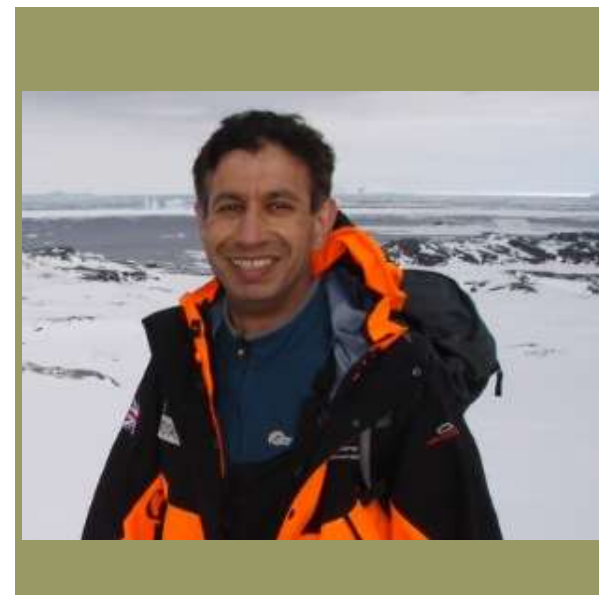




Expedition Dentistry Workshop Participants Handout A Brief Pictorial Guide to Expedition Dentistry



Burjor Langdana

Adventure Medic Resident Dentist

Expedition Dentistry Lecturer



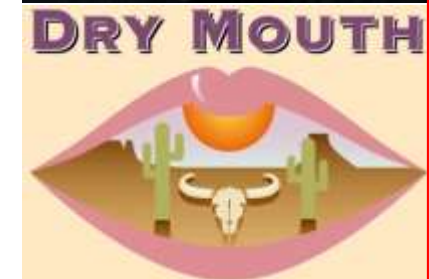
A Brief Guide to Expedition Dentistry- Table of Contents

1. Why are we troubled by Dental Problems so often on an Expedition?
2. How can we prevent Dental Problems spoiling an Expedition?
3. What causes Dental Decay?
4. A brief explanation of the process of Dental Decay.
5. A brief explanation of the process of Gum Disease.
6. What to do to limit the factors that cause tooth and gum problems on an Expedition?
7. Techniques to overcome Expedition oral hygiene blind spots.
8. Flossing- Expedition questions and answers.
9. What to do to protect the teeth from attack?
10. Is there need for pre-departure dental check up?
11. Steps towards doing dental treatment In the field.
12. Expedition dental problem solving.
13. Antibiotics commonly used In Expedition Dentistry._
14. Dental filling materials available for Expedition Dentistry.
15. Step by step guide of how to do a filling using pre-mixed dental filling- Cavit. [Hands on Exercise 2](#)
16. Step by step guide on how to mix dental filling- Glass Ionomer.
17. Step by step guide on placing a dental splint- Treatment of an avulsed tooth. [Hands on Exercise 3](#)
18. A guide on how to give dental local anaesthesia. [Hands on Exercise 1](#)
19. Spread of dental infection- A guide to surgical management. [Hands on Exercise 5 & Practical Assessment \[Extended Workshop only\]](#)
1. A guide to principles and procedures of dental extraction. [Hands on Exercise 4](#)
2. Past historical expedition dental cases- How they were managed.



are we troubled by Dental Problems so often on an Expedition?

- Change in diet → **Increased** sugar intake
- Decreased fluid intake → **Dry Mouth**
- Difficulty in → Maintaining good **Oral hygiene**
- Exposure to cold/heat → **Sensitivity**
- **No Access to Dentist** → **YOU ARE THE DENTIST**



INCREASING CAVITY RATE



can we Prevent Dental Problems spoiling an Expedition?

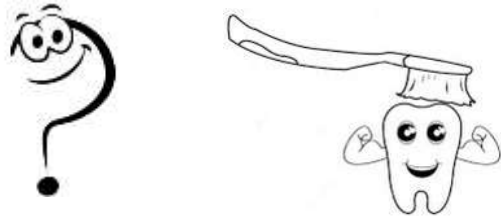
- 1. A brief **understanding** on what causes tooth and gum problems.



- 2. **Limit the factors** that cause tooth and gum problems.



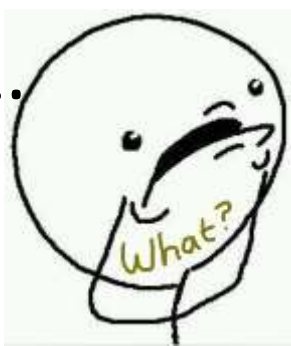
- 3. **Protect** the teeth from attack.



- 4. Pre-departure **dental check up**.



1.



causes Dental Decay?



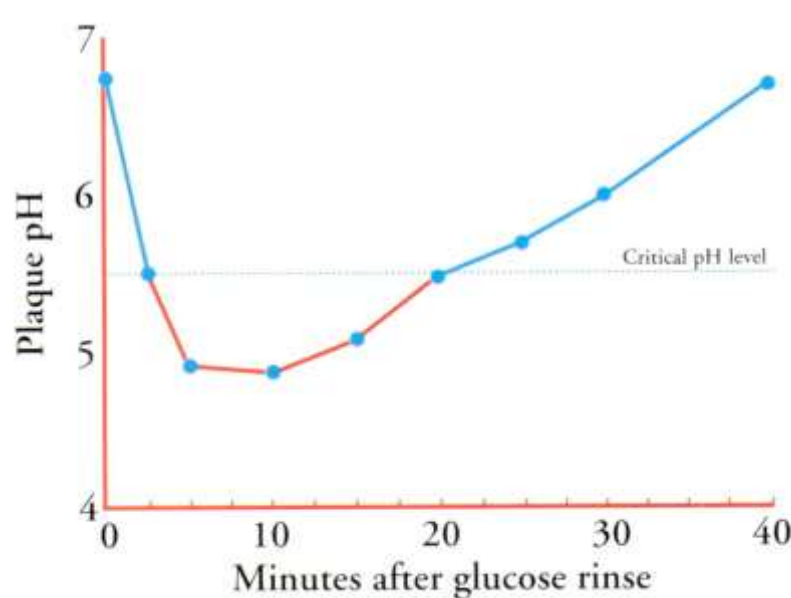
One sip of sugary energy drink + Mouth Bacteria = Acid

Clever Saliva buffers → ← Acid = Saliva repairs acid damage to teeth



Multiple sips + Mouth Bacteria = A LOT of Acid for PROLONGED time.

Saliva unable buffer → ← Acid = Acid dissolves tooth surface.



Frequency of sugar intake is critical



A BRIEF EXPLANATION OF THE PROCESS OF DENTAL DECAY.

- Decay will eat away at the dentine under the enamel of the tooth.
- The result is a progression: Toothache

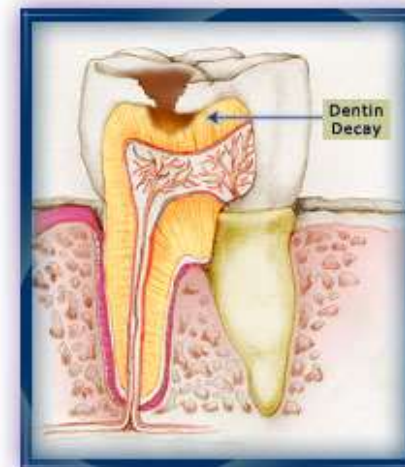
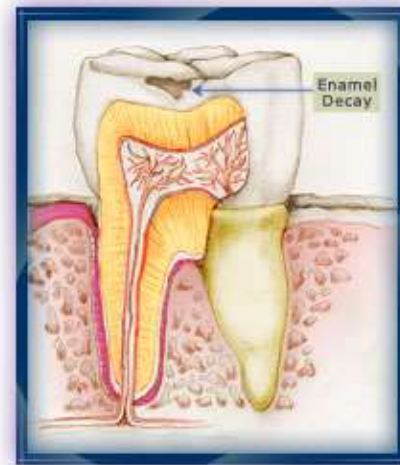
Severe toothache

Tooth dies (relief for a week or so)

Infection at the end of the root.

Abscess.

- A direct result of sugar + plaque

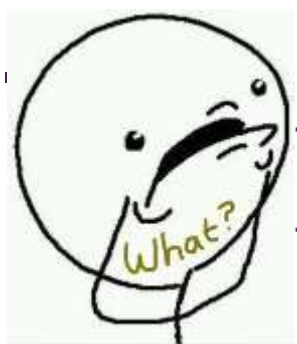


+ A BRIEF EXPLANATION OF THE PROCESS OF GUM DISEASE.

- Plaque build up at the gum / tooth interface.
- Inflammation of the gums.
- Detachment of the gums from the teeth forming pockets.
- Pockets next to the teeth collect plaque , vicious cycle resulting ultimately in tooth loss. This process causes 50% of tooth loss.

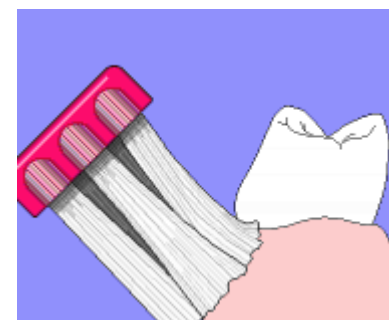
Healthy → Gum Disease Progression →





to do to Limit the Factors that cause tooth and gum problems on an Expedition?

- 1. Reduce sugar intake frequency. **Diet.**
- 2. When 1. is not possible (due to the physical demands of an Expedition) increase the attention given to reducing plaque. **Oral Hygiene, brushing and flossing** . Following slides will discuss...
- a) Techniques to overcome Expedition oral hygiene blind spots
- b) Flossing- Expedition questions and answers





Techniques to Overcome Expedition Oral Hygiene Blind Spots.

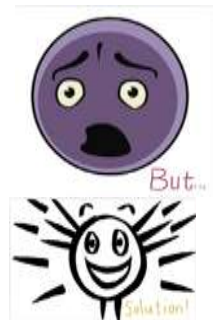
1) Blind Spot- Food debris collection cheek side of upper last tooth.



You Say- Lips are cracked and tender can't reach there.

I Say- Close your mouth partly . This will loosen your cheek muscles . Allowing you to get your brush all the way back to the cheek side of the top last tooth 

2) Blind Spot- Food debris collects on the gum line of lower front teeth.





You Say- But there are no mirrors around.

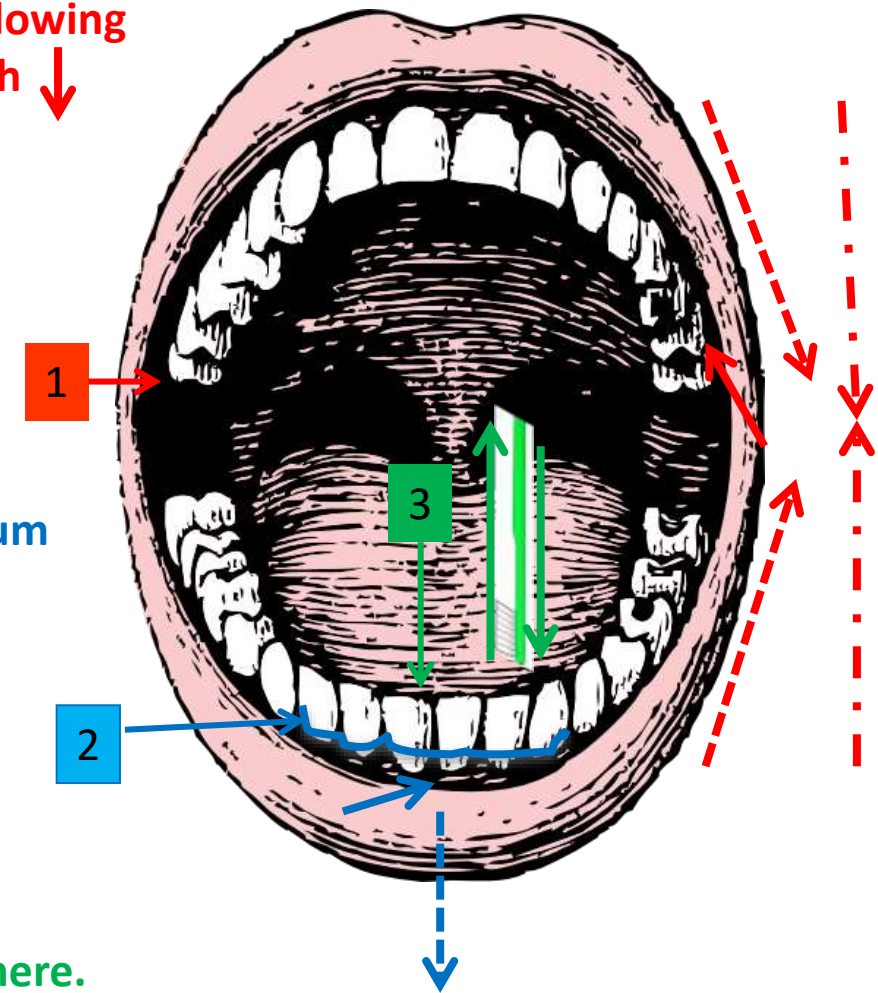
I say- Pull your lower lip down . Allowing you to brush all the way to the gum line of the lower teeth 

3) Blind Spot- Food debris collects on the tongue side of lower front teeth.



You Say- Mouth's dry, sore and tooth brush too big to get it deep down in there.

I say- Keep your tooth brush vertical. So you can get deep down. Brush vertically Downwards  and Upwards 



2b



Flossing- Expedition questions and answers



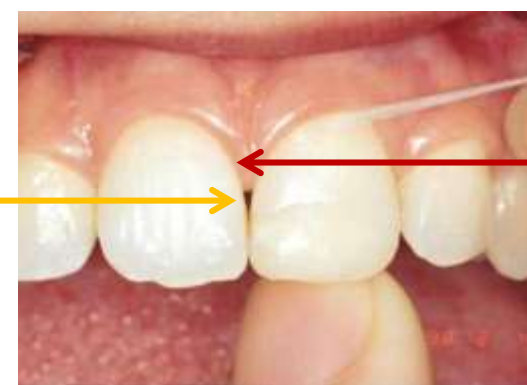
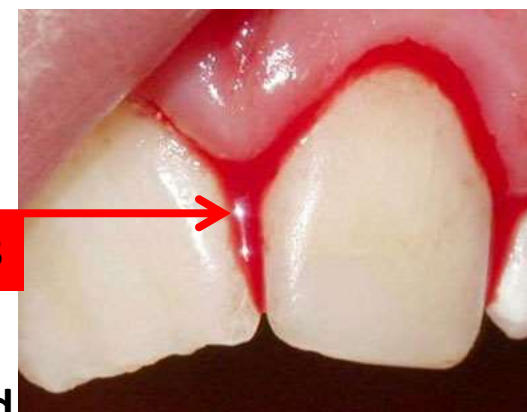
You say- I don't floss because it bleeds **3** every time I floss.



I say- Because you don't floss often. Debris collects between the teeth where the toothbrush can't reach **1**. Irritating the gums that get inflamed **2**. Inflamed gums bleed as soon as the floss touches them.



Solution- Concentrate on the areas that bleed. Floss better and regularly there.



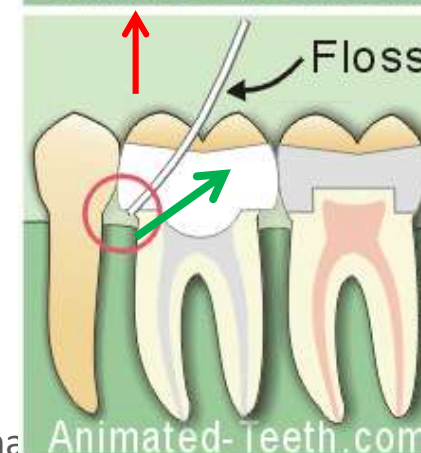
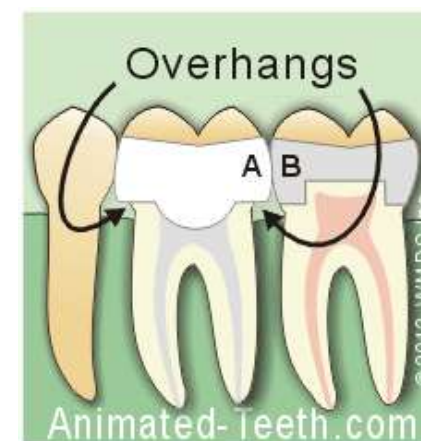
You say- The floss keeps catching around the fillings. You are scared it'll pull out the fillings



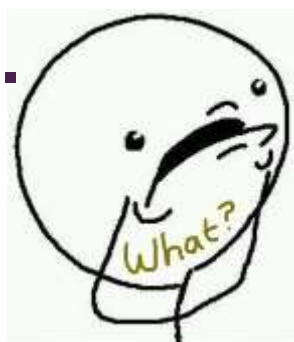
I say- The floss is getting stuck below the overhangs of your fillings. Food debris also collects there so its important to floss there.



Solution- Use a non shredding floss. DON'T rip it out vertically . Gently pull it out HORIZONTALLY 



3.



to do to Protect the Teeth from Attack? Answer-Use the Correct Fluoridated toothpaste in the correct way.

A) The correct way

For 2 Minutes



B) The correct Fluoridated Tooth Paste

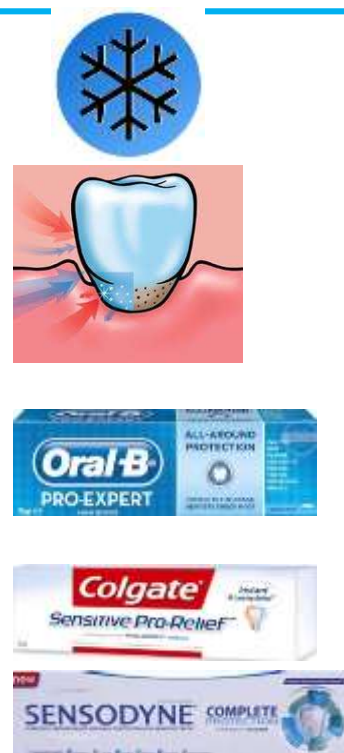
For Cold Weather Expeditions

Expedition issue - Sensitivity

Advised Toothpastes- Antisensitivity Type. **Normal Fluoride Percentage with Anti Sensitivity Medication.**

Things to Remember

- i) It takes a few days to a few weeks before maximum anti- sensitivity action kicks in. Be patient.
- ii) You CANNOT mix and match. They all have different mechanisms of action. You have to stick to the same one.
- III) You CANNOT mix with normal toothpaste. This will become your regular toothpaste. Twice a day.
- iv) Make sure its Fluoridated.



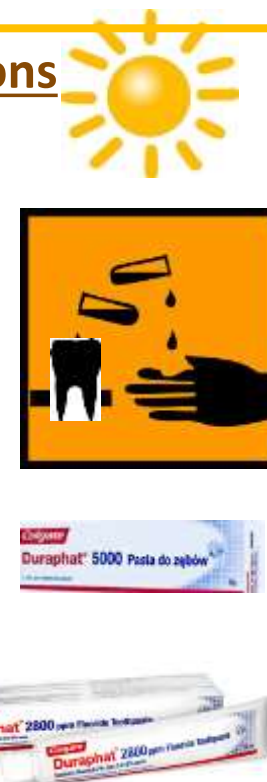
For Warm Weather (Desert) Expeditions

Expedition issue- Multiple sips of sugary energy drinks increase frequency of acid attack on teeth

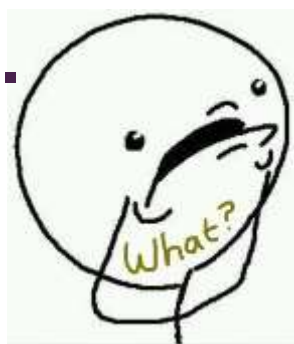
Advised Toothpastes- High Fluoride. **Much Higher Fluoride Percentage.**

Things to Remember

Like any other medicine Fluoride needs time to act. Hence just spit out the excess toothpaste. DON'T rinse after you brush or it'll just wash it away. The longer it stays on your teeth the better it is. If you do want to use a mouthwash use it in between the day.



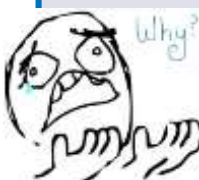
4.



Is there need for Pre-departure Dental Check Up?

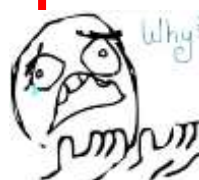
Answer- It'll help in the Prevention and Diagnosis of Teeth and Gum problems on an Expedition.

A) Pre Departure Dental Check ups- Prevention- Pro Active involvement in making sure this is done at least 2/3 months before departure. Informing the dentist where, how long for and degree of dental cover available.



- i) 2/3 months gives enough time for the dentist to complete complicated treatment like Root Canal, Crowns, Extractions. 2/3 months also affords sufficient time to heal from these procedures.
- ii) Informing the Dentist about duration, location and degree of Expedition Dental cover. Allows him to adjust his treatment accordingly. Especially for those teeth that lie in the grey zone between conservative and radical treatment modalities

B) Pre Departure Dental Check ups- Diagnosis- To collect a Detailed Dental Charting from the Dentist and Carry it on the Expedition.



