.8 ml of solution except articaine cartridges, which contain 1.7 ml.
 *with vasoconstrictor
 † from Malamed, S.F. Handbook of Local Anesthesia, 2nd Ed.

Local Anesthetic Half-Lives

Local Anesthetic	Half-Life(min)
Articaine	20
Prilocaine	90
Lidocaine	90
Mepivacaine	115
Etidocaine	155
Bupivacaine	210

Figure 5: The biological half-life of local anesthetics.

Toxicity: Lidocaine vs. Articaine

	Lidocaine 1.8 ml	Articaine 1.7 ml
% Solution	2	4
mg/ml	20	40
mg of drug per cartridge	1.8 ml x 20 mg/ml = 36 mg	1.7 ml x 40 mg/ml = 68 mg
Maximum dose	500 mg	500 mg
# of cartridges allowed	$\frac{500 \text{ mg}}{36 \text{ mg}} = 13.8$	$\frac{500 \text{ mg}}{68 \text{ mg}} = 7.3$

Figure 6: Values are for a healthy 70-kg adult and do not take into account the toxicity of the vasoconstrictor.

Figure 6: The number of cartridges tolerated before the maximum dose is reached for the average 70-kg (154 lb) adult comparing 2% lidocaine with 4% articaine, both with epinephrine.

Signs & Symptoms of Hypo & Hyperglycemia

Hypoglycemia

- Low blood sugar
- Rapid onset
- Aggressive, irritable behavior
- Moist skin, pallor
- Normal or rapid breathing

Hyperglycemia

- High blood sugar
- Slow onset
- Drowsiness & disorientated
- Dry skin
- Deep labored breathing

Medical Emergencies Commonly Provoked By Anxiety

- Angina (old or new)
- Myocardial Infarction
- Hypoglycemia
- Psychogenic response
- Hyperventilation
- Hypo Adrenal crisis
- Hyper Thyroid crisis

Hyperventilation Syndrome

- Increased respiratory rate and depth of breathing
- Dizziness, tingling of fingers and /or toes
- Tachycardia, palpitations, chest pains, shortness of breath
- Tremors, weakness, anxiety, syncope

Pregnancy Considerations

- First trimester: teratogenic effects-AVOID
- Second & Third Trimester: mostly growth, development and maturation; limit to basics and emergencies
- Avoid x-rays and pharmacologic agents if possible
- Vena Cava syndrome: 3rd trimester
- Postpartum: breast feeding considerations

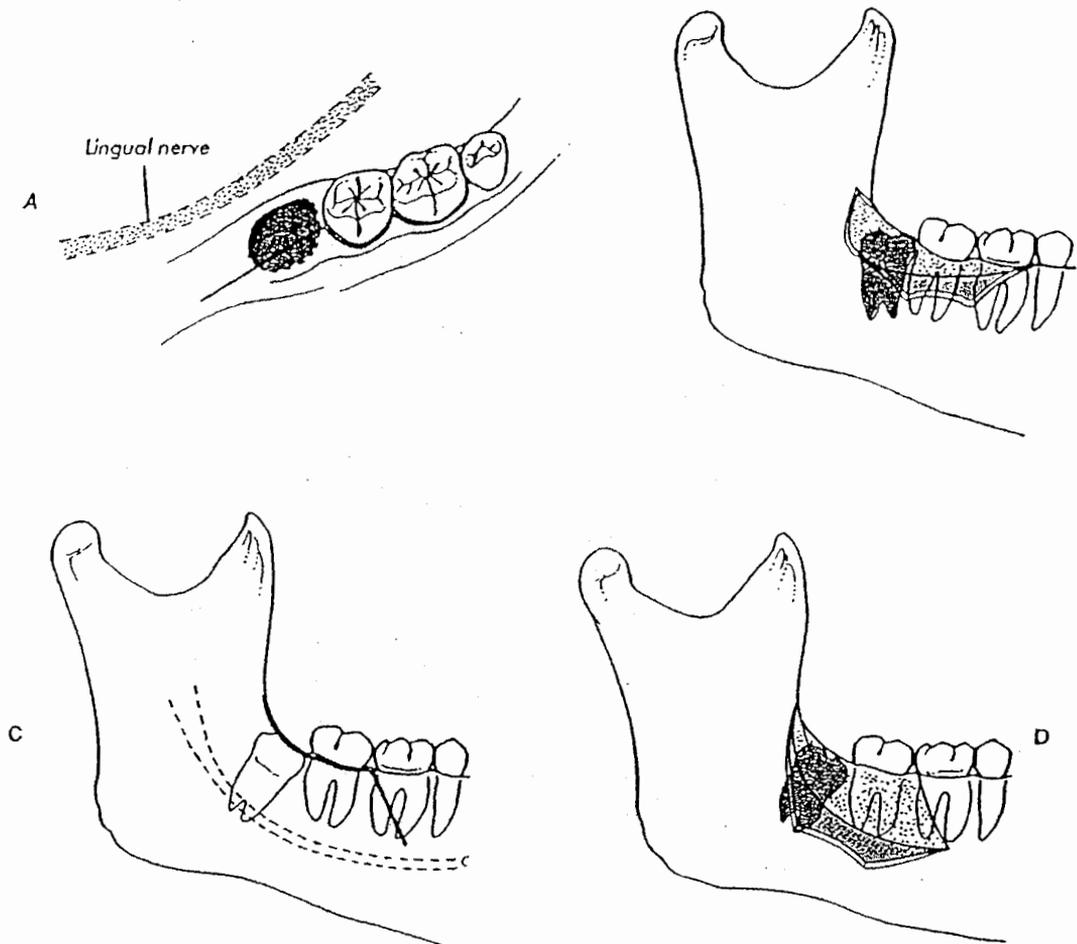


Fig. 9-43. A, Envelope incision, most commonly used to reflect soft tissue for removal of impacted third molar. Posterior extension of incision should diverge laterally to avoid injury to lingual nerve. B, Envelope incision is reflected laterally to expose bone overlying impacted tooth. C, When three-cornered flap is made, release incision is made at mesial aspect of second molar. D, When soft tissue flap is reflected by means of release incision, greater visibility is possible, especially at apical aspect of surgical field.

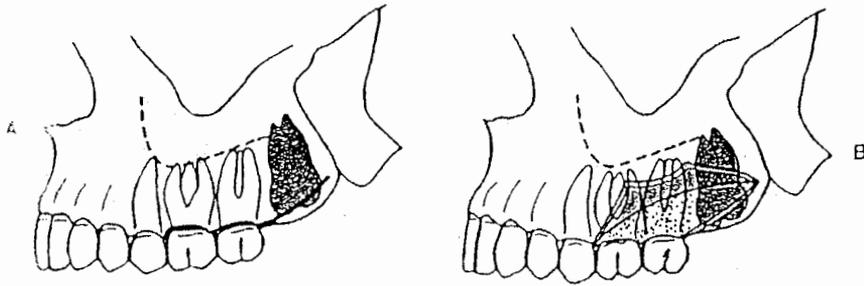


Fig. 9-44. A, Envelope flap, most commonly used flap for removal of maxillary impacted teeth. B, When soft tissue is reflected, bone overlying third molar is easily visualized.