To an untrained eye the tooth may look perfect. But actually it could be a crown, a white composite filling. All these may just look like a tooth. A detailed dental charting will let you know exactly

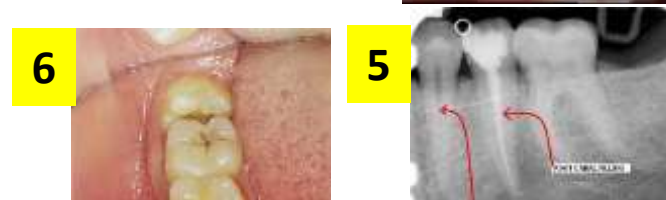
Where are the= Fillings: Amalgam **1** and White composites **2**

Where are the = Crowns **3**

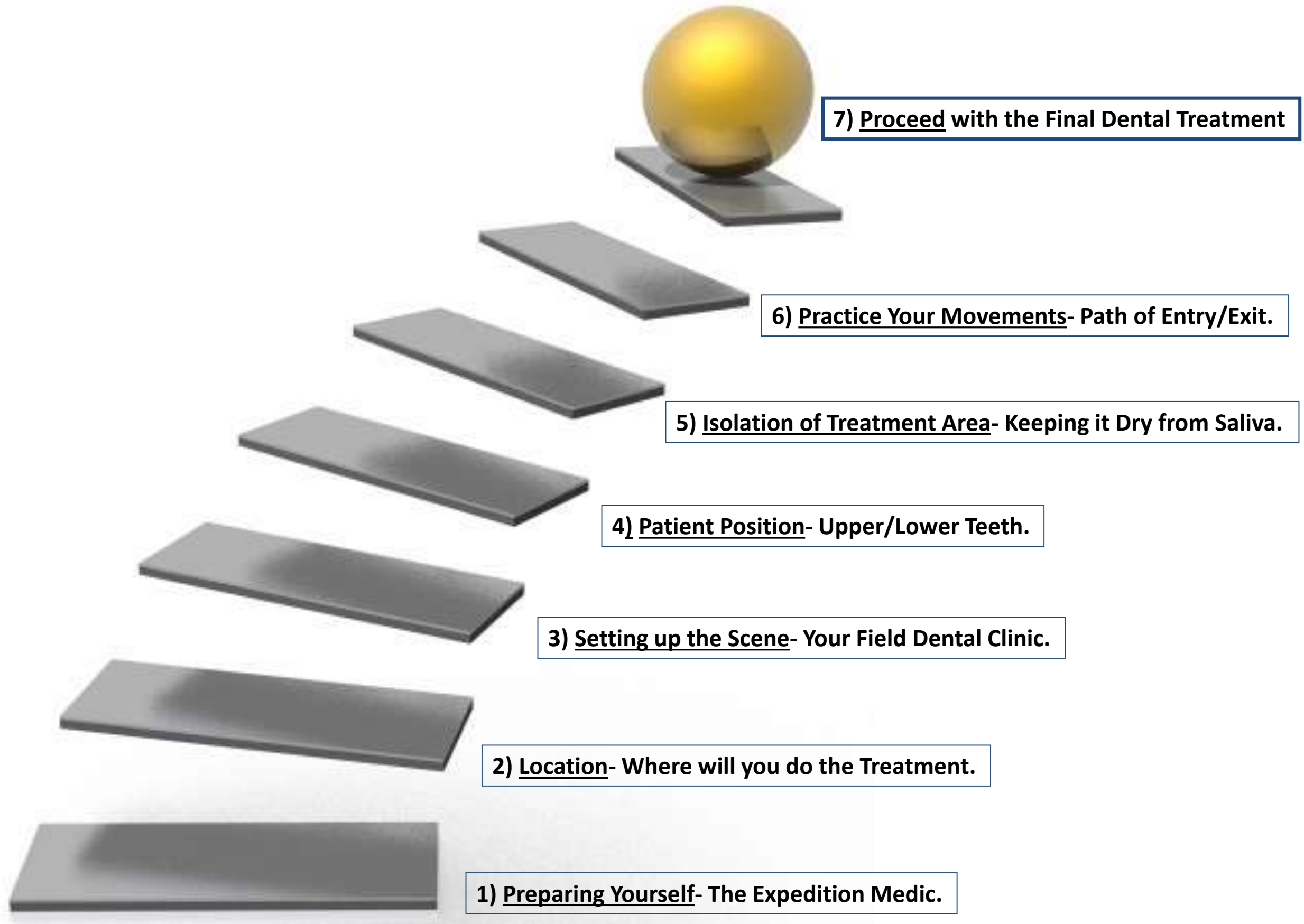
Where are the problem areas= Deep Fillings **4**

Where are the= Root Canal treated Teeth **5**

Where are the= Wisdom Teeth, are they Impacted, or have they been removed **6**



Steps Towards Doing Dental Treatment In the Field



1) Preparing Yourself- The Expedition Medic

Dental treatment will push you out of your comfort zone so

- Make sure you are dry, well fed and relaxed.
- It'll be fiddly and take time- Keep good posture, padding for your knees and back.



2) Location- Where will you do the Treatment

- Day time- Preferably with the patient having a good back rest. Patient facing the sun to get the maximum advantage of natural light.
- Night Time- In a closed tent. To prevent light attracted bugs from joining in the dental treatment.



3) Setting up the Scene- Your Field Dental Clinic.

1- Tent Floor

Empty. Except for Dental stuff and Padding for Patient and Field Medics.

2- Patient

Centre of padded tent floor. Knees bent to allow More freedom of movement in tight space. Assisting in dental procedure by holding dental Stuff 5 and holding light or in retraction.

3- Assistant ONE

Has head light. Manual Head Rest and Retractor.

4- Field Medic- Dentist

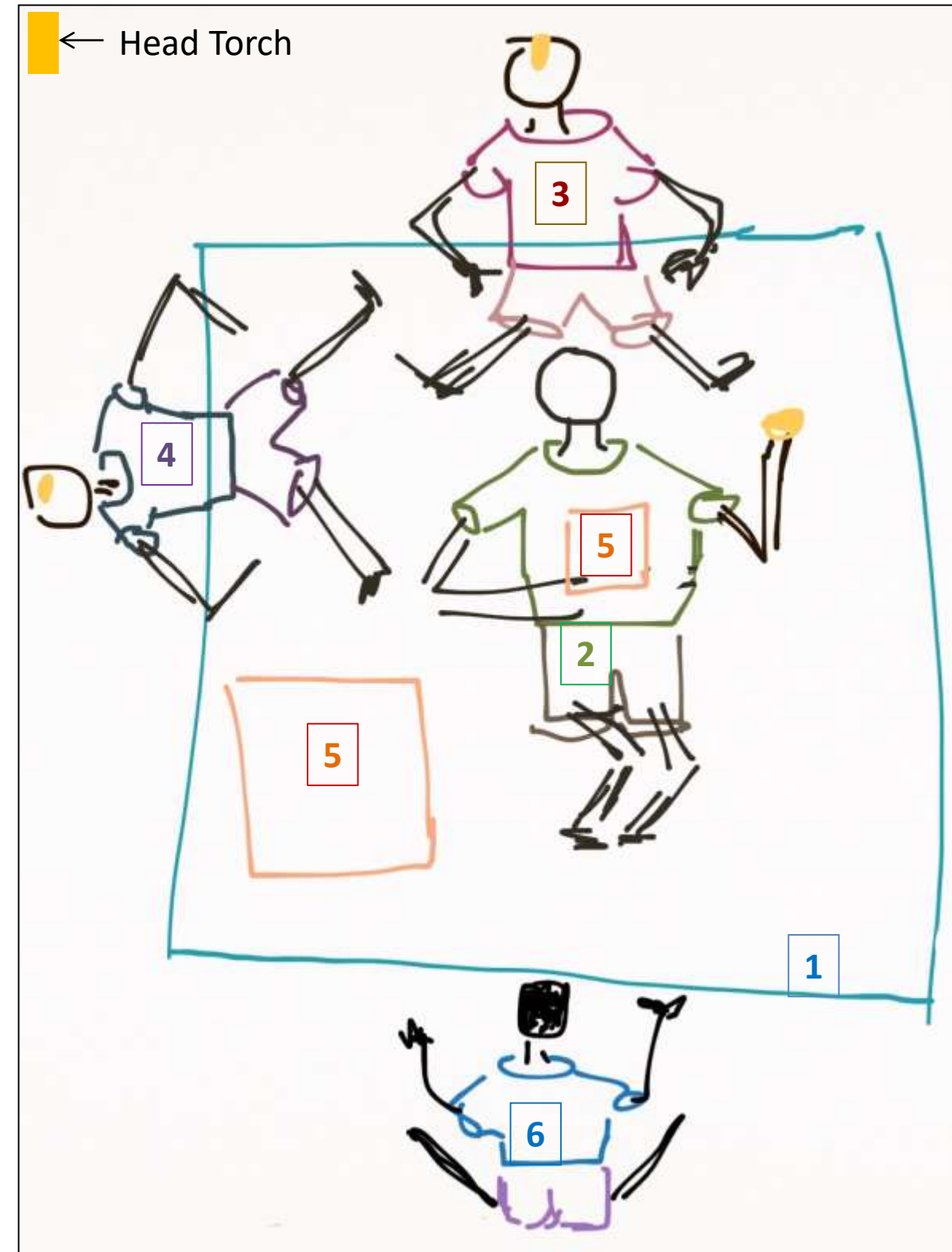
With head light.

5- Dental Stuff/ Dental Charting

Well spread out and arranged.

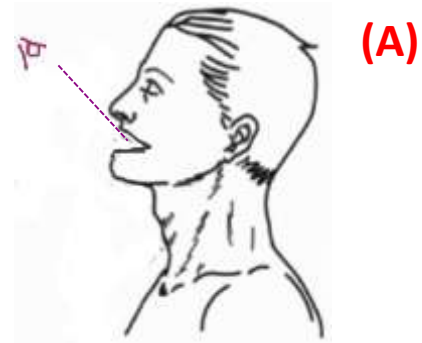
6- Assistant TWO

Waits outside to give a helping hand- Space in tent Limited.

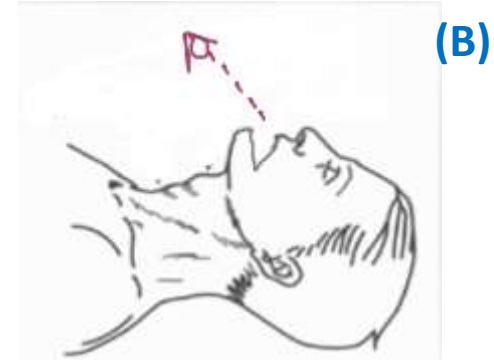


4) Patient Position- Upper/Lower Teeth.

A) For Lower Teeth- Sitting with Lower teeth Parallel to the Floor.

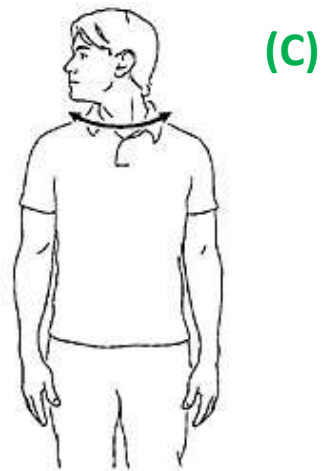


B) For Upper Teeth- Patient Lying supine Head rotated, Neck extended, Upper teeth at an angle of 60 degree to floor. Making direct vision possible.



5) Isolation of Treatment Area- Keeping it Dry from Saliva.

C) Position- Rotate the head to the opposite side you are treating. This allows the saliva to pool opposite to the side you are treating.



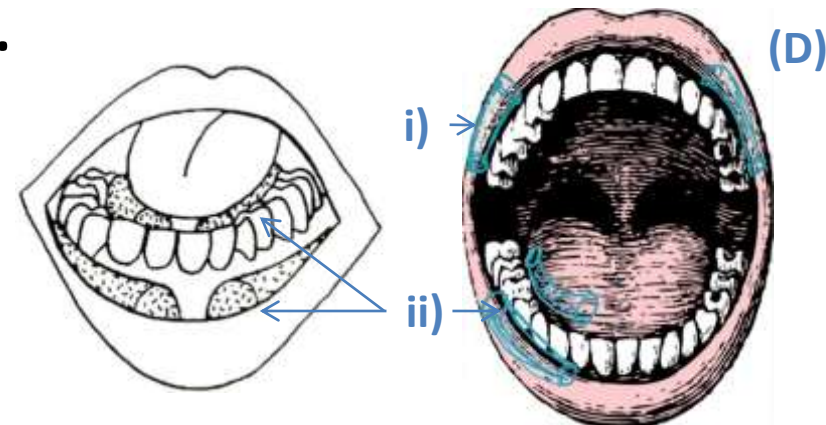
D) Location of cotton rolls to reduce salivary flow into mouth.

i) Uppers- Place cotton roll on cheek side of upper first molar (next to the opening of parotid duct).

ii) Lowers- Place cotton roll on the tongue side of lower teeth AND lip/cheek side of lower teeth.

6) Practice Your Movements- Path of Entry/Exit.

This gives you an idea of how you will be able to place the filling. What problems you will encounter. Once that is sorted out you can then actually pick up the filling material and insert it into the tooth.

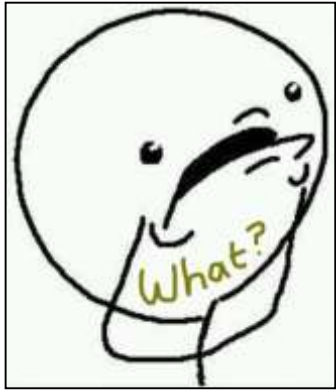


Expedition Dental Problem Solving

Key to the Images



Patient complaining of...



What can you (Expedition Medic) see.



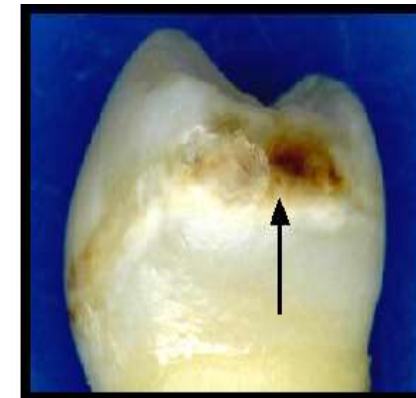
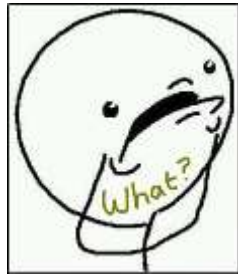
How did this happen-The pathology behind the signs and symptoms.



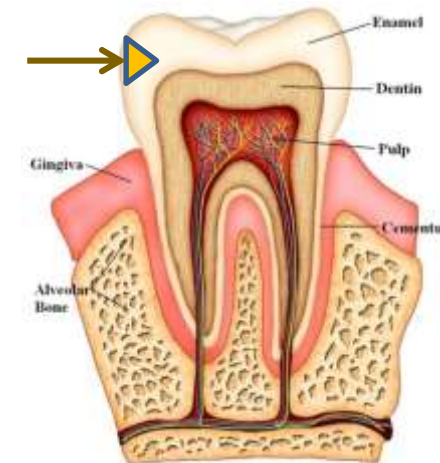
Expedition Dental solution options.



Doc I've got this brown spot on my tooth, it's very sensitive to cold.



Enamel Caries- Acid from food dissolved outer surface of Enamel. This has become rough and picked up stains from food. It's now porous, demineralised and very sensitive.



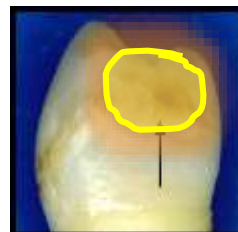
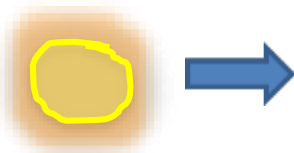
1) Isolate , dry area



2)Duraphat Fluoride Varnish



3)Apply over affected area



4)No food or water for 30 Minutes

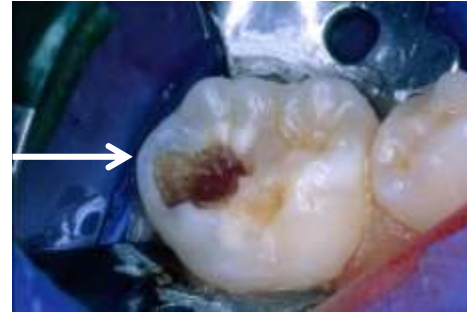
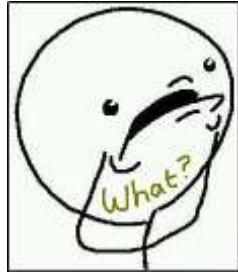


5)Diet and oral hygiene instructions

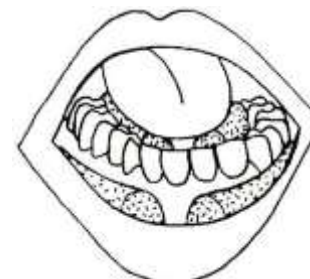
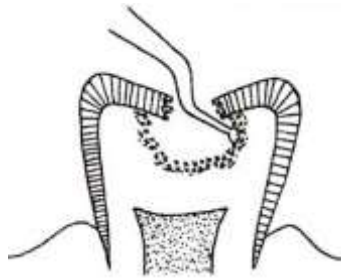
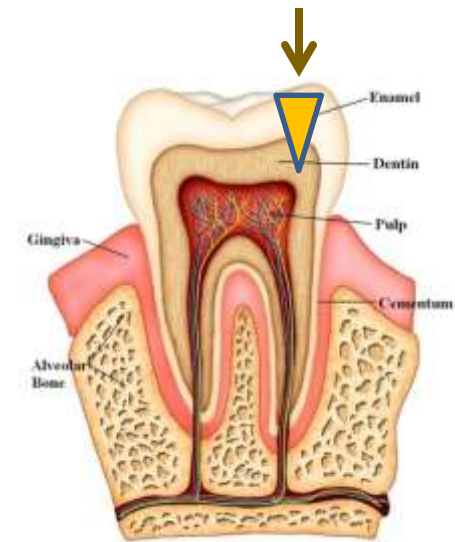
Note- If No Duraphat Fluoride Varnish available- Use any Antisensitivity Toothpaste as a compromise.



Doc I've got a tooth that's getting more and more sensitive. It now hurts for a while after ive finished eating my soup. I think there is a hole in it.

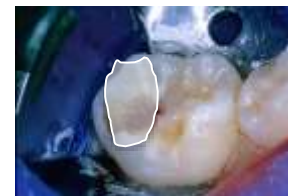


Dentine Caries- Acid dissolving through the Enamel. Now reached the Dentine. Dissolving and hollowing the tooth. Unsupported Enamel crumbles forming a hole. Getting closer to the pulp, hence increase in sensitivity.



1) Clean soft cheesy leathery debris from the hole in tooth

2) Isolate , dry area



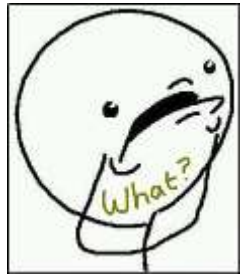
3) Take temporary filling material- Cavit, IRM

4) Cover hole in tooth- Avoid eating for 30 minutes

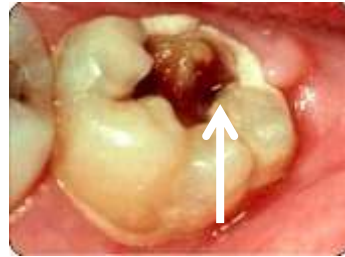
Note- If temporary filling material not available. Following used historically- Clove oil dipped cotton, Ski/Candle wax, Chewing Gum.



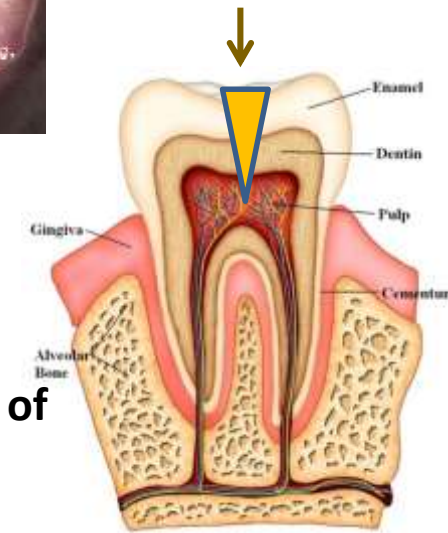
Doc the entire side of my face hurts. I can't make out which tooth this constant throbbing pain is coming from.
On questioning he may give a) History of a very deep filling done there b) History of tooth ache associated with a particular tooth.



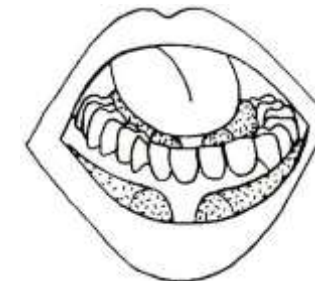
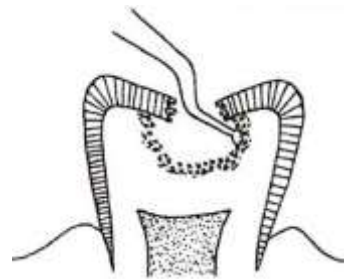
A deep carious hole.



A very large, deep, loose or broken filling.



Deep caries with tooth Pulp involvement- Pulp getting irritated and inflamed . This Inflammation creates pressure pain in tooth centre. Pulp has NO proprioceptive receptors. Hence localisation of pain is a problem.