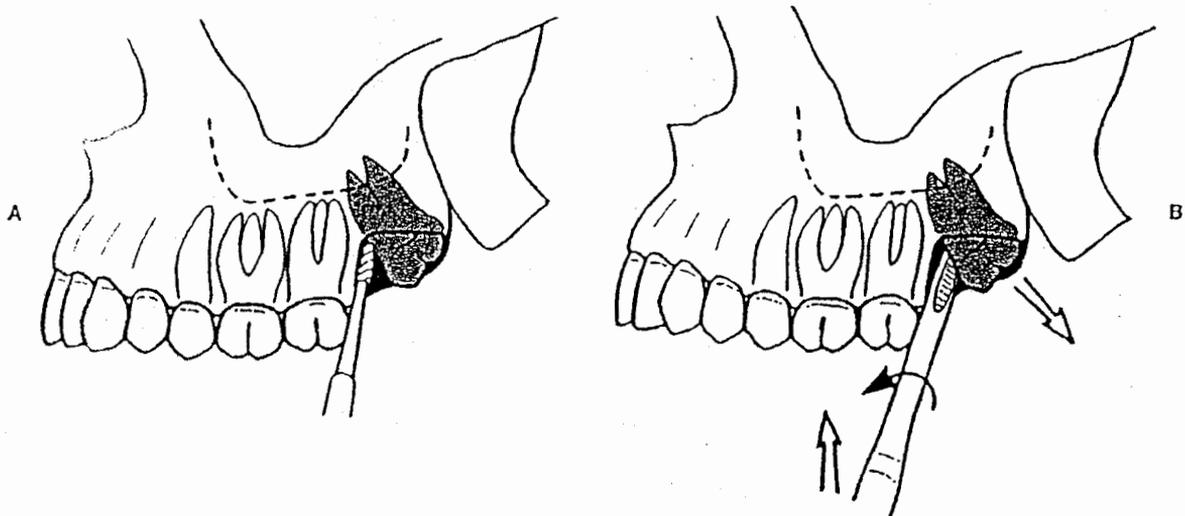


Fig. 9-50. Delivery of impacted maxillary third molar. A, Once soft tissue has been reflected, small amount of buccal bone is removed with bur or hand chisel. B, Tooth is then delivered by small straight elevator with rotational and lever types of motion. Tooth is delivered in distobuccal and occlusal direction.

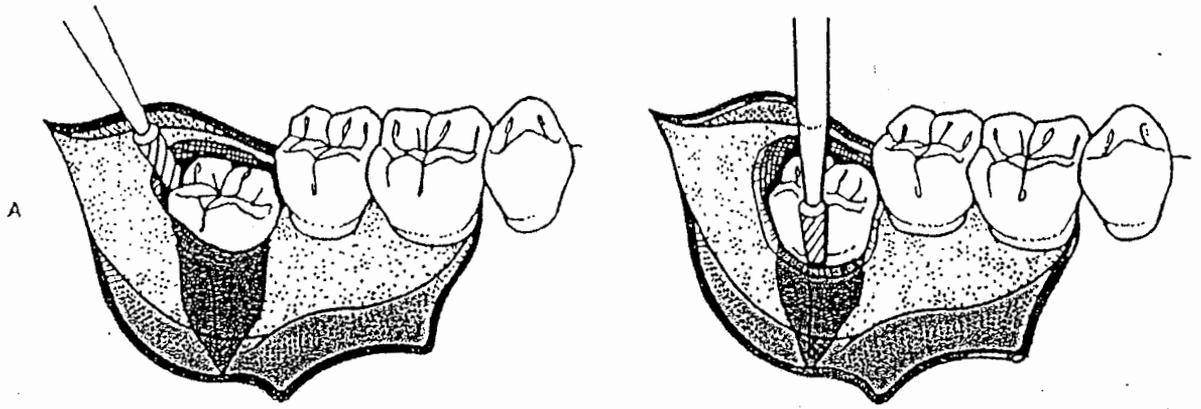


Fig. 9-45. A, After soft tissue has been reflected, bone overlying occlusal surface of tooth is removed with Fisher bur. B, Bone on buccal and distal aspect of impacted tooth is then removed with bur.

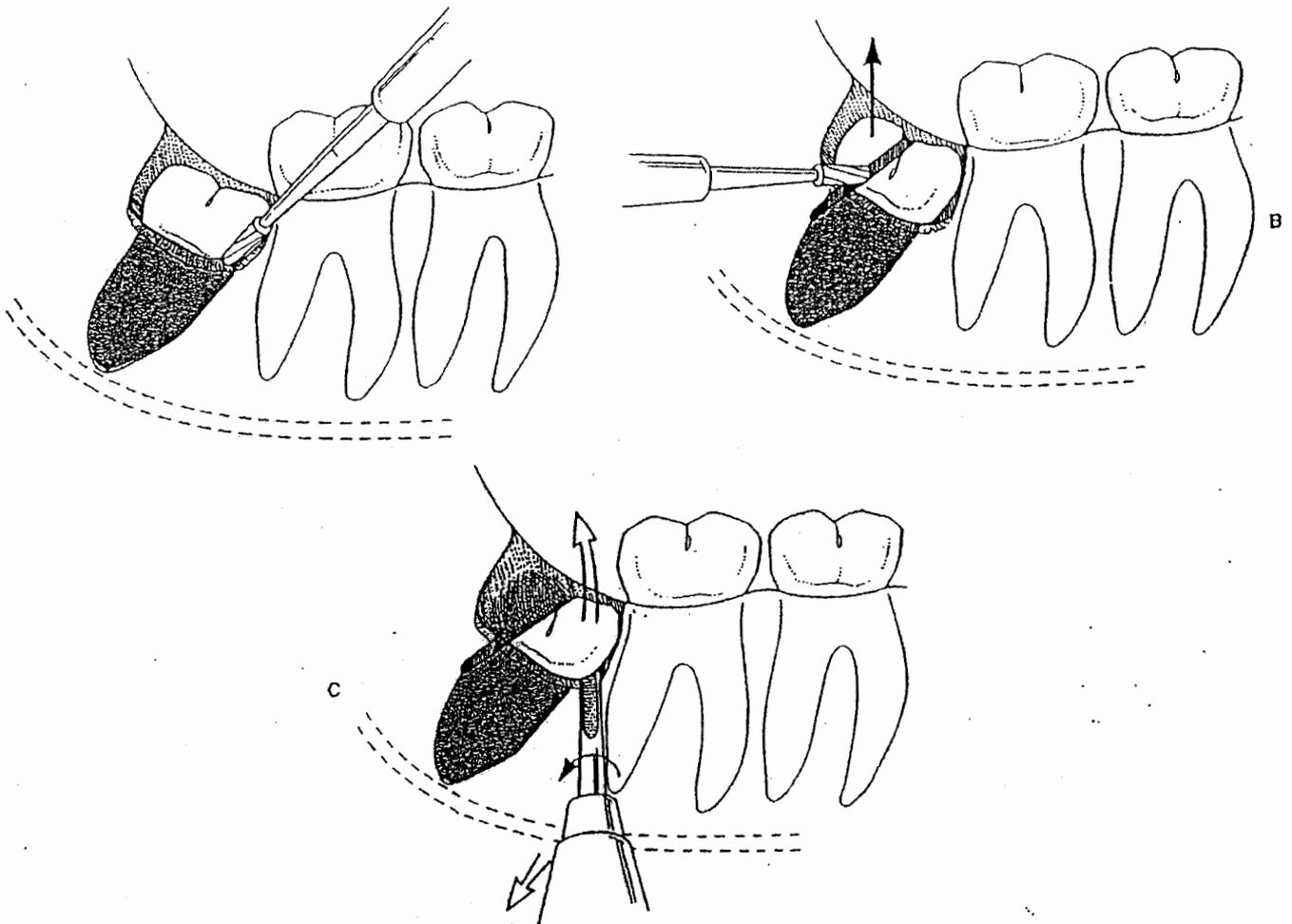


Fig. 9-46. A, When removing mesioangular impaction, buccal and distal bone are removed to expose crown of tooth to cervical line. B, Distal aspect of crown is then sectioned from tooth. Occasionally it is necessary to section entire tooth into two portions rather than to section distal portion of crown only. C, After distal portion of crown has been delivered, small straight elevator is inserted into purchase point on mesial aspect of third molar, and tooth is delivered with rotational and lever motion of elevator.