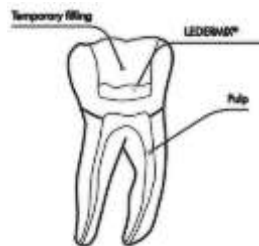


1a) Pluck out loose broken filling

1b) Clean soft cheesy leathery debris

2) Isolate , dry area

5)Take Ledermix/ Odontopaste



4)Place this mild antiseptic steroid paste in the depth of the cavity

5) Fill rest of the cavity with Cavit/IRM

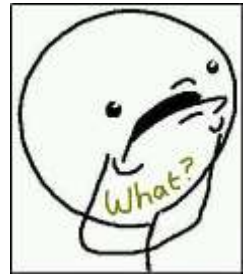
6) Antibiotics and Anti-inflammatories

May need Deep Filling, Root Canal treatment or Extraction by dentist in future





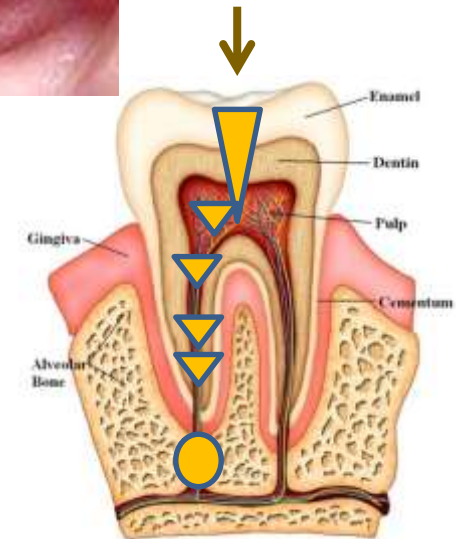
Doc when I eat there is a tooth that really hurts. I know exactly which one it is. It's not very sensitive to hot and cold. But very painful when I bite on it.



Tenderness or swelling adjacent to
A tooth with a large filling or a deep hole.



Dental Abscess- The Infection after reaching and inflaming the pulp. Finally results in pulp death. Dead necrotic stuff leaks out of the Root to result in an abscess in the bone below the root. The bone DOES have proprioceptive receptors. Hence pain can be localised.



1) Antibiotics +
Anti-inflammatories



2) **✗** Avoid Extra-Oral Heat application.
This would migrate the swelling extra-orally.
worsening the situation

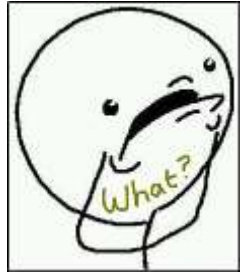
3) Dental Dressing with Ledermix or Odontopaste
(Last Slide) may help



4) Drainage- a) Incision and drainage b) Using wide bore
needle c) Extraction. May all help depending on experience,
training of Exped Medic and existing situation



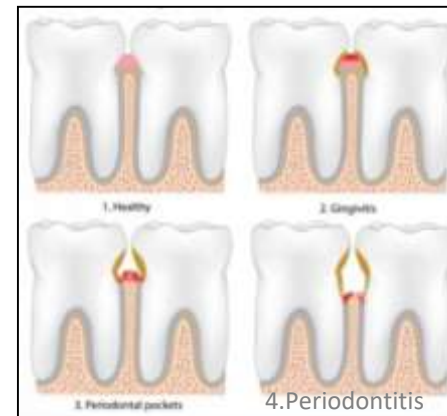
Doc my gums bleed while brushing and flossing. So I've stopped brushing there. But its getting worse. Its bleeding more and getting even more painful.



Red, inflamed gums. Poor oral hygiene.
Gums bleed when you touch them



Gingivitis/Periodontitis- Poor brushing flossing –
Food Debris- Inflamed gums-Results in bleeding while
brushing, flossing- Scares patient- Who then brushes
and flosses less-This results in a vicious cycle.



1) Bleeding while brushing and flossing indicates that he/she must
brush and floss in that area better (not more force) just better.



2) Take Corsodyl
Mouth wash or Gel



3) Flush with Corsodyl
Mouth Wash or paint
teeth with Corsodyl Gel





Doc, I've got a pimple on my gum. Is it a gum boil?



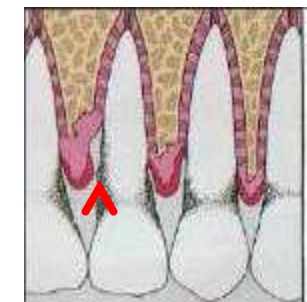
A pimple on the gum.



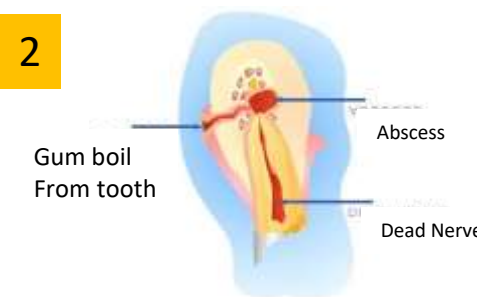
Periodontal/ Gum Abscess- 1 Food and debris causes pocket between tooth and gums. Irritated gums get so inflamed that they close the opening of the pocket, sealing in all the debris, that liquefies causing a pimple. This has to be differentiated from a Dental abscess 2 that decompresses through a sinus to form a gum boil. Tooth abscess is situated further away from the crown, compared to gum abscess ^



1



2



1) Antibiotics + Anti-inflammatories

2a) Treatment-Incise and drain



OR

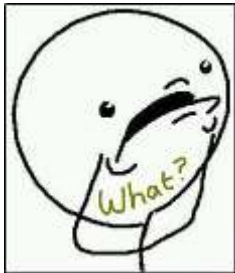
2b) Curette, Clean and drain through pocket



3) Flush with Corsodyl Mouth Wash or insert Corsodyl Gel



Doc I can't open my mouth, my face hurts, and it's swollen. The gums behind my last tooth is swollen

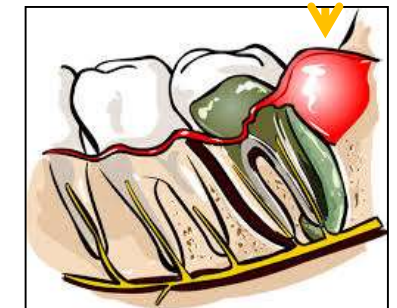


Partly erupted wisdom tooth. Overlying gums appear swollen and inflamed. →

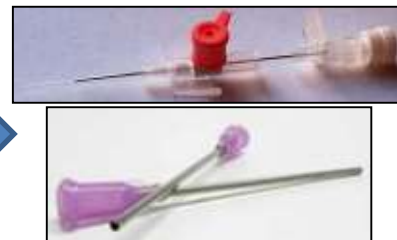


Pericoronitis (Inflammation around crown) of wisdom tooth (3rd Molar)

Due to plaque build up on and between the wisdom teeth. This time it is around a wisdom tooth that is half buried in the gum: because it is so difficult to clean, the resulting infection is almost inevitable! ↓

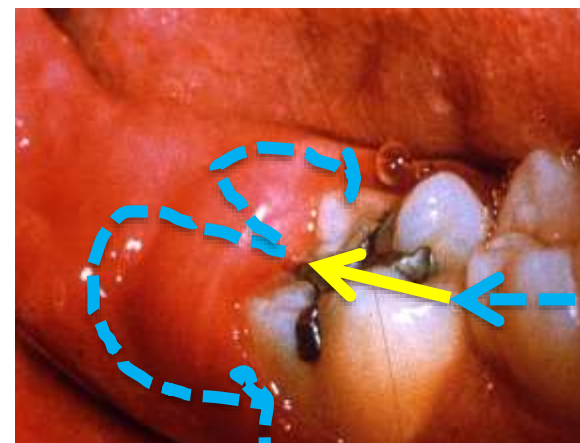


1) Antibiotics + Anti-inflammatories



2) Irrigation using blunt needle (Venflon outer plastic cannula)

3) Irrigate using Corsodyl or luke warm salt water



4) Insert blunt needle ↑ in the pocket between inflamed gum and partly erupted wisdom tooth. Gently flush out the debris. →

Antibiotics Commonly Used In Expedition Dentistry

NOT Allergic to Penicillin

- Amoxycillin 500mg + Potassium Clavulanate 125mg (Augmentin/ Co-amoxiclav- 625mg) OR
- Amoxycillin 500 mg + Metronidazole 400mg

History of Penicillin Allergy

- Metronidazole 400mg + Erythromycin 500mg OR
- Metronidazole 400mg + Clarithromycin 500mg OR
- Metronidazole 400 mg + Azithromycin 500mg

Analgesics/ Antinflammatories Commonly used in Expedition Dentistry

- Ibuprofen 400mg OR
- Diclofenac 50 mg
- Paracetamol (Acetaminophen) 500 mg can be combined with Ibuprofen or Diclofenac

Dental Filling Materials available for Expedition Dentistry

Premixed

A

Supplied in a sealed tube; squeeze out and apply.

- The premixed materials (e.g. 'Cavit') are easier to use but have less structural strength.
- Requires a mechanically retentive cavity to stay put. i.e. a hole with walls.
- Erodes and may require replacing as often as every few days.
- Cavity can be a little damp but not wet.



Materials that require mixing

B

Examples include IRM (Intermediate Restorative Material) or any glass ionomer filling material which is fussy, but also very sticky and retentive.

Consider the following before starting:

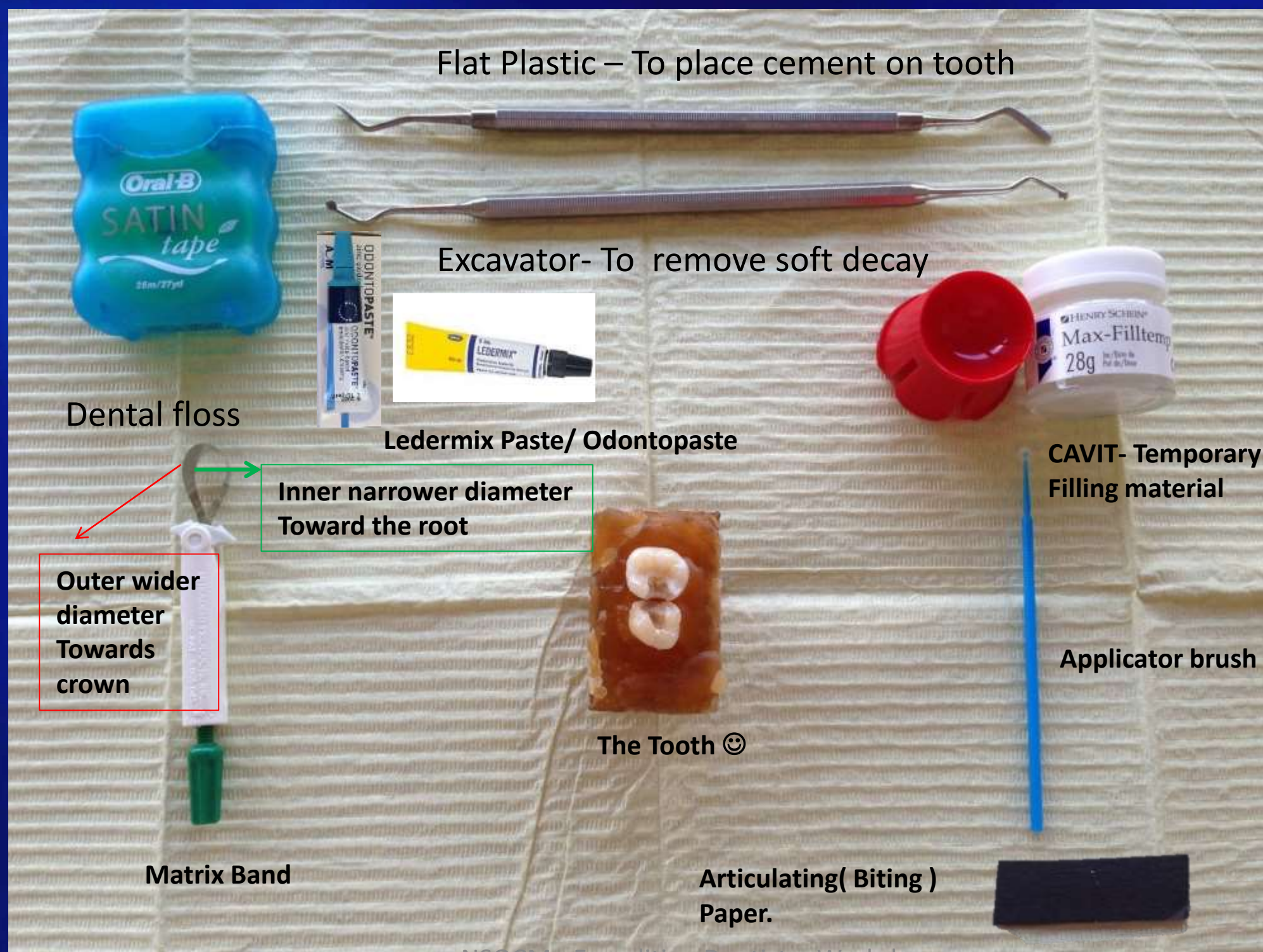
- Isolating and drying the cavity – as above
- The exact ratio of powder to liquid is critical.
- The mixing time is about 1 min and the setting time is similar.
- Mix on a glass/shiny plastic slab with a flat spatula into a dough-like consistency.
- Apply and compress into a dry cavity, immediately removing all excess material from the biting surface. A Vaseline coated finger in ease of smoothing and shaping the filling.
- IRM may be colour-coded: white for a clean cavity, blue for decay present, red for pulpal symptoms.



If you have no filling material available

Improvisation can be attempted. Dip cotton pellet into oil of cloves or Eugenol. Swab the depth of the cavity. Then seal the cavity with candle wax, ski wax or sugarless chewing gum. Expect limited success of a very short duration.

A Filling a tooth with deep decay with a temporary filling material- Cavit and Ledermix or Odontopaste. Things you will need.



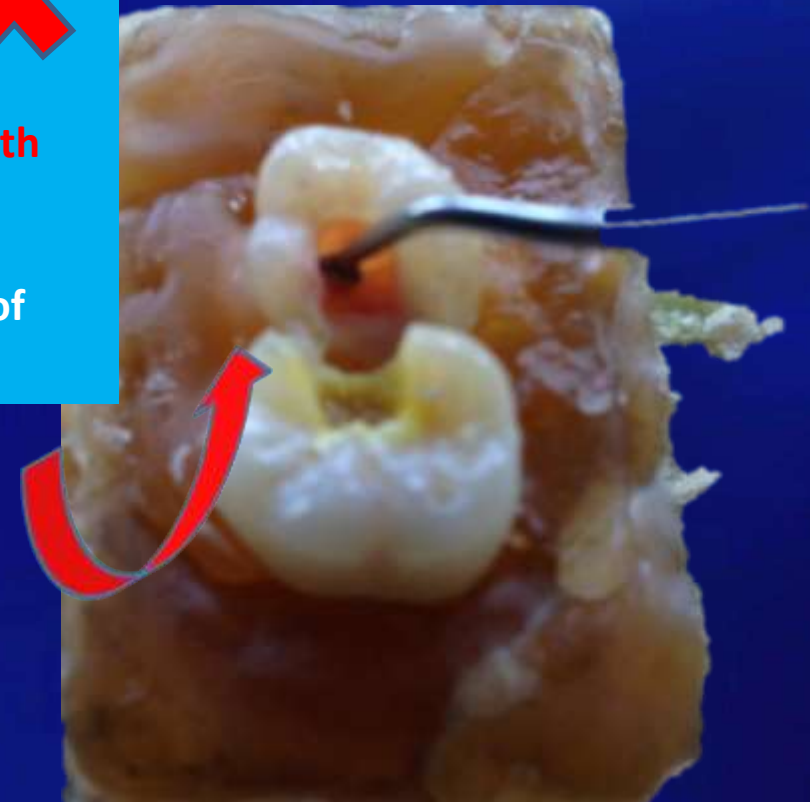
A First you will need to excavate(clean) debris from the tooth before filling.



THE WRONG WAY

Towards the pulp of the tooth
FROM Soft debris TO Hard tooth structure. Deep Aggressive spooning.

Can dig straight into the pulp of the tooth.



Dental Excavator- use to clean soft leathery debris from cavity.
Cleaned using **CONCAVE** side **not CONVEX** side



Now Clean the artificial debris
From the tooth the **RIGHT** way.
AWAY from the pulp of the tooth.
FROM Hard tooth structure TO Soft debris. Gentle Superficial spooning, removing small bits at a time.



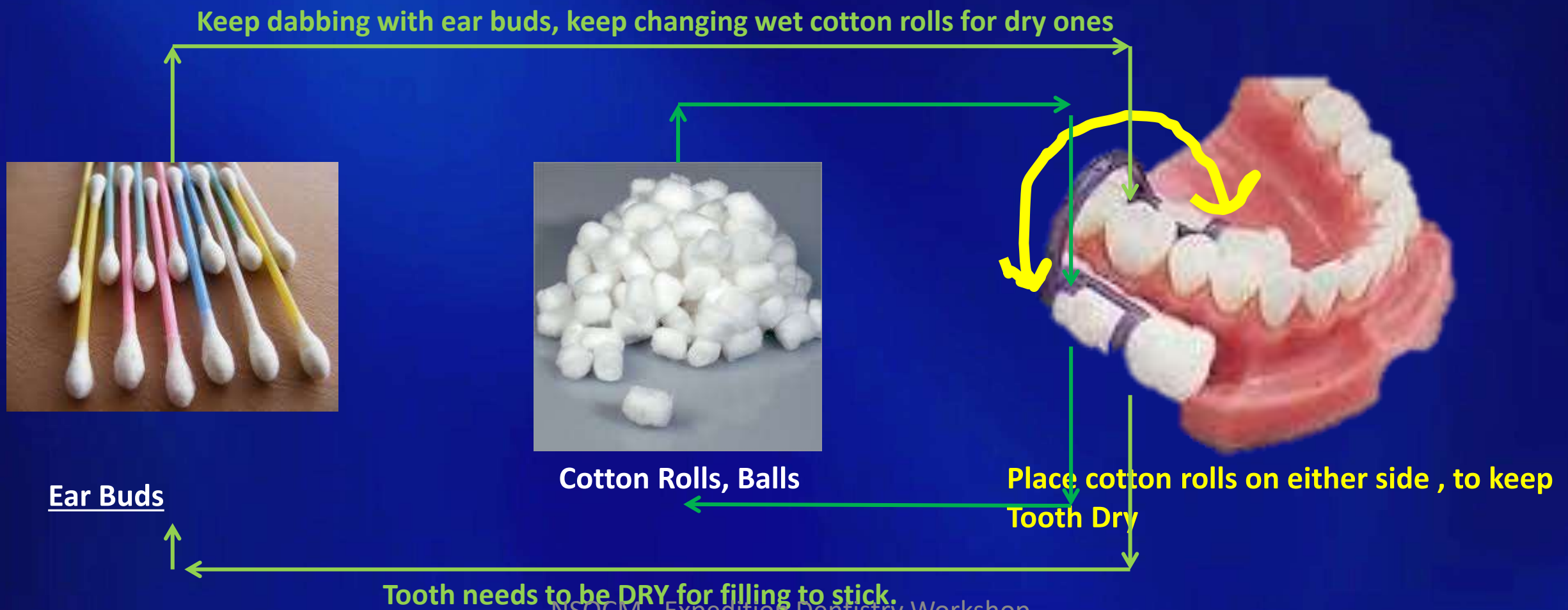
A

Now dry the tooth and KEEP it dry



Compressed air can

Paper Tissue wick



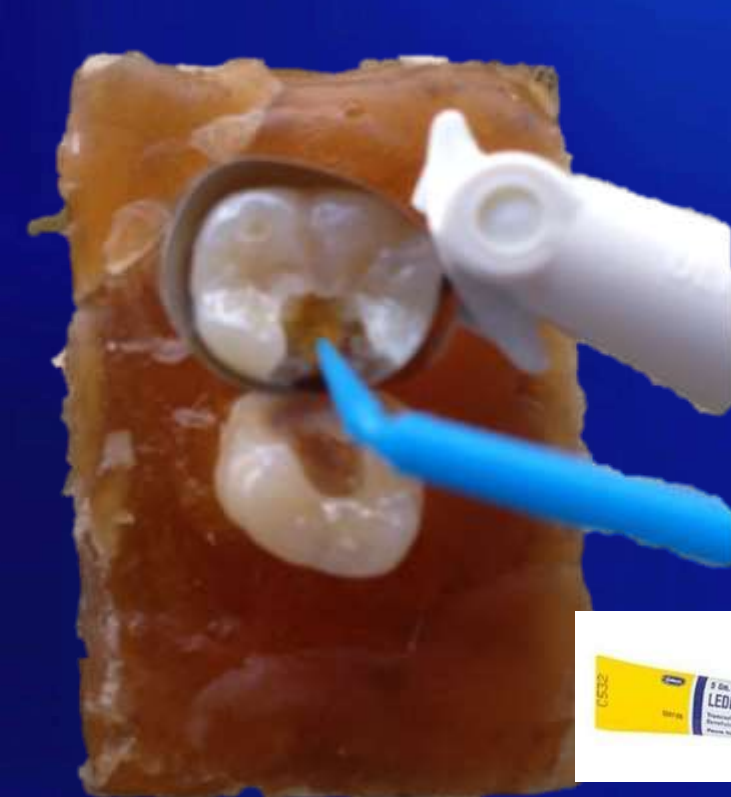
A If the front or back portion of the tooth is broken then one needs to place a Matrix band (like boxing before pouring cement) and placement of Ledermix.



Floss between the teeth, to remove all debris.
To make it easier to place Matrix Band



Put matrix band right way around on tooth.
NARROW to ROOT, WIDER to CROWN.



Dip applicator brush in Ledermix/ Odontopaste.
Coating a modest amount in the
depths of the cavity.



A

Then place the Cavit and use Articulating Paper(Carbon Paper, Typing paper)



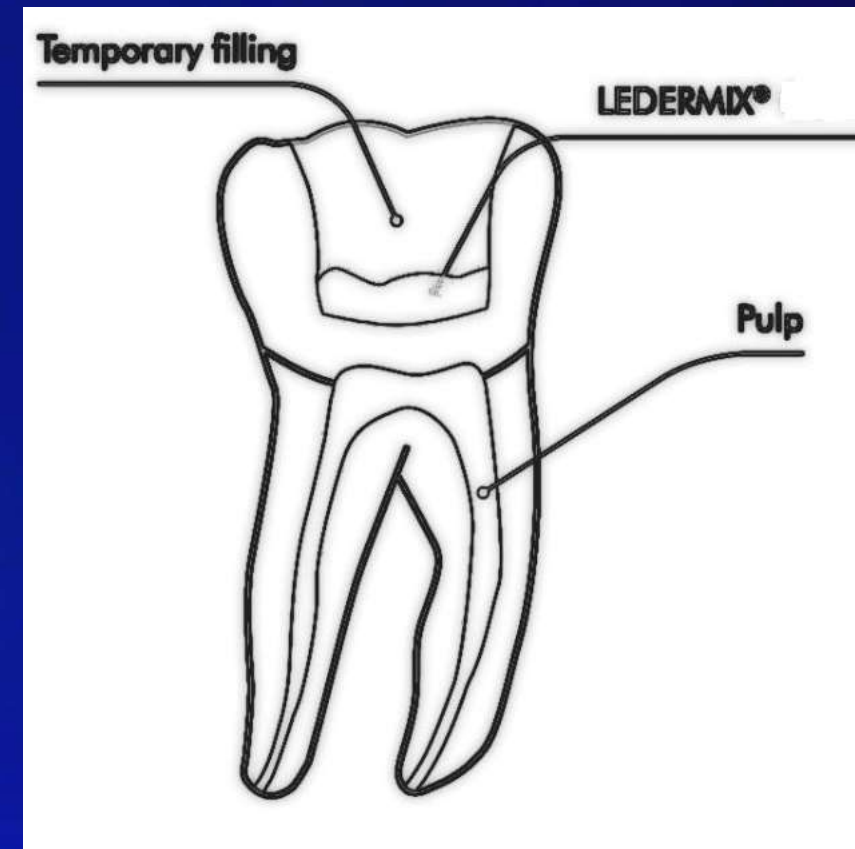
1)Take some Cavit on Flat Plastic. If hard roll into a ball it'll soften.

2)Pat, Press and shape with finger. If filling too Sticky, coating the finger with Vaseline helps

3)Remove Matrix Band

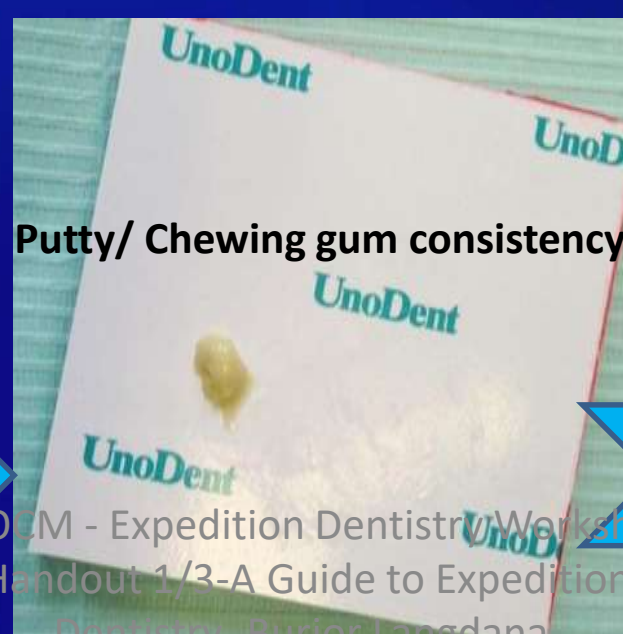
A black dot is shown representing the high point detected when patient bites on articulating paper.

5) Excess removed with Flat Plastic



B

**Glass Ionomer Cement Mixing -Its stickier,
sets harder, grips on to tooth better. Longer lasting filling. But fiddly to mix and place.**



Front tooth gets knocked out- Its now an **AVULSED TOOTH**- This **MODULE** will train you in how you can save this tooth.

Burjor Langdana

AVULSED TOOTH MODULE

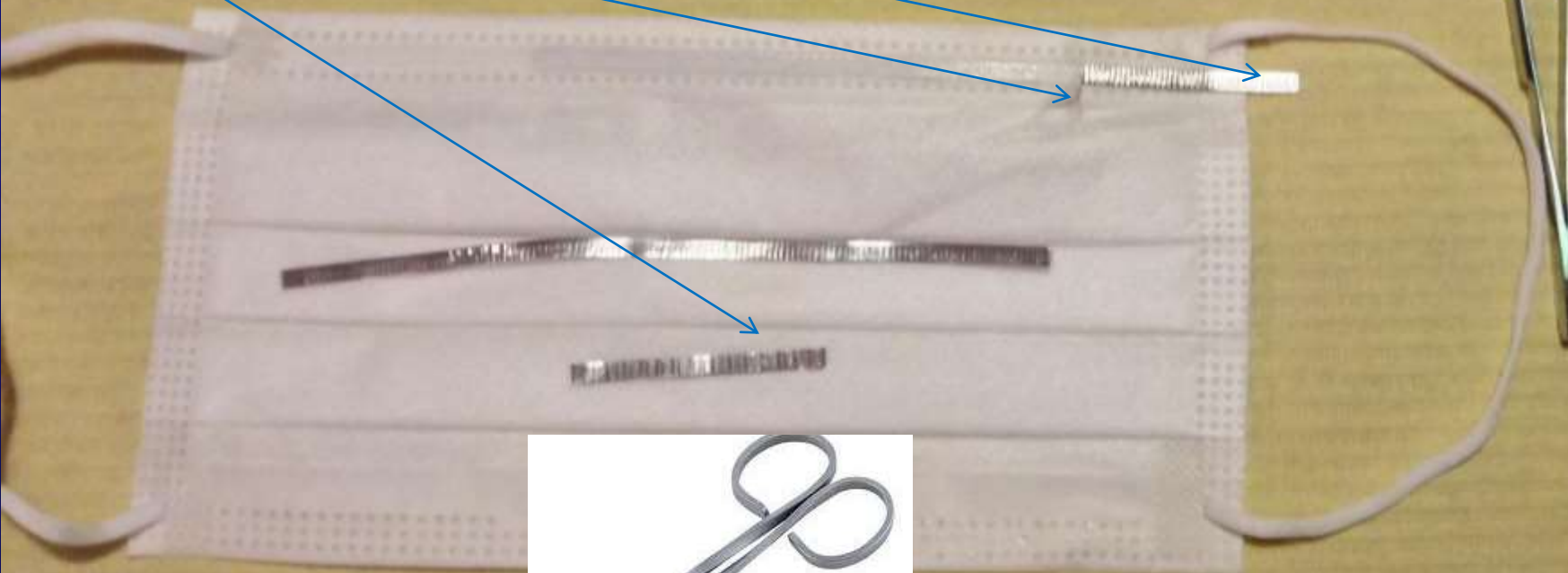


The empty socket with blood clot represented by **blue cotton**

The avulsed tooth in blood and dirt. Represented by **Ketchup**

Syringe to gently flush blood and dirt from the tooth

The Splint that we will use to stabilise the tooth. This is obtained by Cutting and pulling out the nasal clip from the mask. We have cut some Splints and prepared them for you.



We will fix the splint to model Teeth using **glue dots**

Removal of Blood clot and preparing the Socket

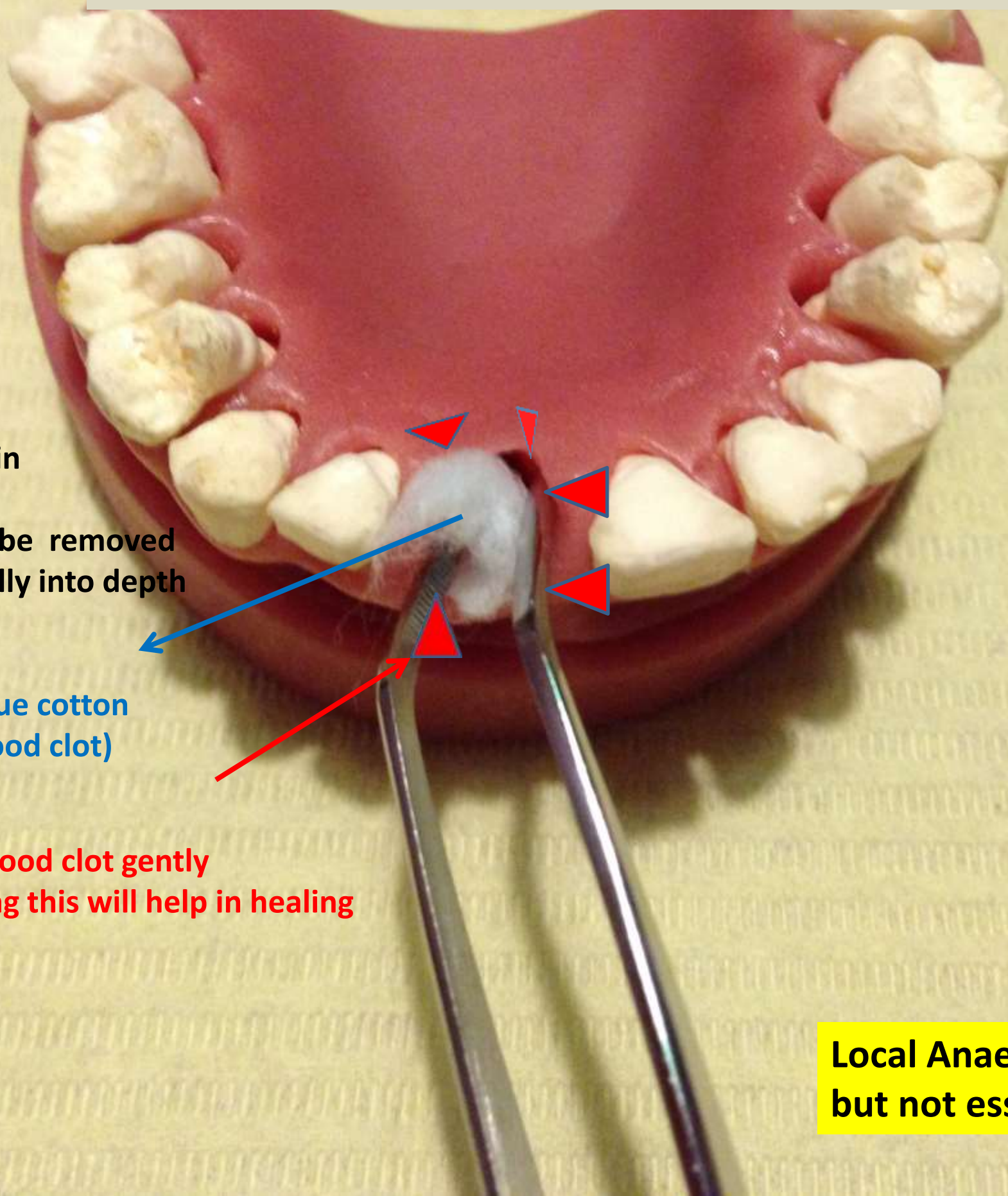
Blood clot forms in
8 minutes.

Blood clot has to be removed
To insert tooth fully into depth
of socket.

So remove the blue cotton
(representing blood clot)

As you remove blood clot gently
Stimulate bleeding this will help in healing

Local Anaesthesia preferable
but not essential.



Cleaning the tooth- How to hold it



DO NOT TOUCH THE ROOT

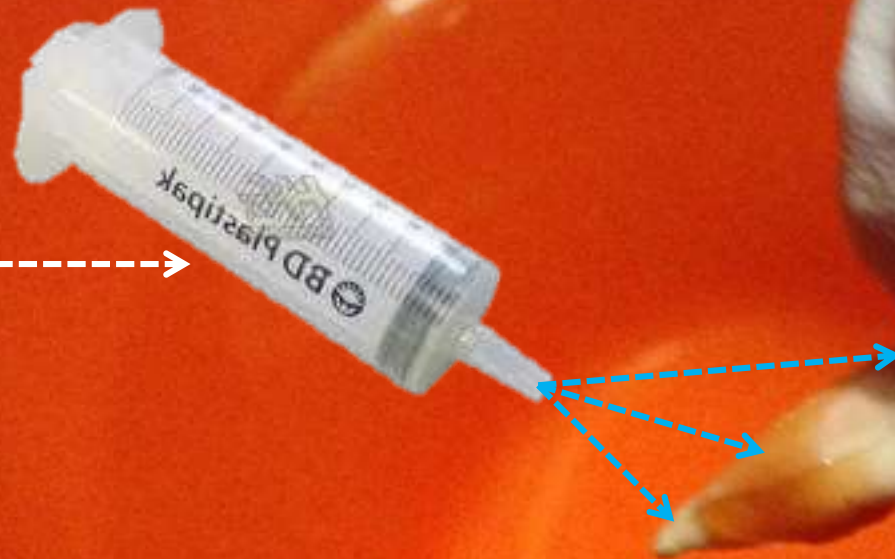
Hold the tooth by the Crown



Cleaning the tooth- What to use



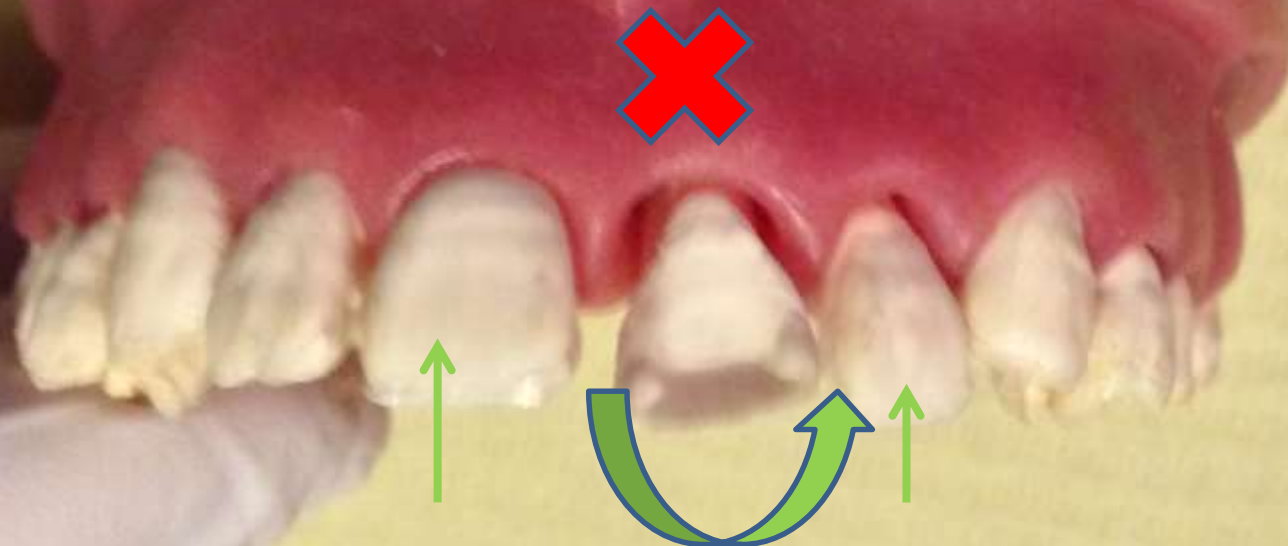
Or



Gently flush the tooth clean
For approximately

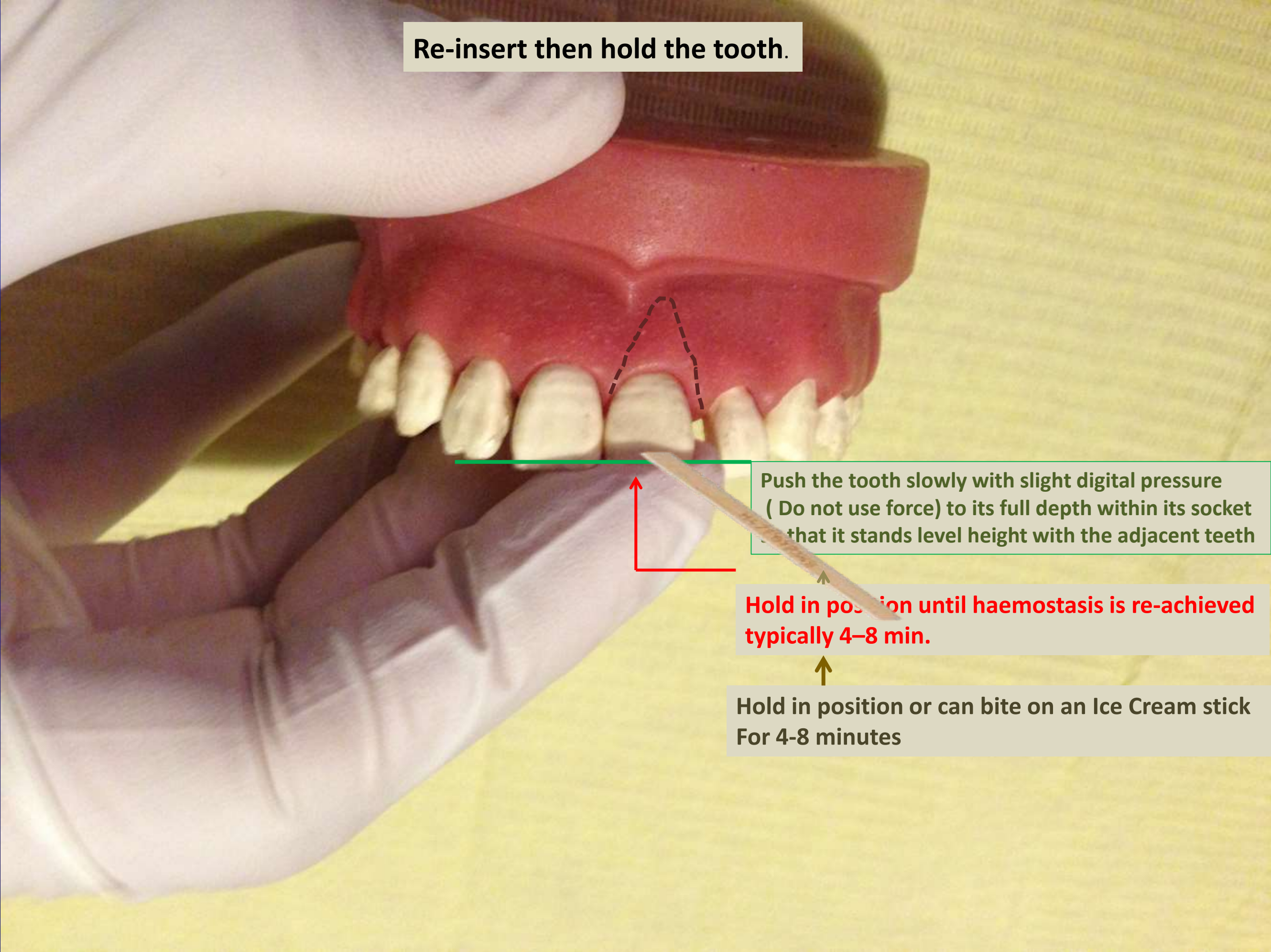


Re-insert the Tooth



Check the adjacent teeth to make sure you reinsert the tooth the right way round

Re-insert then hold the tooth.



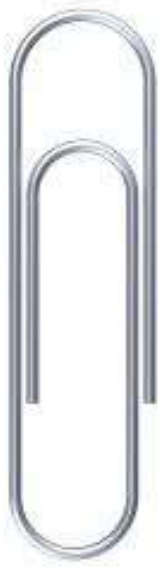
The diagram shows a dental model of a lower jaw with a red gum tissue. A tooth is being re-inserted into its socket. A dashed line indicates the original position of the tooth. A green line marks the level of the adjacent teeth. A red arrow points to the tooth, and a green box contains text instructions. A red arrow points to the tooth, and a red box contains text instructions. A brown arrow points to the tooth, and a brown box contains text instructions.

Push the tooth slowly with slight digital pressure
(Do not use force) to its full depth within its socket
that it stands level height with the adjacent teeth

Hold in position until haemostasis is re-achieved
typically 4–8 min.

Hold in position or can bite on an Ice Cream stick
For 4-8 minutes

Now adapt the splint- In this case nasal clip from mask



Tuck the front and the back end of the splint inbetween the teeth if possible

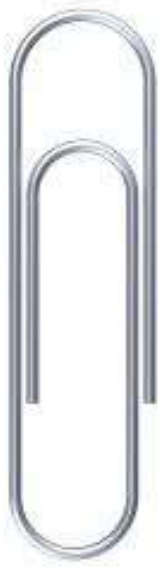
Try to adapt the Splint on the Midsurface of the tooth between gum line and the Top of the tooth.