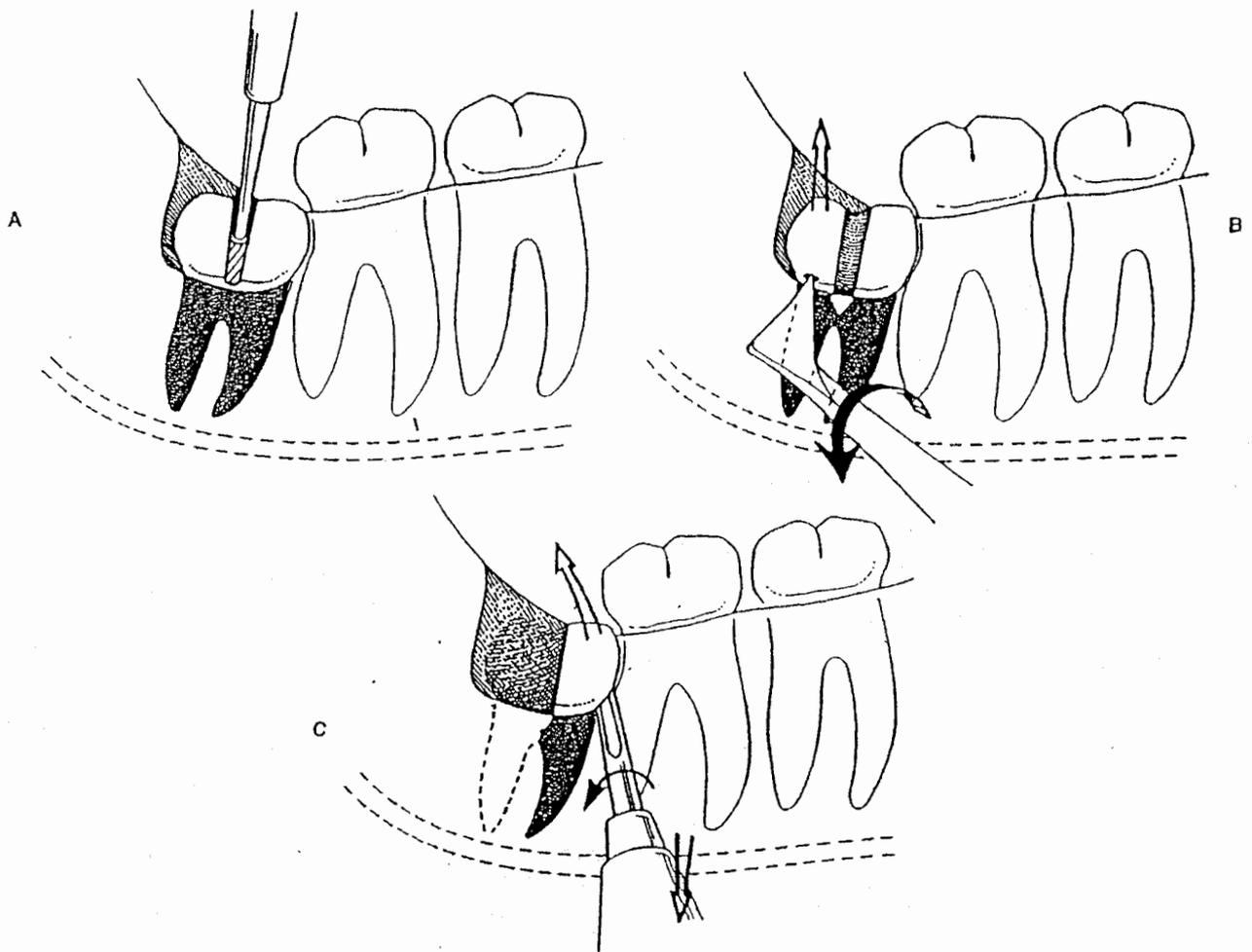


Fig. 9-48. A, When removing vertical impaction, bone on occlusal, buccal, and distal aspects of crown is removed, and tooth is sectioned into mesial and distal sections. If tooth has fused single root, distal portion of crown is sectioned off in manner similar to that depicted for mesioangular impaction. B, Posterior aspect of crown is elevated first with Cryer elevator inserted into small purchase point in distal portion of tooth. C, Small straight elevator No. 301 is then used to elevate mesial aspect of tooth by rotary and lever type of motion.