One or more teeth on each side are used to splint the damaged tooth



Allegro Medical

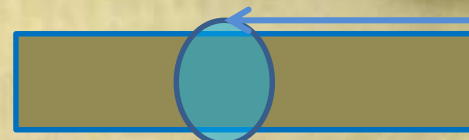
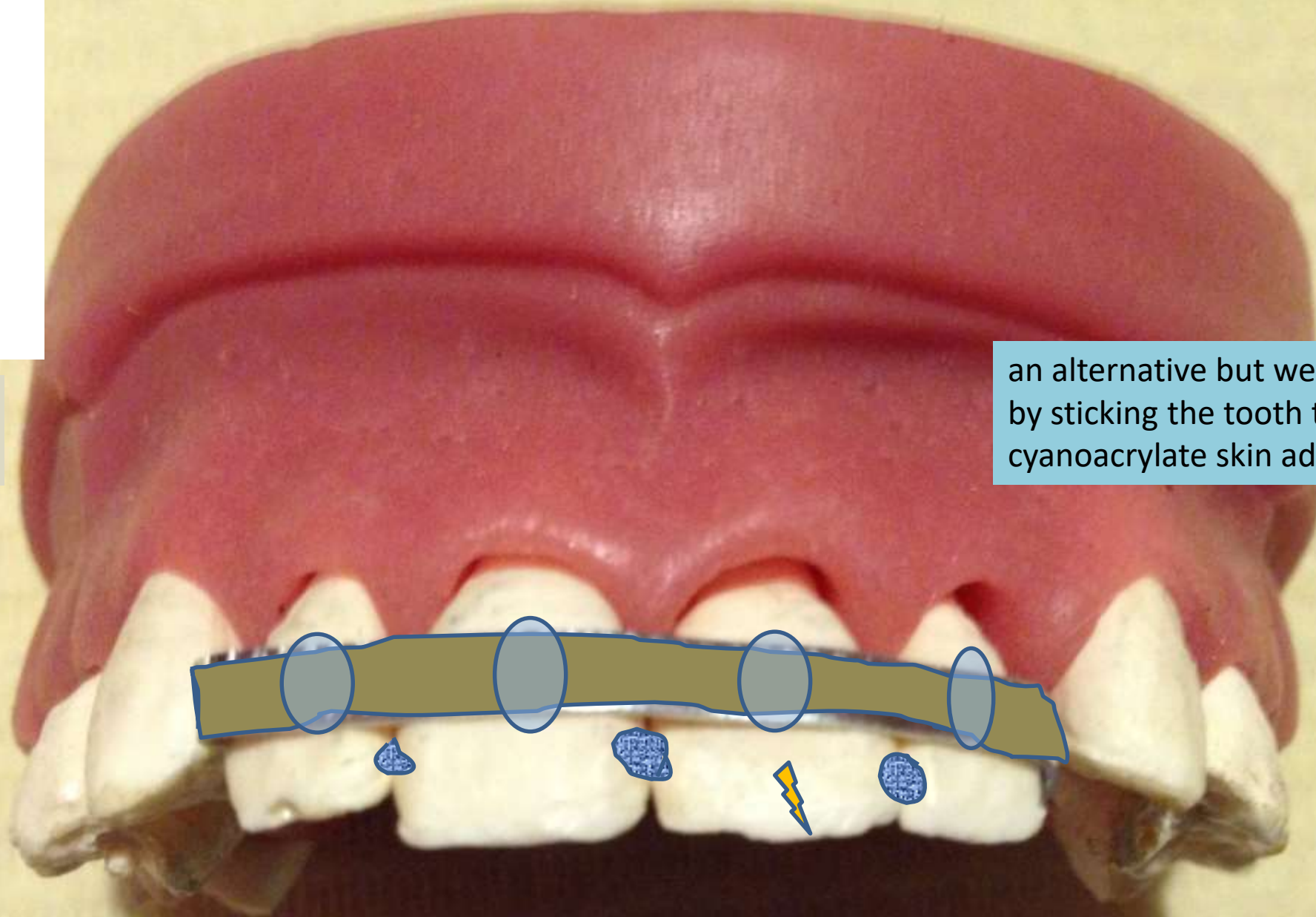
But if you don't have a nasal clip you could also use-



A Straightened
Paper clip



an alternative but weaker bond can be made by sticking the tooth to its neighbours with cyanoacrylate skin adhesive.



cyanoacrylic tissue adhesive, with supplementary steristrips if needed

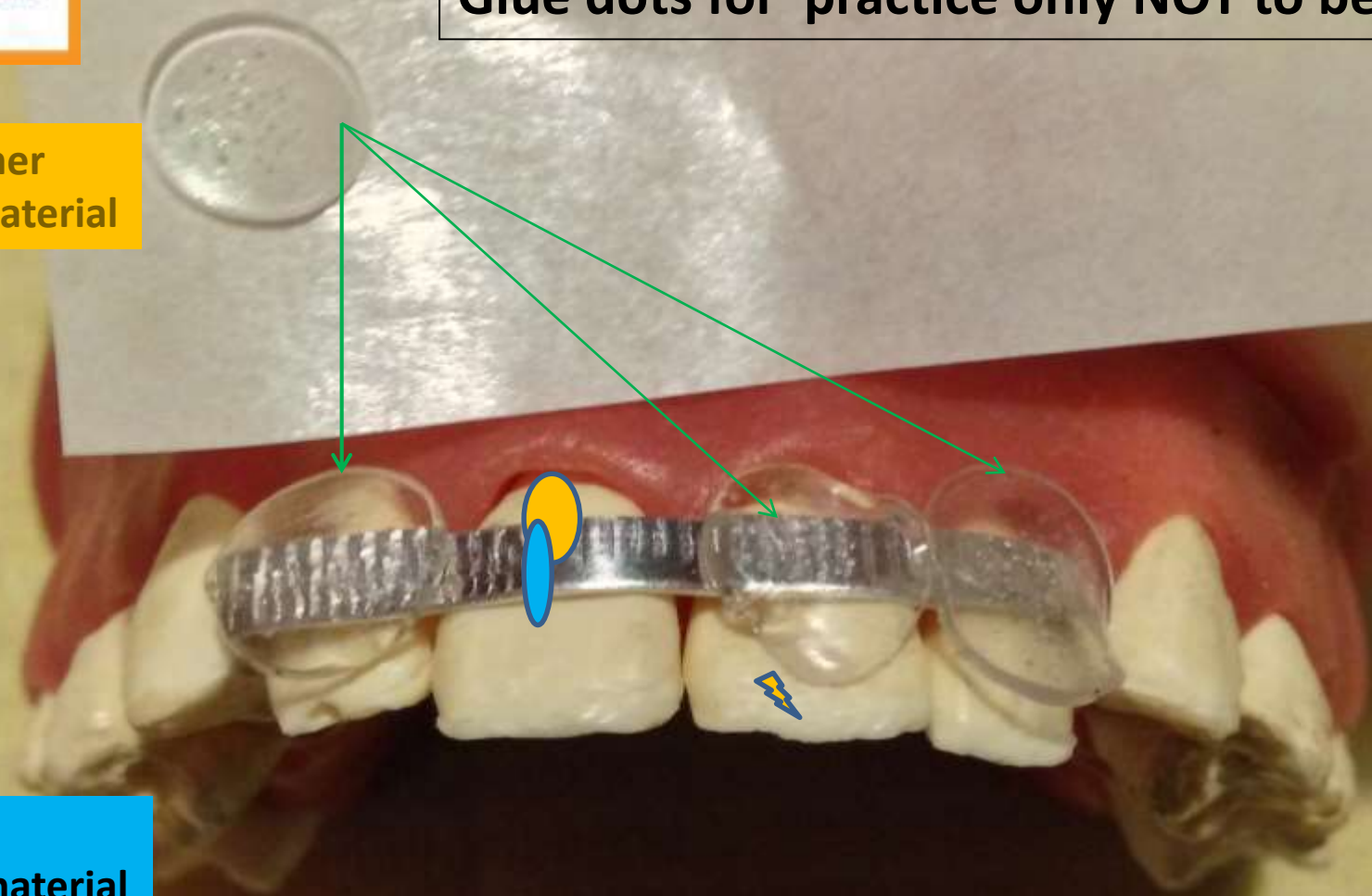


Now fix the splint to the teeth- We could either use Dental filling materials- Surgical Glue (Weak Bond)- For practice we will use Glue dots

Glue dots for practice only NOT to be used in the mouth

Powder Liquid- Glass inomer Based emergency filling material

2 pastes- Composite Based emergency filling material



A)When do you take the splint out- 1) Till patient sees his dentist – Preferably ASAP/ or Within the next 7 days
2) If that's not possible- Splint may be left in place for 2 to 4 weeks

B)What will the Dentist do- 1) Within a week he will start Root Canal Treatment 2) Take the splint out AFTER Starting root canal Treatment. Approx 2 to 4 weeks post injury depending on time tooth was out of mouth.

C) Prognosis- Upto 80% if tooth stored correctly and done within 1 Hour. Over an hour less than 20%



Instructions after Splinting-

- A) Soft Food for up to 2 weeks . B) Brush Tooth gently with soft toothbrush after each meal
- C) Use Clorehexidine moth wash or gel twice a day for a week. D) Prescribe NSAIDs and a broad-spectrum antibiotic for at least 7 days. E) Tetanus Booster

Tuck the front and the back end of the splint inbetween the teeth if possible



Dental Local Anaesthesia Module(a bit of hands on)

Burjor Langdana

Aims and objectives

- 1) To familiarise you guys with the equipment used for giving LA
- 2) Briefly explain procedure and landmarks
- 3) Give you the hands on feel to locate these landmarks
- 4) Essentially a brief guide to get teeth numb on an expedition

Please divide in groups of Three

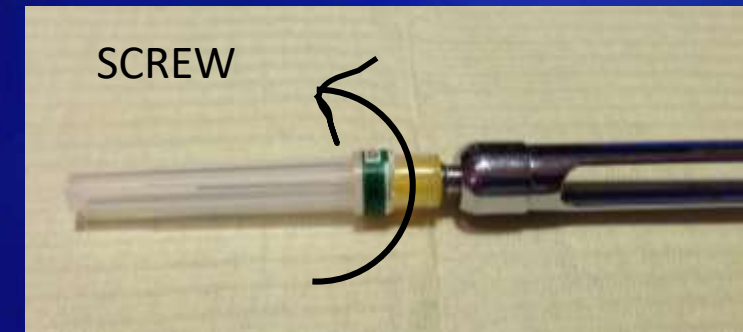
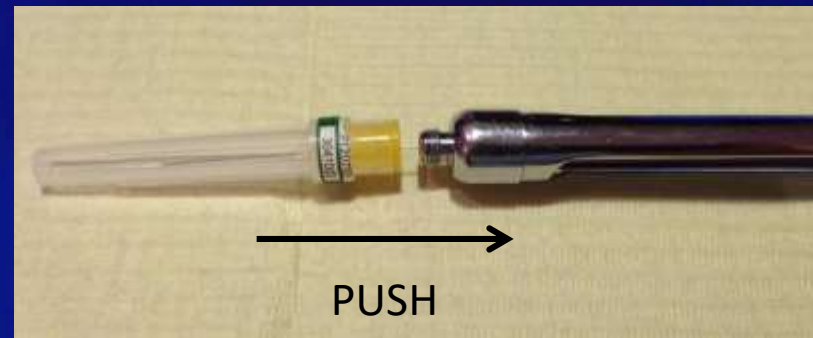
(1) Chief Operator (2) Patient for this exercise (3) Manual headrest

LOADING A DENTAL SYRINGE

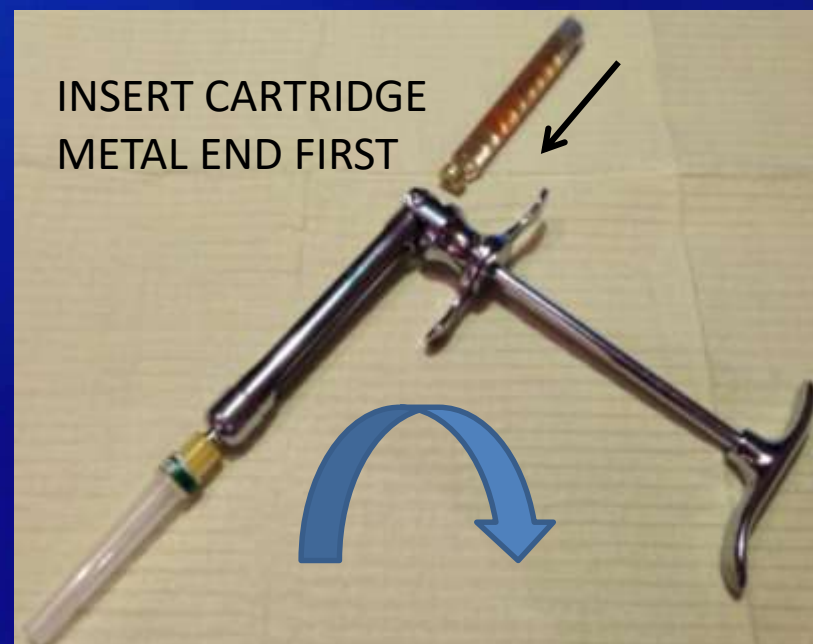
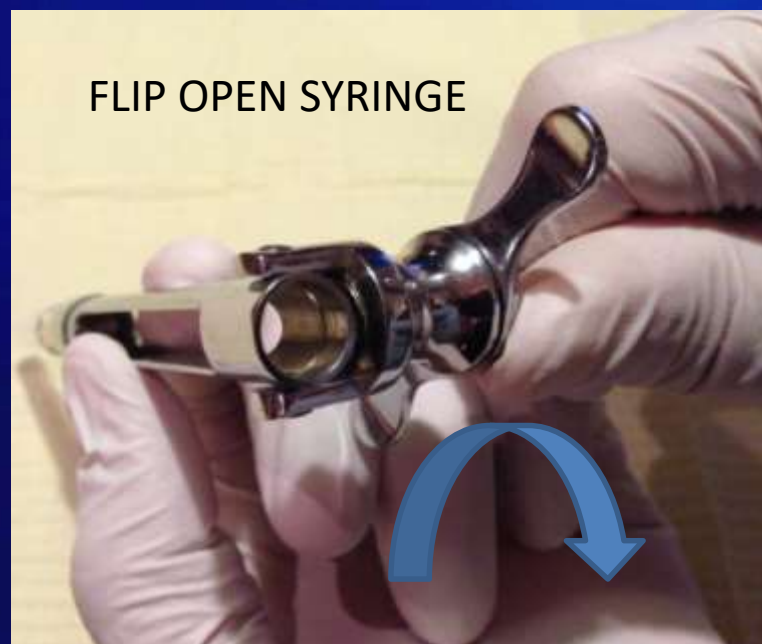
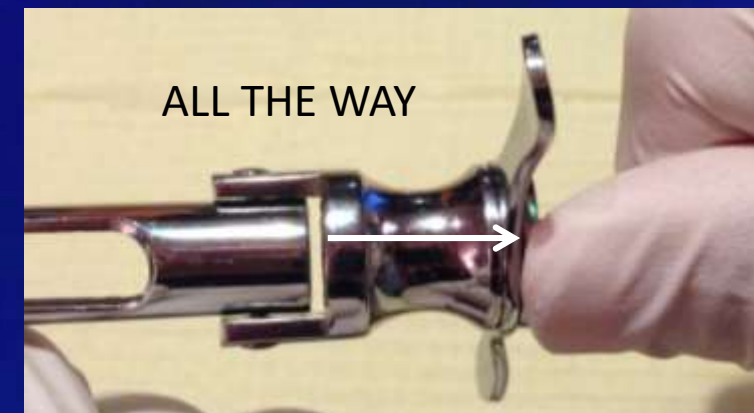
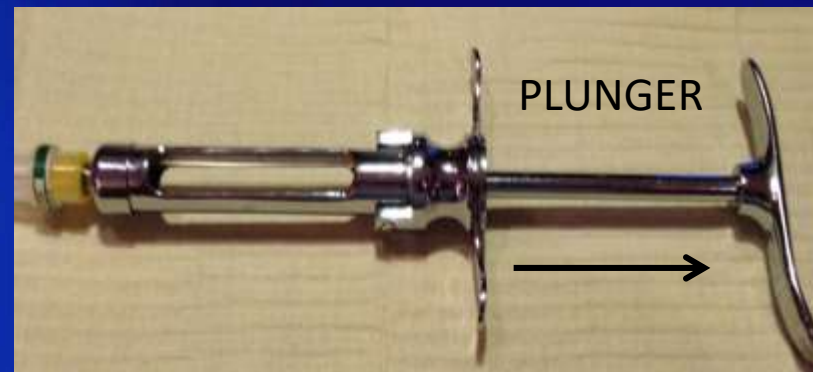
To open needle



To fix needle to dental syringe

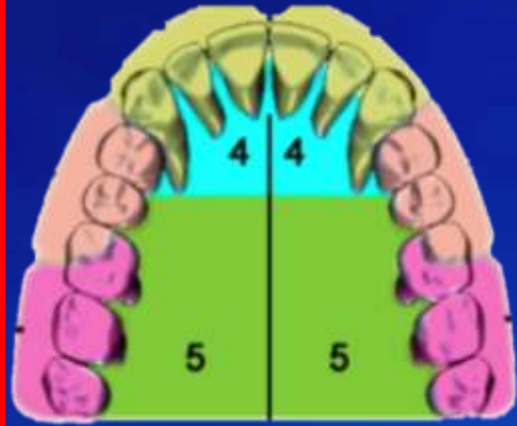


To open dental syringe



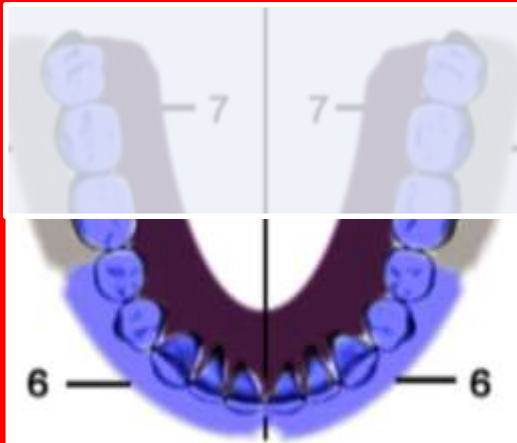
Different ways to get Teeth numb on an Expedition

1



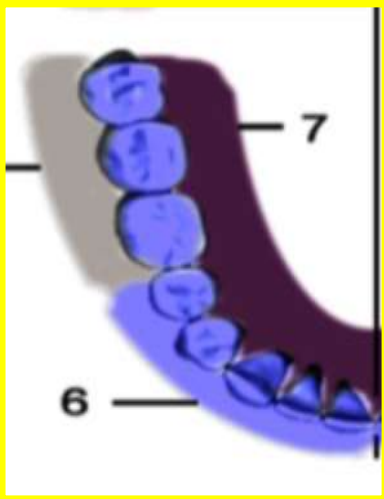
1 Local Infiltration – This is our FIRST exercise= Works for all upper teeth . All lower front teeth including and up to first premolar. The bone in these areas is soft and porous for local infiltration.

All Uppers- Buccal Infiltration AND Palatal Infiltration



Lowers till First Premolars- Buccal AND Lingual Infiltration

2

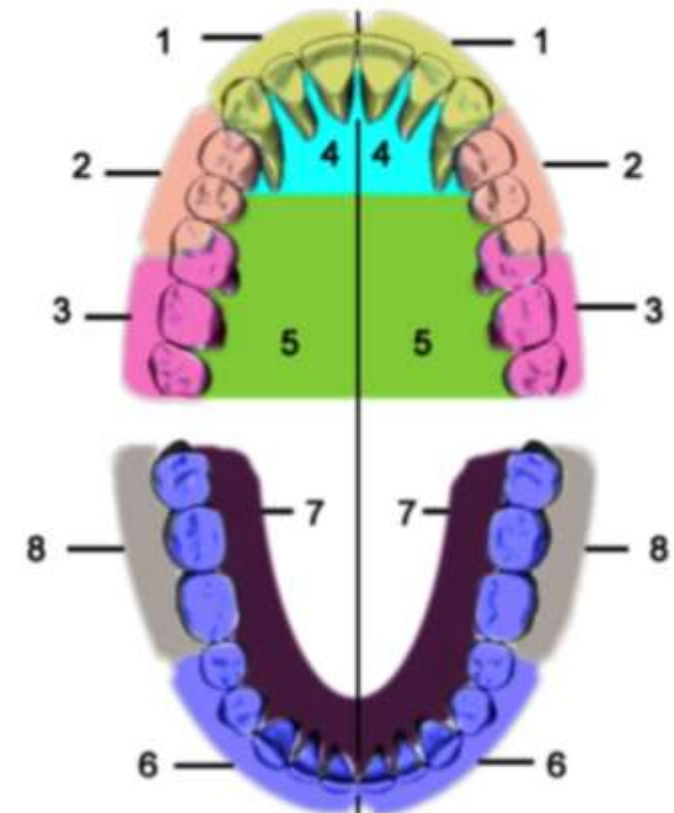


2 Mandibular Nerve block- This is our SECOND Exercise (including long buccal and lingual nerve as a part of the package deal) =The mandibular bone posteriorly to lower second premolars is too dense for infiltration to work. Mandibular Nerve block is essential if you are working in this area. It'll anaesthetise the entire half of the lower jaw.

3 Intra Ligamentary-We shall discuss this= Injection between tooth and bone. Works for any tooth, teeth as a supplement to 1) and 2).

1. Anterior Superior Alveolar Nerve
2. Middle Superior Alveolar Nerve
3. Posterior Superior Alveolar Nerve
4. Nasopalatine Nerve
5. Greater (Anterior) Palatine Nerve
6. Inferior Alveolar Nerve
7. Lingual Nerve
8. Buccal Nerve

Key to Innervation Diagram



TAKE UP YOUR POSITIONS TO PRACTICE LOCAL ANESTHESIA TECHNIQUES

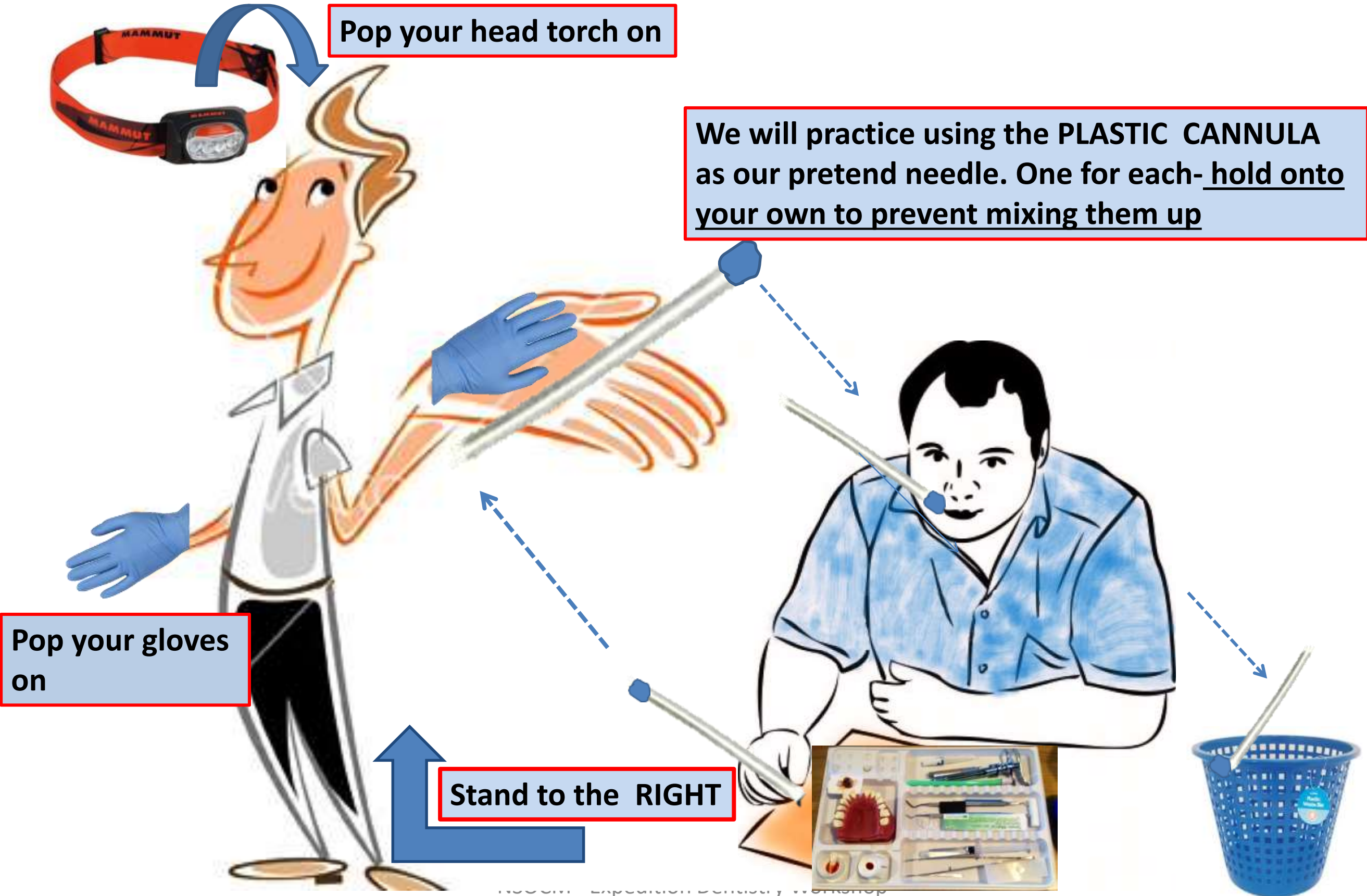
Pop your head torch on



We will practice using the PLASTIC CANNULA as our pretend needle. One for each- hold onto your own to prevent mixing them up

Pop your gloves on

Stand to the RIGHT

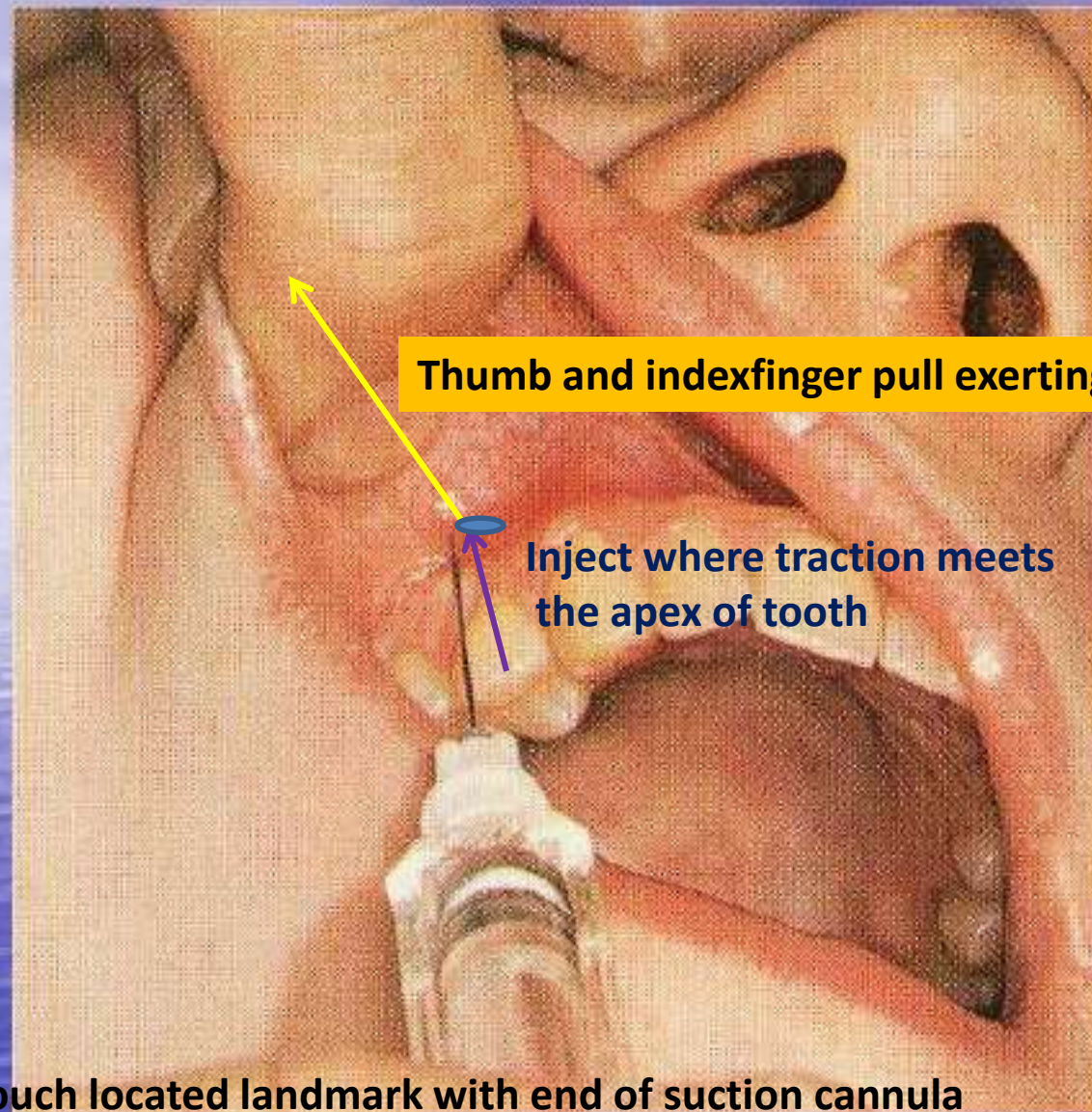


Pinch the upper lip/cheek with thumb and index finger. Pull Upwards and outwards to establish a traction line. Insert till you touch bone(Para-periositeal) Inject in the depth of the mucobuccal fold apical to the tooth being anesthetised.



BUCCAL INFILTRATION EXCERSISE

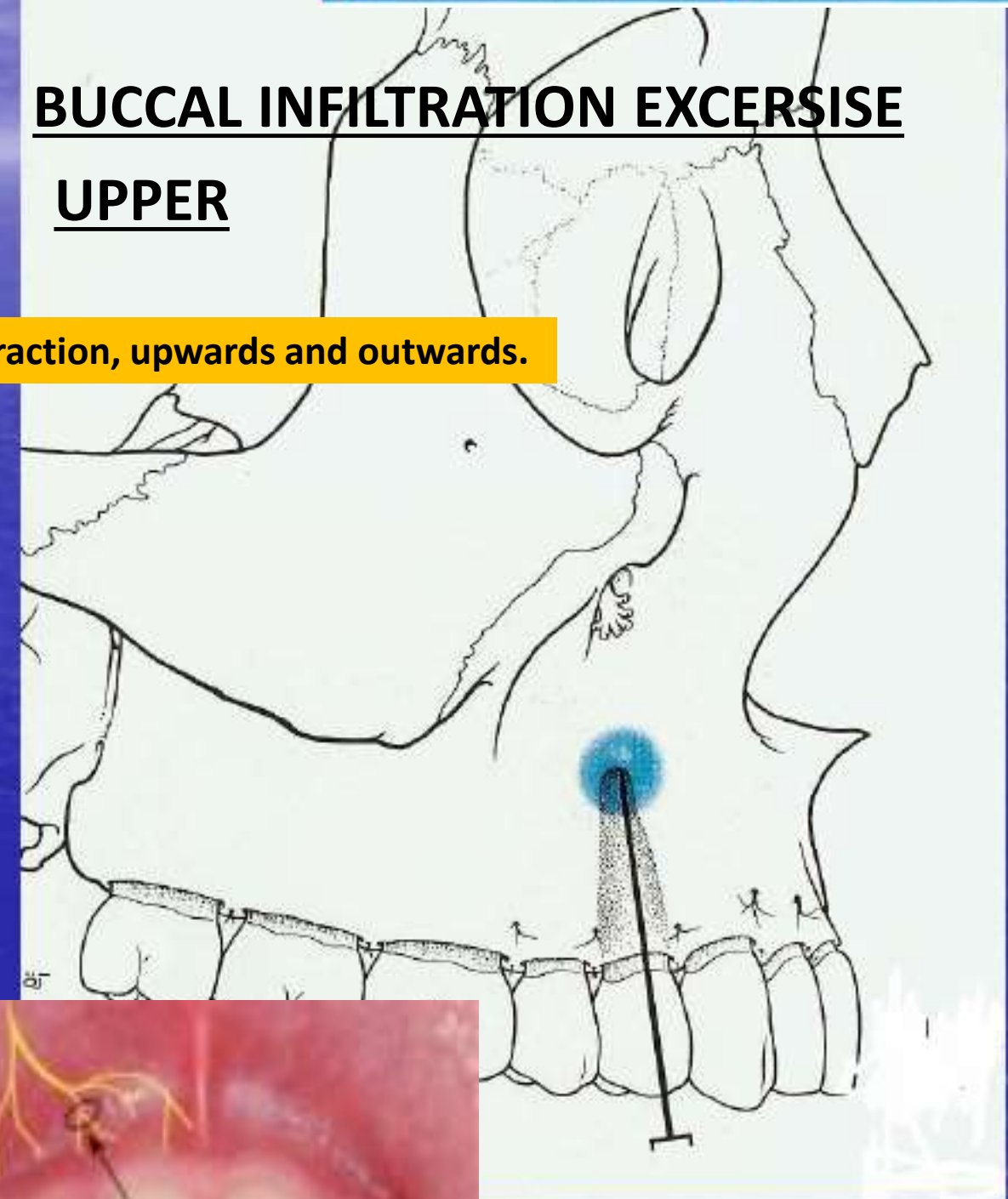
UPPER



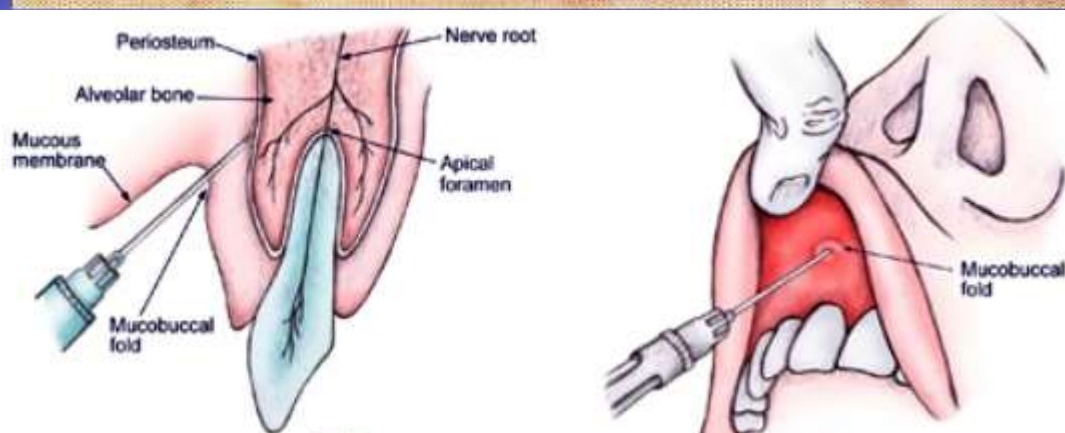
Thumb and indexfinger pull exerting traction, upwards and outwards.

Inject where traction meets the apex of tooth

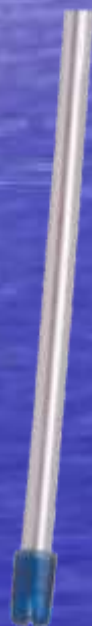
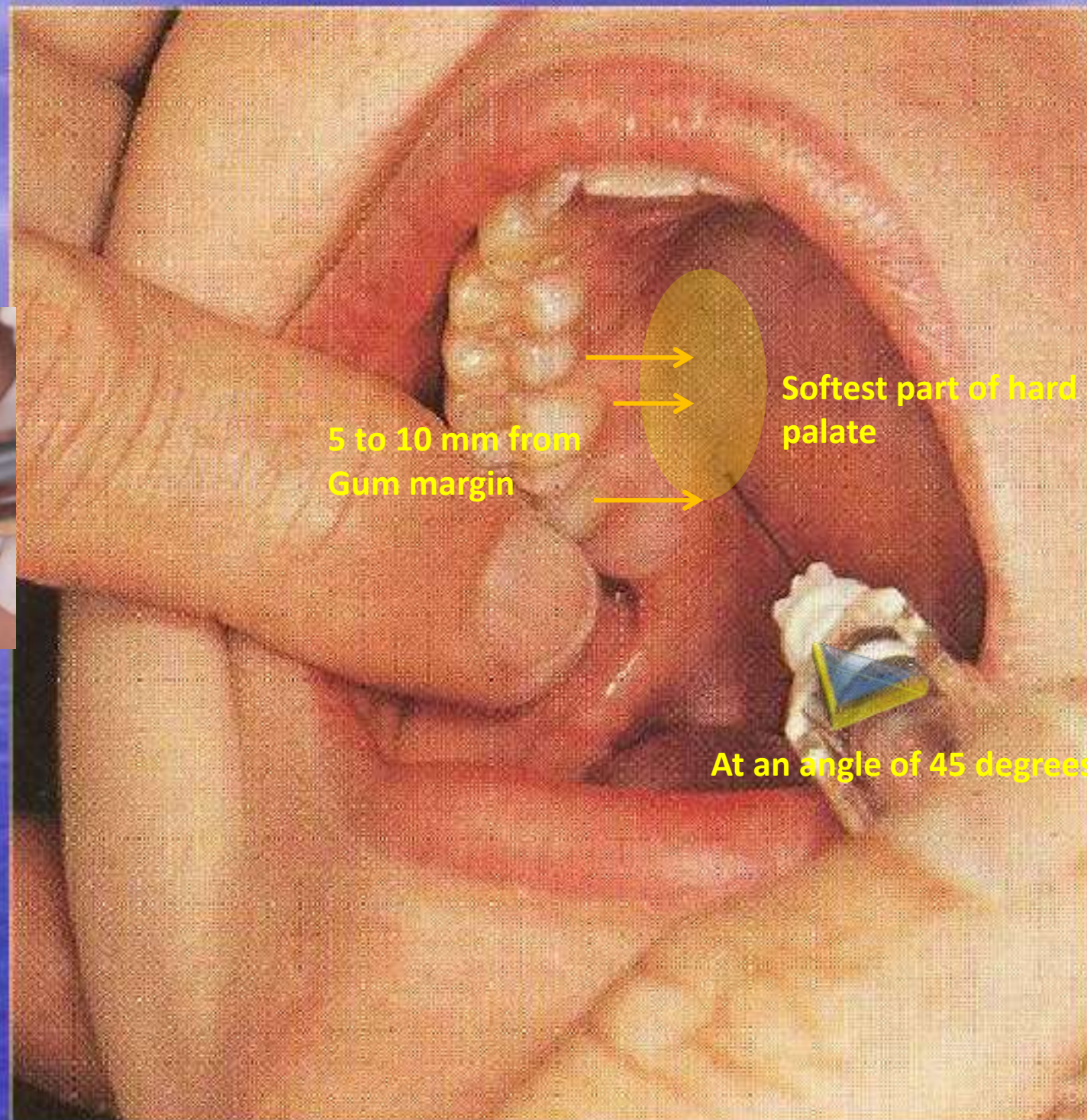
Touch located landmark with end of suction cannula



Where the cheek gums meet the tooth bone



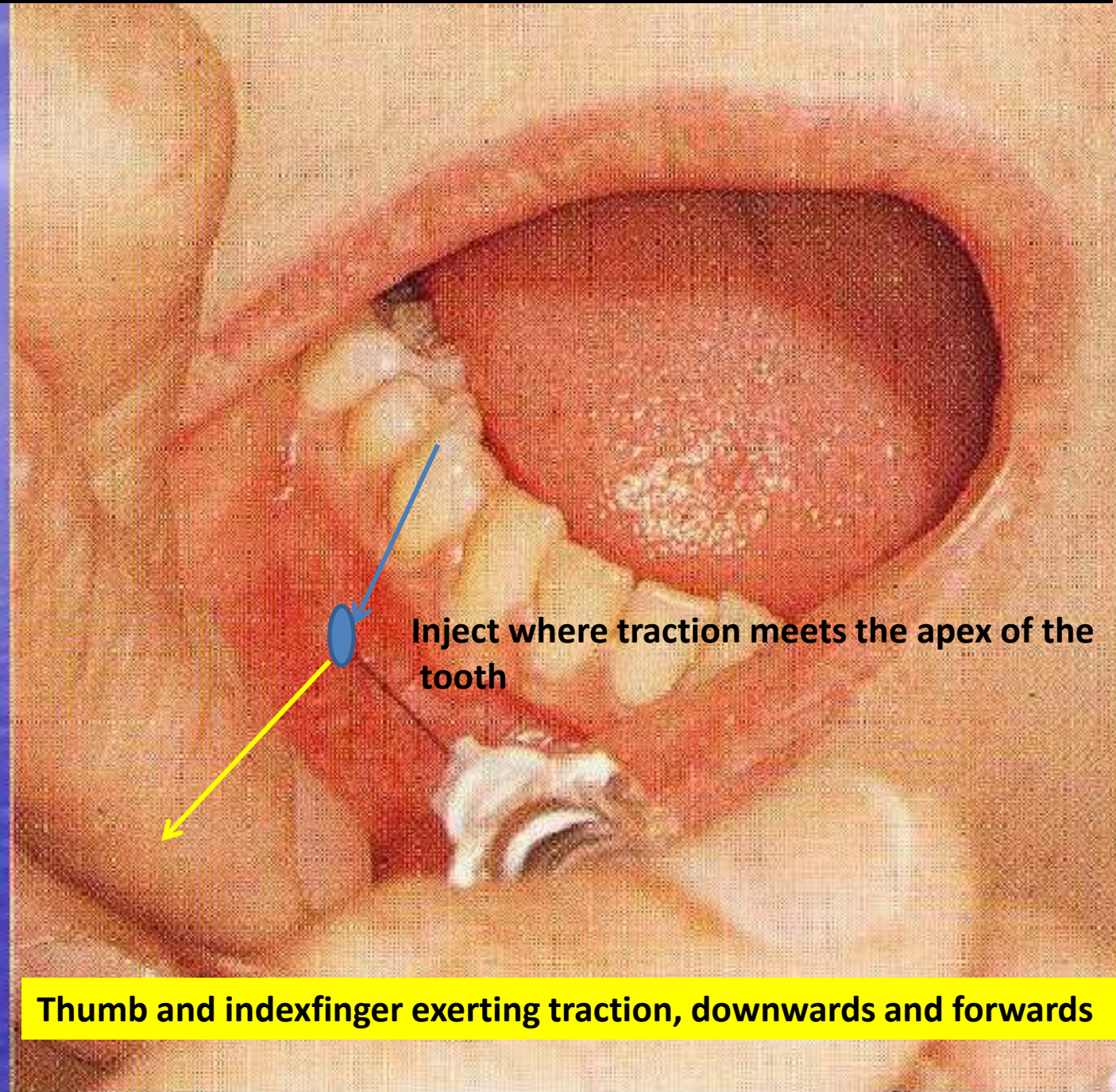
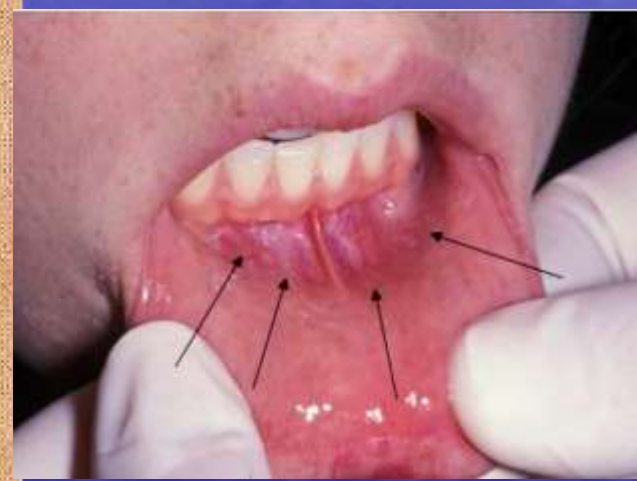
The Local Anaesthesia is injected at the softest part of hard palate (5 to 10 mm from the gum margin) approximately 45 degrees angle. Adjacent to the tooth being anesthetised.