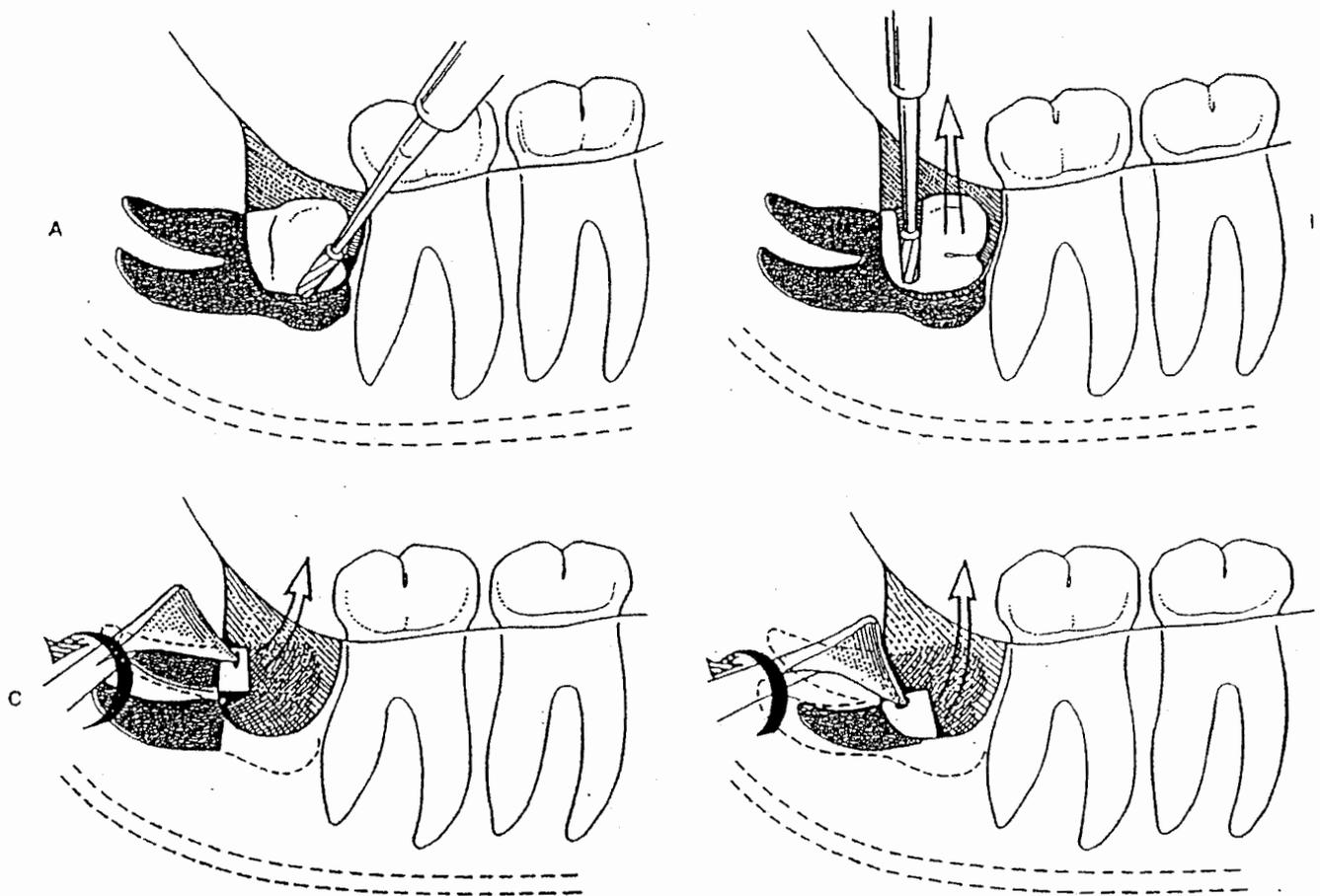


Fig. 9-47. A; During removal of horizontal impaction, bone overlying tooth—that is, bone on distal and buccal aspect of tooth—is removed with bur. B, Crown is then sectioned from roots of tooth and delivered from socket. C, Roots are then delivered together or independently by Cryer elevator used with rotational motion. Roots may need to be separated into two separate parts; occasionally, purchase point is made in root to allow Cryer elevator to engage it. D, Mesial root of tooth is elevated in similar fashion.