Touch located landmark with end of suction cannula

PALATAL INFILTRATION EXCERSISE

Pinch the lower lip/cheek with thumb and index finger. Pull downwards and forwards to establish a traction line. Insert till you touch bone (Para-periositeal) Inject in the depth of the Mucobuccal fold apical to the tooth being anesthetised



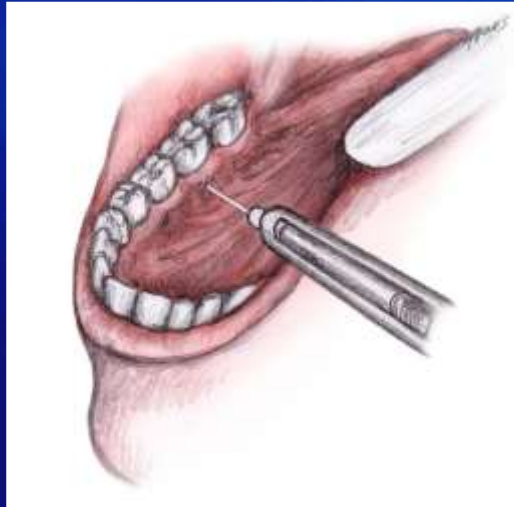
Touch located landmark with end of suction cannula

BUCCAL INFILTRATION EXCERSISE

LOWER



1)Retract and hold the tongue



**2)Insert till you touch bone (Para-periositeal)
Inject in the depth of the Mucobuccal fold
apical to the tooth being anesthetised**



3)You will notice ballooning and or blanching in that area as you inject the local anesthetic.

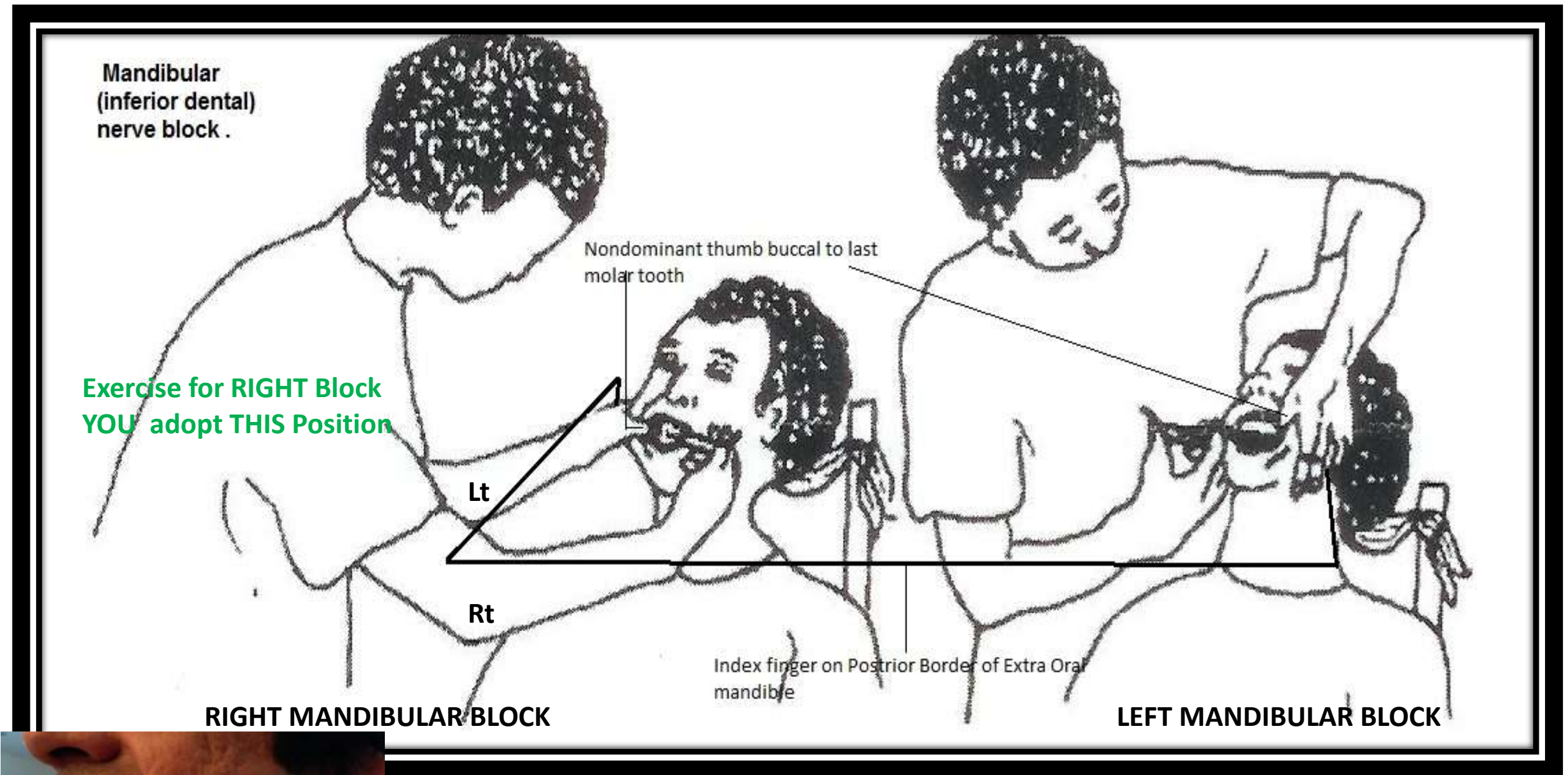


LINGUAL INFILTRATION - IN HANDOUT ONLY

Handout 1/3-A Guide to Expedition

Dentistry- Burjor Langdana.

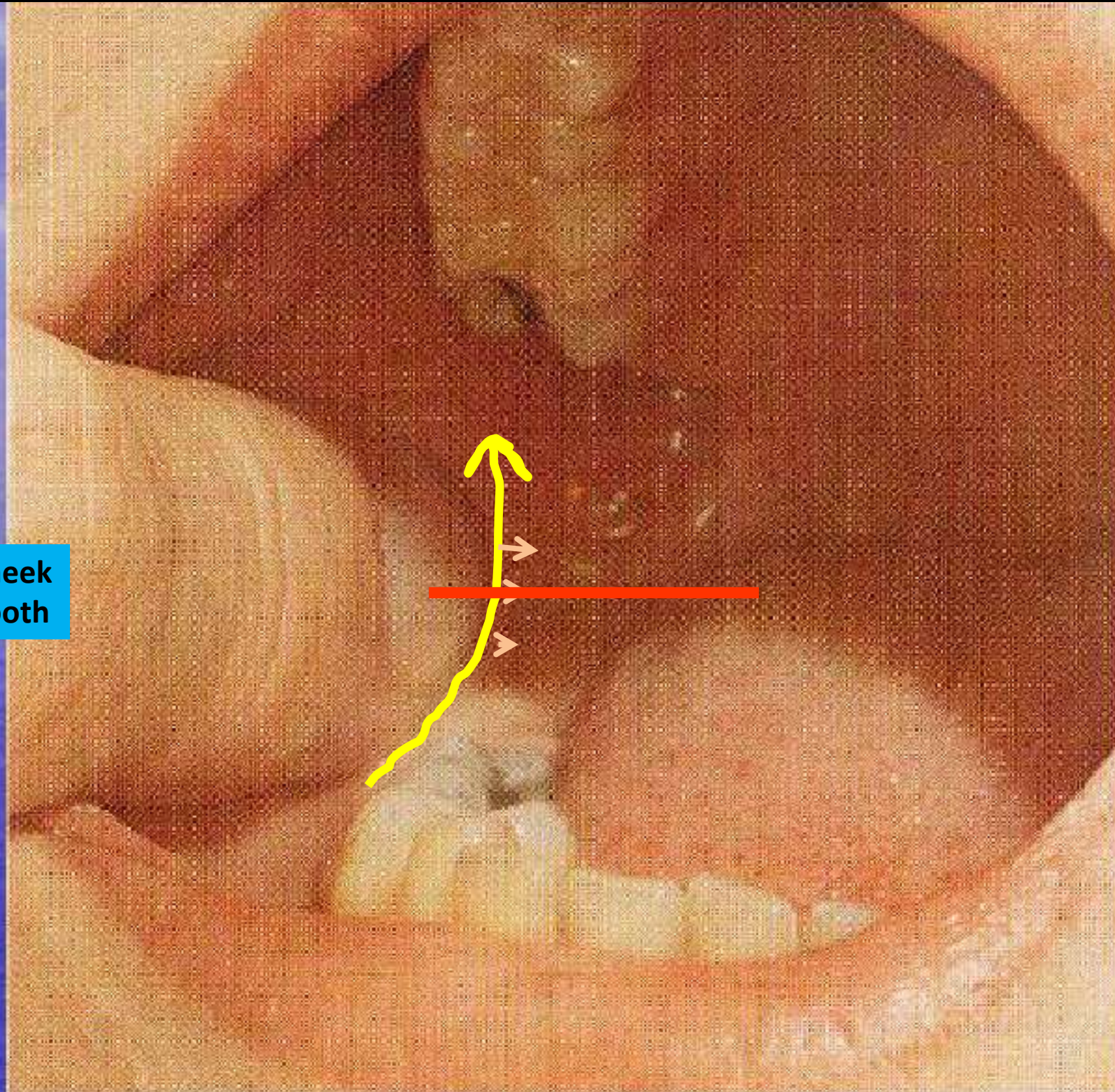
MANDIBULAR NERVE BLOCK EXCERSISE(RIGHT SIDE)- POSITION



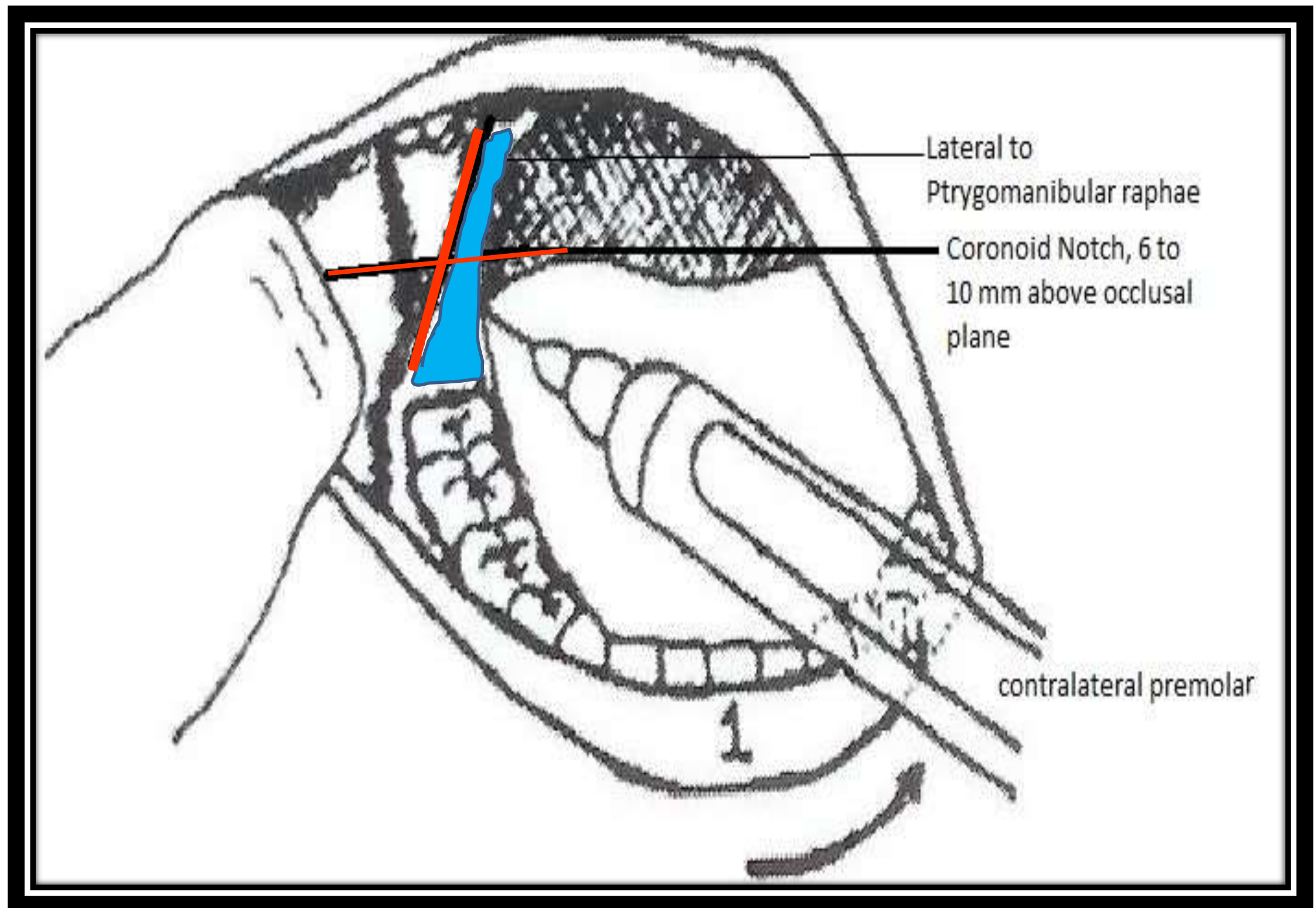
Index finger(left hand) posterior border of Extra Oral mandible

Put your thumb besides the last molar tooth. Feel the jaw bone as it turns upwards to the head . Rest your thumb in the depression there - the Coronoid notch. Centre part of Coronoid notch is your Horizontal landmark

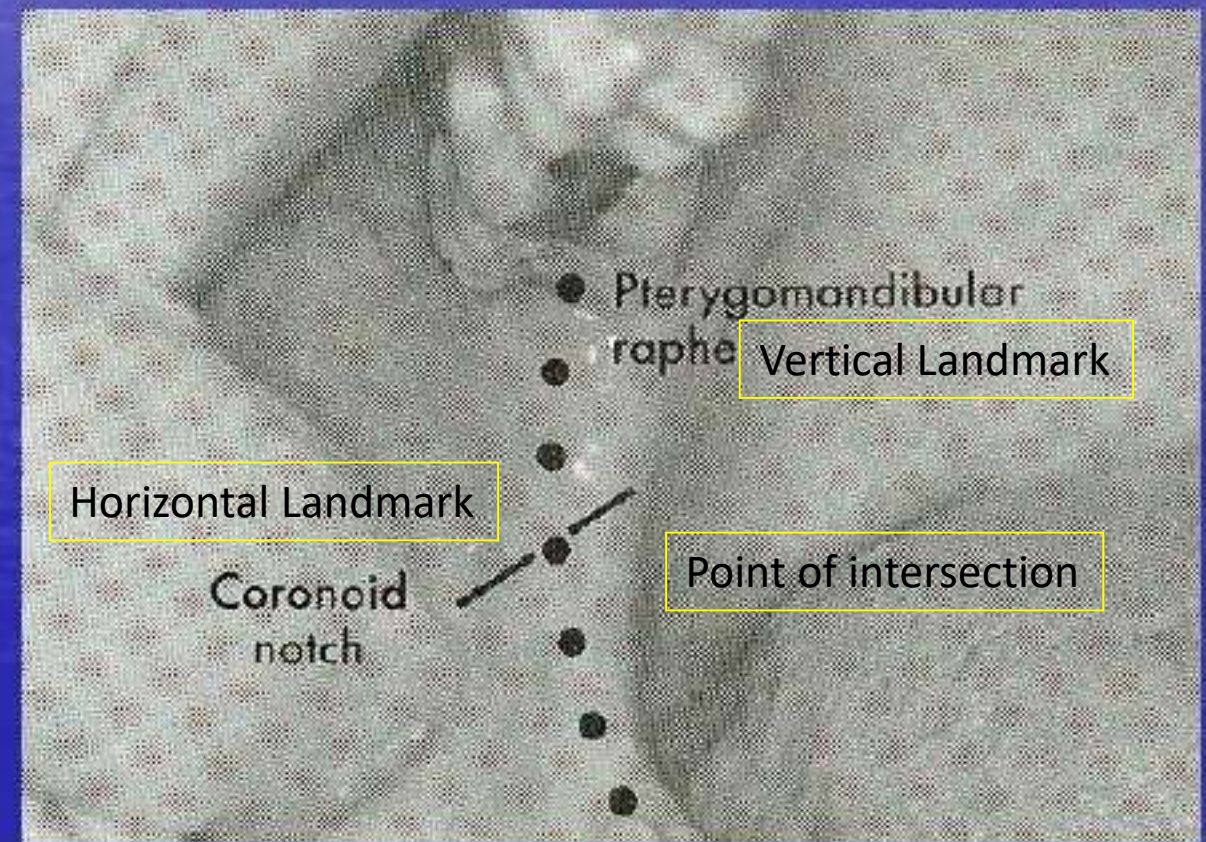
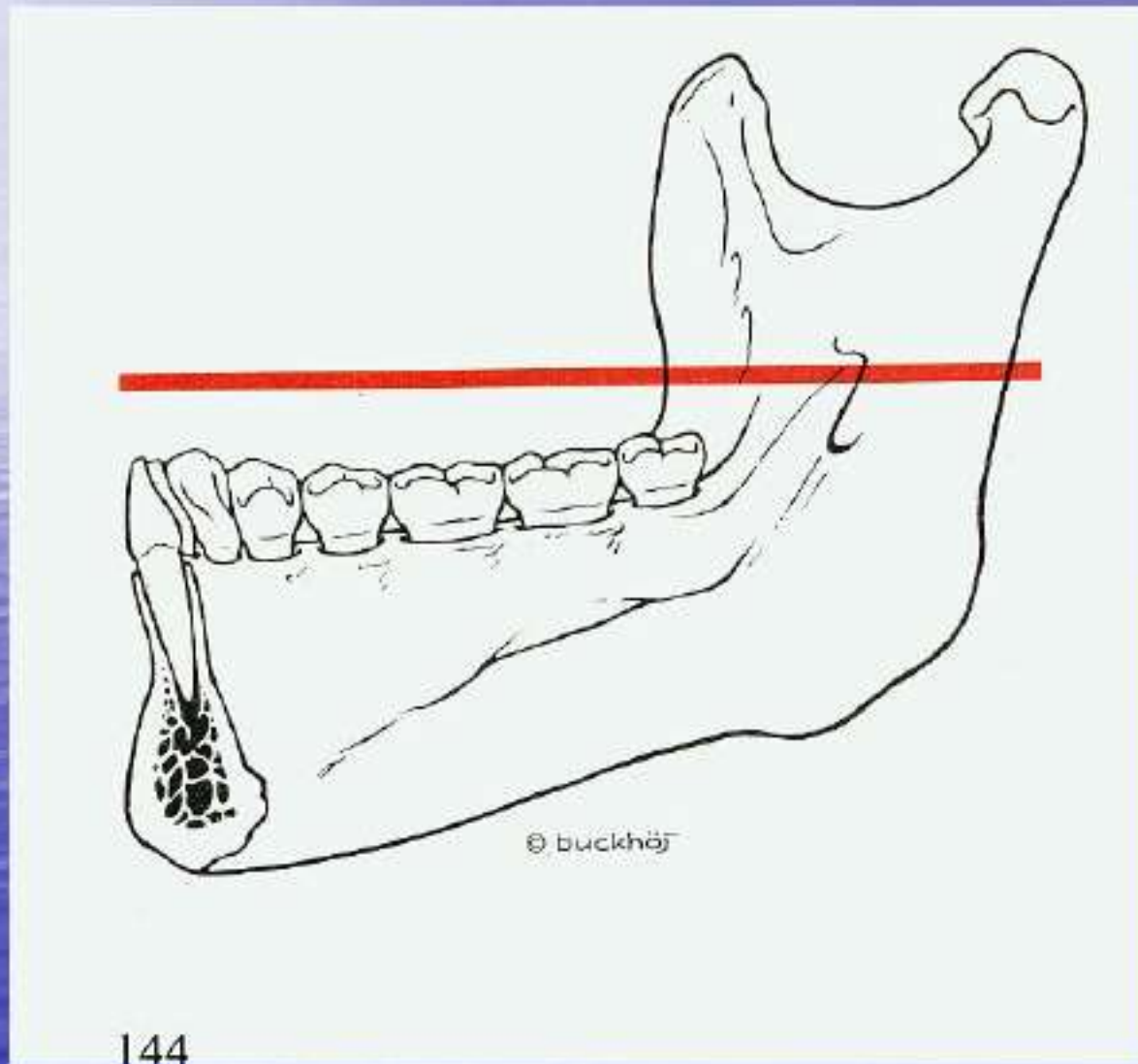
Left Thumb on bone on cheek side of last lower molar tooth



The vertical landmark is the lateral fold line of a muscular pillar that runs from the lower teeth to the upper teeth - Pterygomandibular raphe .



Mandibular anesthesia:



You insert the needle at the point of intersection between the HORIZONTAL and VERTICAL landmark. The **ANGLE** of injection is from the **OPPOSITE SIDE PREMOLARS**. Insert needle till you **HIT BONE**.