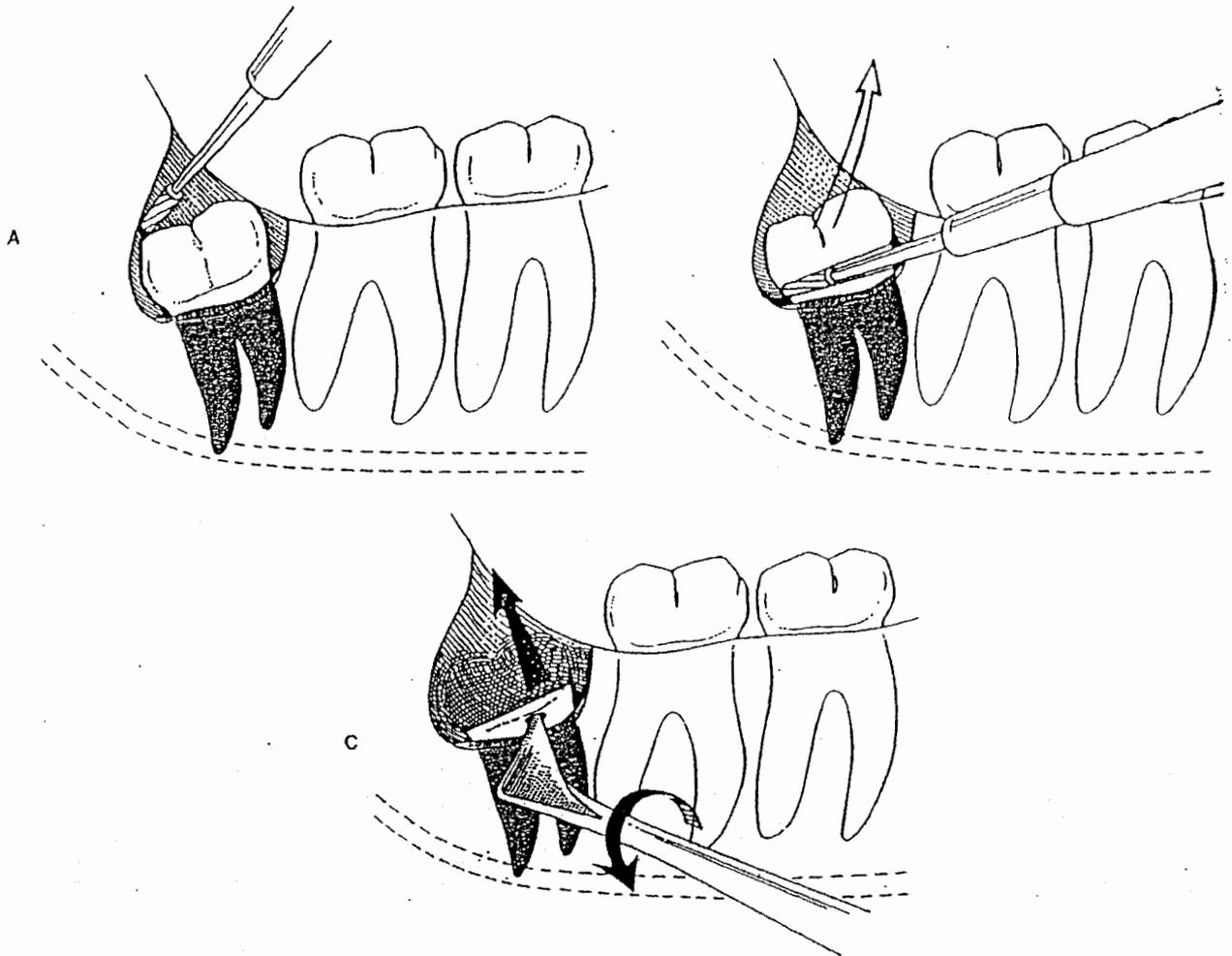


Fig. 9-49. A, For distoangular impaction, occlusal, buccal, and distal bone is removed with bur. It is important to remember that more distal bone must be taken off than for vertical or mesioangular impaction. B, Crown of tooth is sectioned off with bur, and crown is delivered with straight elevator. C, Purchase point is put into remaining root portion of tooth, and roots are delivered by Cryer elevator with wheel and axle type of motion. If roots diverge, it may be necessary in some cases to split them into independent portions.

REPRESENTATIVE LOCAL ANESTHETICS

LOCAL ANESTHETIC	EACH 1.8 ML DENTAL CARTRIDGE CONTAINS		
	ANESTHETIC AGENT	EPINEPHRINE	MAXIMUM DOSE ¹
2% Lidocaine w/ 1:100,000 Epinephrine	36 mg	.018 mg	2.5 mg / lb
2% LIDOCAINE (NO VASOPRESSOR)	36 mg	0	3.0 mg / lb
3% Mepivacaine (No Vasopressor)	54 mg	0	3.0 mg / lb
4% Prilocaine (No Vasopressor)	72 mg	0	3.0 mg / lb
4% Articaine w/ 1:100,000 Epinephrine	68 mg (1.7 ml)	.017 mg	500 mg
1.5% Etidocaine w/ 1:200,000 Epinephrine	27 mg	.009 mg	75 mg
0.5% Bupivacaine w/ 1:200,000 Epinephrine	9 mg	.009 mg	90 mg

¹ **MAXIMUM DOSE:** According to the Physician's Desk Reference (PDR), based on a 150 lb adult. In general, should not exceed 300 mg injected in divided doses over a period of 90 minutes.

To compute maximum dose for children: child's weight (lbs) ÷ 150 x maximum dose for adult (MDA) = (W_{child})(MDA) / 150

Bisphosphonate Associated Necrosis of the Jaws

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The worldwide use of bisphosphonate drugs to treat osteoporosis, Paget's disease and hypercalcemia of malignancy has escalated in recent years. A newly described condition, Bisphosphonate associated Bone Necrosis (BON), has emerged necessitating medical and dental health professionals become aware of this disease and identify their patients at risk.

Bisphosphonate drugs are synthetic analogues of inorganic pyrophosphate. They have a great affinity for binding calcium in the hydroxyapatite moiety of bone mineral. The bisphosphonates act by inhibiting osteoclastic activity, this results in a reduction of bone remodeling. These actions help retain skeletal bone density in osteoporosis and reduce the spread of skeletal metastases in patients with multiple myeloma and metastatic breast and prostate cancer. At higher doses, the bisphosphonates may also possess tumoricidal activity by inhibiting angiogenesis in bone; hence, they have become an important weapon for oncologic physicians to improve length of patient survival.

The exact mechanism and combination of events that produce Osteonecrosis of the jaws in some patients and not in others is still indeterminate. The patients at greatest risk are those receiving intravenous bisphosphonates (Zometa and Aredia) although patients taking oral forms of these drugs are also believed at risk to a much lesser extent. A list of the chemical and proprietary names of the clinically used bisphosphonates can be found in table I. The risks appear to increase with length of time in therapy. Osteonecrosis most commonly occurs following some physical trauma. Dentoalveolar surgery, periodontal surgery and denture sore

spots have all been implicated as well as local dental infection. Patients with preexisting periodontal disease are at the highest risk although numerous cases of spontaneous bone exposure have also been documented. The lesions clinically appear as ragged painful or painless ulcers with central bone necrosis and an erythematous halo of inflamed mucosa. There is no known cure to date and all osseous tissues are affected however bone exposure has only been documented in the jaws. Debridement, flap closure, ostectomy and hyperbaric oxygen, treatments commonly used for osteomyelitis and radiation necrosis, have failed to cure or even alleviate this condition. Local measures such as smoothing rough surfaces, topical chlohexidine swabs and systemic antibiotics produce a palliative effect in most patients.

Prevention of this condition through increased awareness and reducing risk factors is our best and only approach at this time. Current protocols to prevent BON have been established based on expert opinion and panel discussion. Some of these recommendations are listed in table II. More time and the establishment of evidenced based research is necessary to develop care standards from which the health care community may best manage risks for patients on these medications. Collaborative efforts between the health care community and pharmaceutical agencies are currently underway to help provide more answers.

A more detailed summary is provided in JADA December 2005 vol. 136 and JOMS November 2005 vol. 63.

Table I

Chemical name	Proprietary name	Pharmaceutical company	Relative potency	
Etidronate	Didronel	Proctor and Gamble	1	Oral
Risedronate	Actonel	Proctor and Gamble	1,000-10,000	Oral
Tiludronate	Skelide	Sanofi-Synthe Lab	10	Oral
Alendronate	Fosamax	Merck	100-1,000	Oral
Ibandronate	Boniva	Roche	1,000-10,000	Oral
Pamidronate	Aredia	Novartis	100	Intravenous
Zoledronate	Zometa	Novartis	>10,000	Intravenous