Inferior Alveolar Block

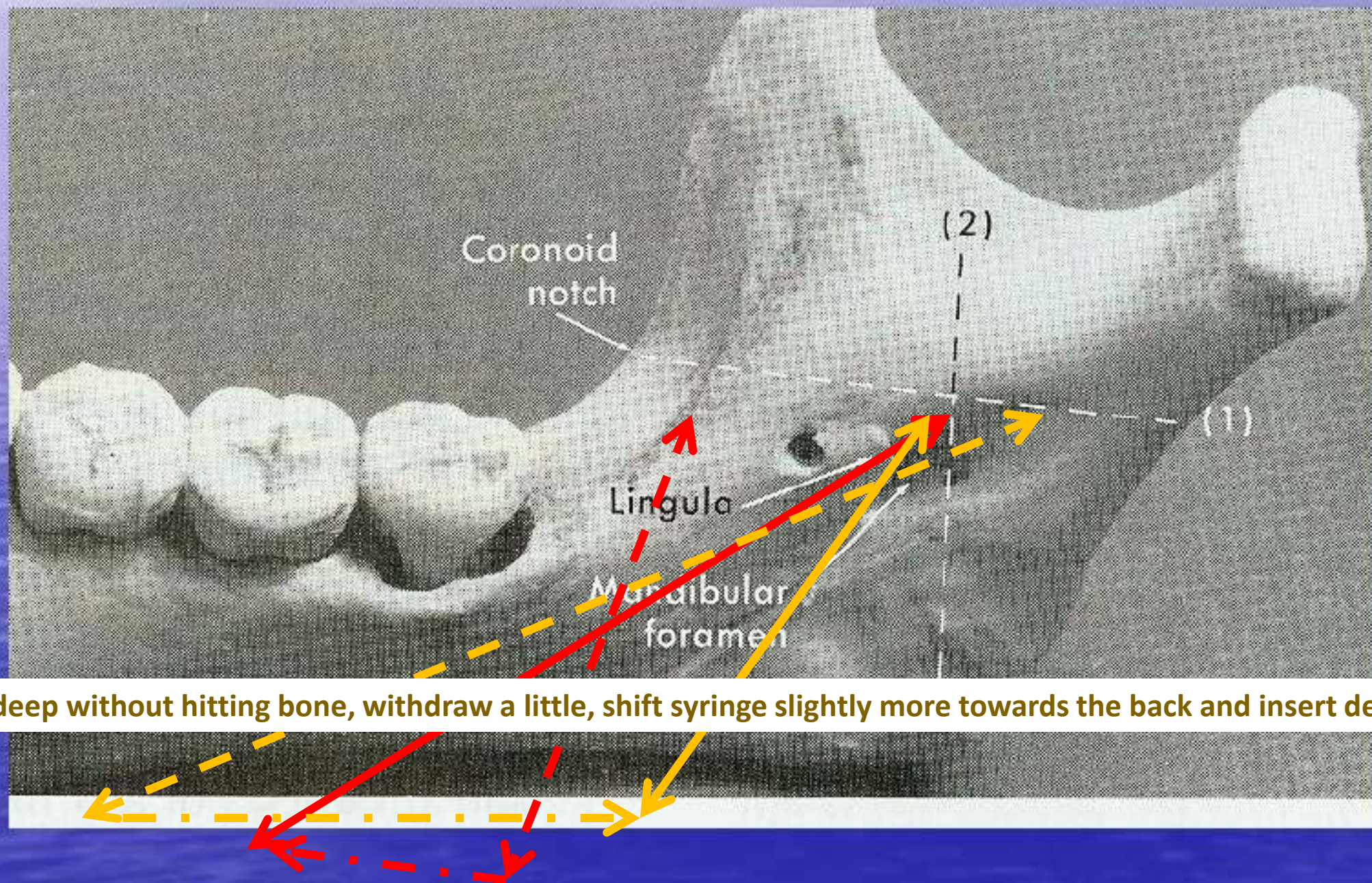
1. Advance needle to bone
2. **Depth of needle 20-25mm**
3. Withdraw slightly
4. Attempt to aspirate
5. **DO NOT INJECT IF-**
 - a) **Bone not contacted**
 - b) **Blood aspirated**
6. Inject very slowly



Touch located landmark with end of suction cannula

Mandibular anesthesia:

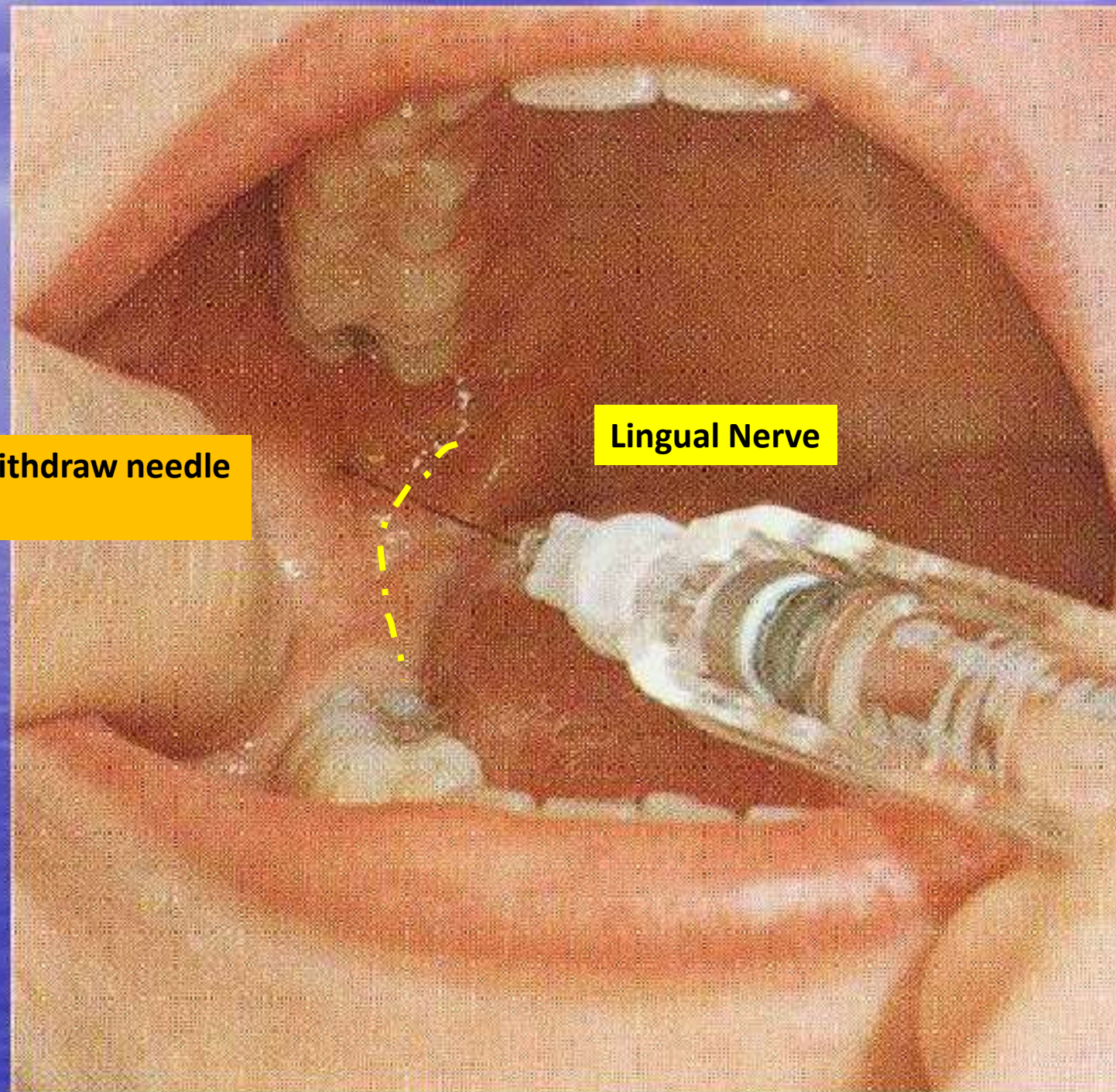
Hit bone too **early**. Gone too **deep** and not hit bone yet. What **do** I **do**?



Gone too deep without hitting bone, withdraw a little, shift syringe slightly more towards the back and insert deeper again

Hit bone too early, withdraw a little, shift syringe slightly more towards midline and insert deeper again.

The Lingual nerve will be anesthetised during the same insertion for Mandibular nerve block

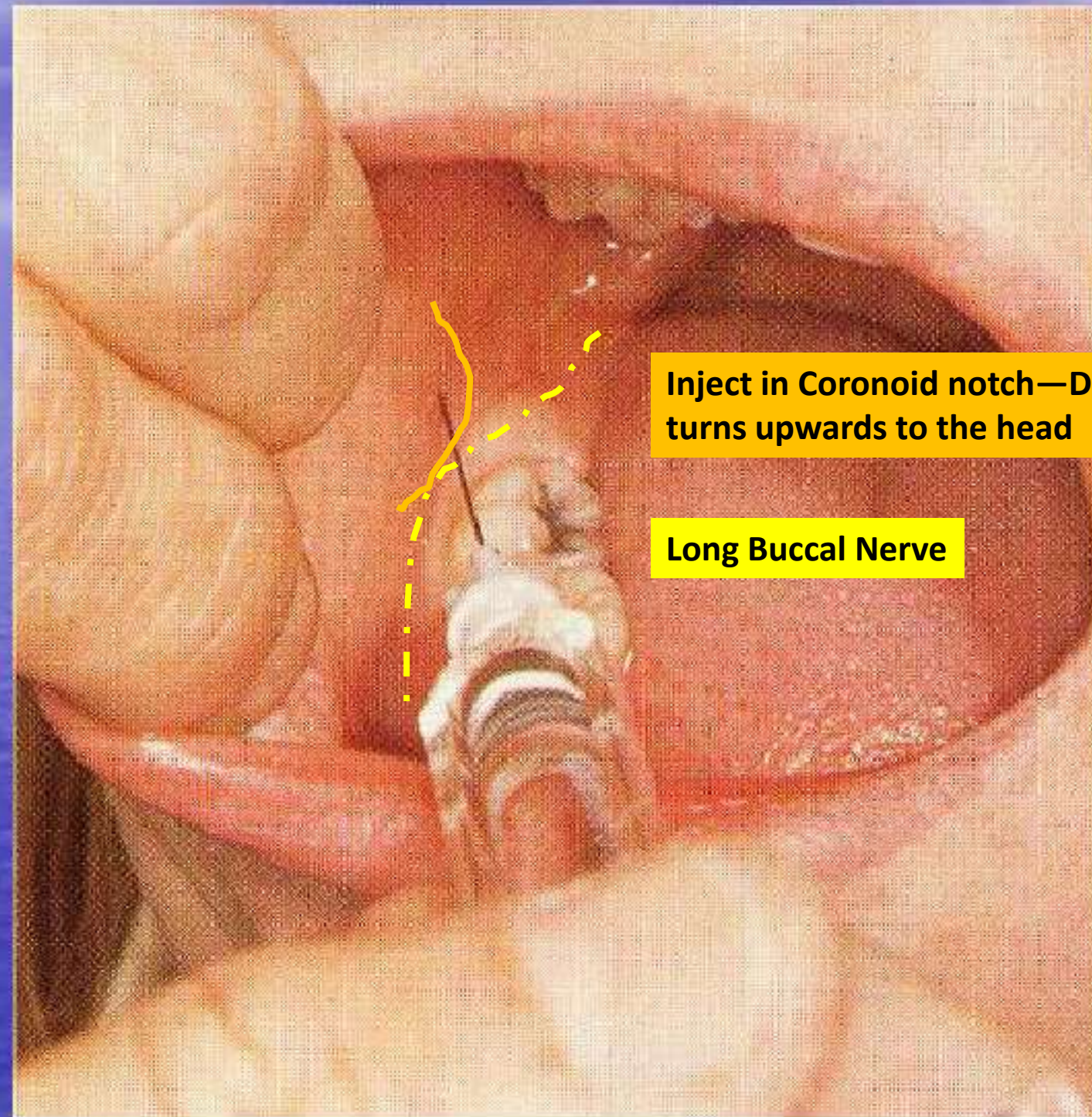


Keep injecting as you withdraw needle after Mandibular Block

Lingual Nerve

Lingual Nerve Block Exercise (Essentially a continuation of Mandibular Block)

**Put your thumb besides the last molar tooth. Feel the jaw bone as it turns upwards to the head .
Rest your thumb in the depression there - the Coronoid notch. That's the place for long buccal nerve block.**



Inject in Coronoid notch—Depression of the jaw bone as it turns upwards to the head

Long Buccal Nerve

Long Buccal Nerve Block Exercise (Essentially a continuation of Mandibular Block)

NSCCM - Expedition Dentistry Workshop Handout 1/8-A
Guide to Expedition Dentistry- Burjor Langdana.

Local Anaesthetic injected with some pressure by pacing the needle parallel to tooth, bevel towards tooth.



Periodontal Ligament Injection
(essentially a supplement to the other injections)

Summary of Local Anesthetic Agents and Vasoconstrictors

Generic Name	Lidocaine			Mepivacaine		Prilocaine		Articaine	Bupivacaine
Common Trade Name(s)	Lidocaine HCl Xylocaine HCl	Lidocaine HCl Xylocaine HCl	Lidocaine HCl Xylocaine HCl	Carbocaine Polocaine	Carbocaine Polocaine	Citanest Plain	Citanest Forte	Septocaine Zorcaline	Marcaline
Concentration of Anesthetic Agent (%)	2%	2%	2%	3%	2%	4%	4%	4%	0.5%
Amount of Anesthetic Agent (mg/ml)	20 mg/ml	20 mg/ml	20 mg/ml	30 mg/ml	20 mg/ml	40 mg/ml	40 mg/ml	40 mg/ml	5 mg/ml
Amount of Anesthetic Agent per carpule (mg/cartridge)	36 mg	36 mg	36 mg	54 mg	36 mg	72 mg	72 mg	68 mg (1.7 ml cartridges)	9 mg
Maximum Dose of Anesthetic Agent (mg/lb. of body weight)	2 mg/lb.	2 mg/lb.	2 mg/lb.	2 mg/lb.	2 mg/lb.	2.7 mg/lb.	2.7 mg/lb.	3.2 mg/lb.	.6 mg/lb.
Maximum Recommended Dose Anesthetic (MRD) per appointment	300 mg	300 mg	300 mg	300 mg	300 mg	400 mg	400 mg	500 mg	90 mg
Vasoconstrictor	---	epinephrine	epinephrine	---	levonordefrin (Neocobefrin)	---	epinephrine	epinephrine	epinephrine
Concentration of Vasoconstrictor	---	1:50,000	1:100,000	---	1:20,000	---	1:200,000	1:100,000 1:200,000	1:200,000
Concentration of Vasoconstrictor (mg/ml)	---	.02 mg/ml	.01 mg/ml	---	.05 mg/ml	---	.005 mg/ml	.01 mg/ml .005 mg/ml	.005 mg/ml
Amount of Vasoconstrictor per Cartridge (mg)	---	.036 mg	.018 mg	---	.09 mg	---	.009 mg	.017 mg .0085mg (1.7 ml cartridges)	.009 mg
Maximum Recommended Dose Anesthetic (MRD) per appointment	---	.2 mg	.2 mg	---	1.0 mg	---	.2 mg	.2 mg	.2 mg
Agent Limiting Max. Volume for Healthy Patient	Lidocaine	epinephrine	Lidocaine	Mepivacaine	Mepivacaine	Prilocaine	Prilocaine	Articaine	Bupivacaine
Number of Cartridges Needed to Reach MRD of Limiting Agent (Healthy Patient)	8.3	5.5	8.3	5.5	8.3	5.5	5.5	7.3	10

Spread Of Untreated

infection

infection

infection

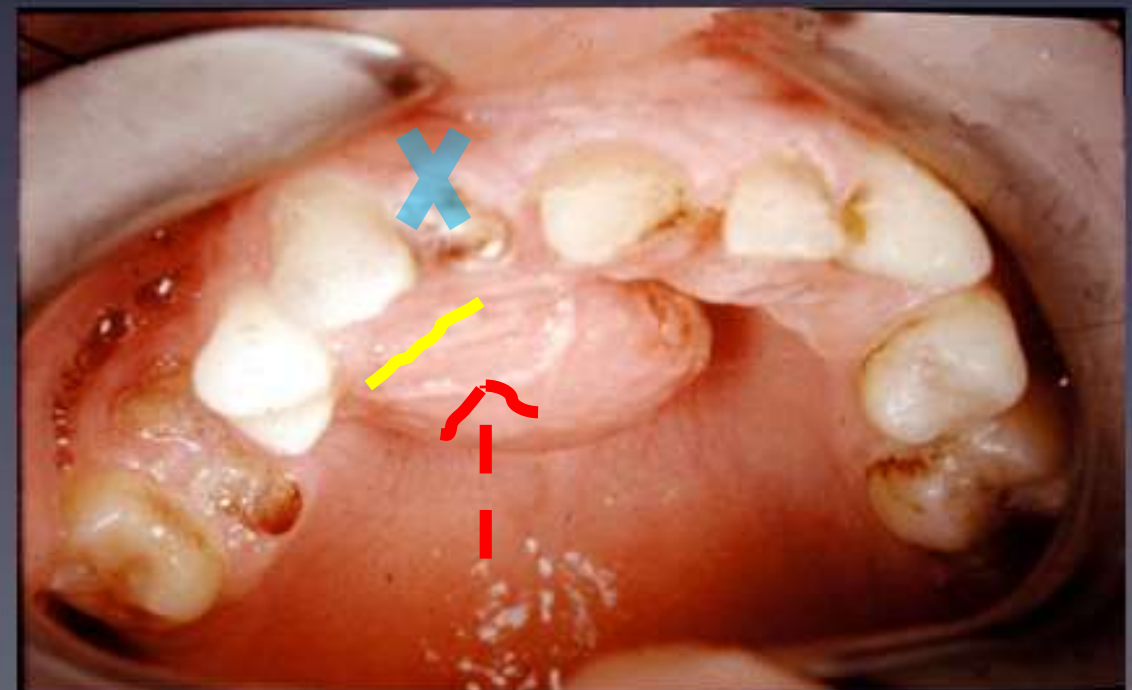
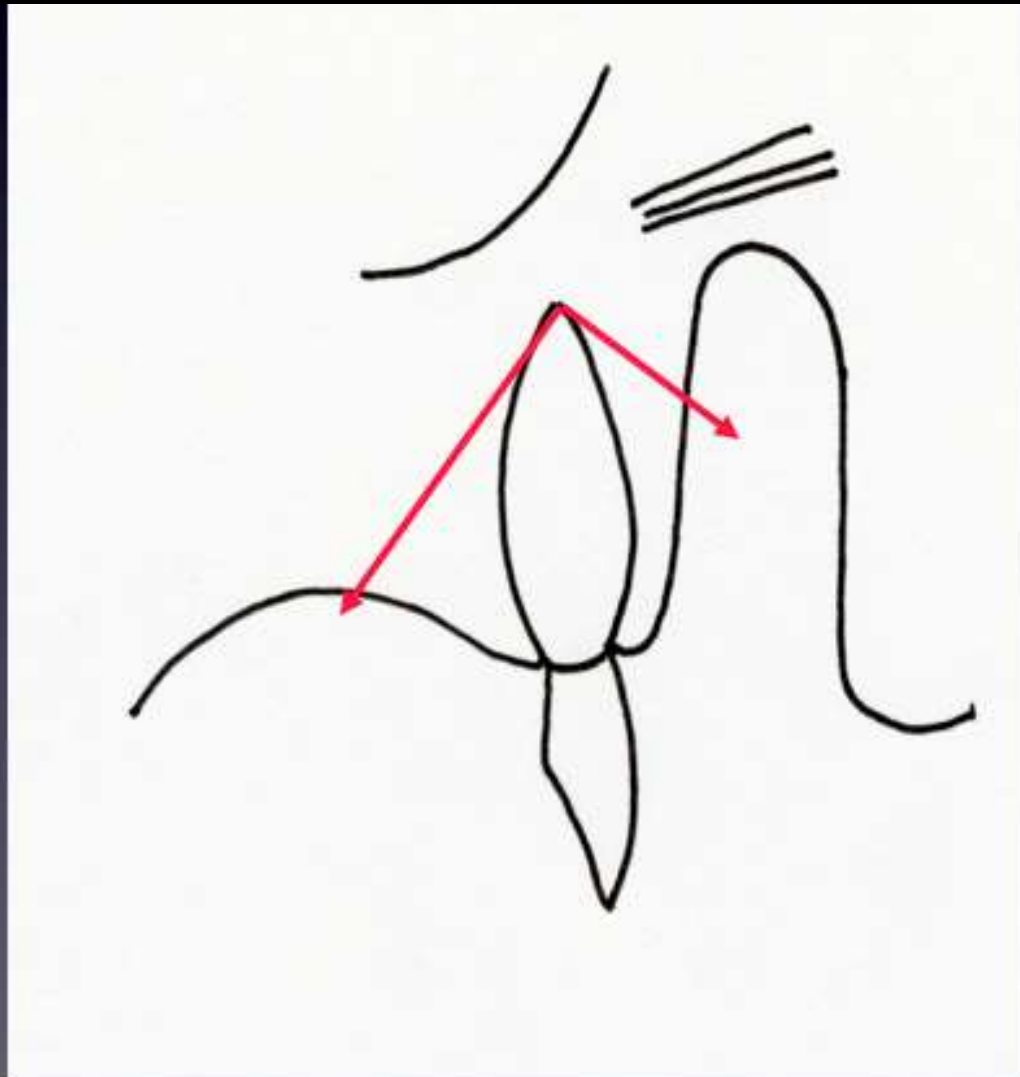
infection

infection

Surgical Management

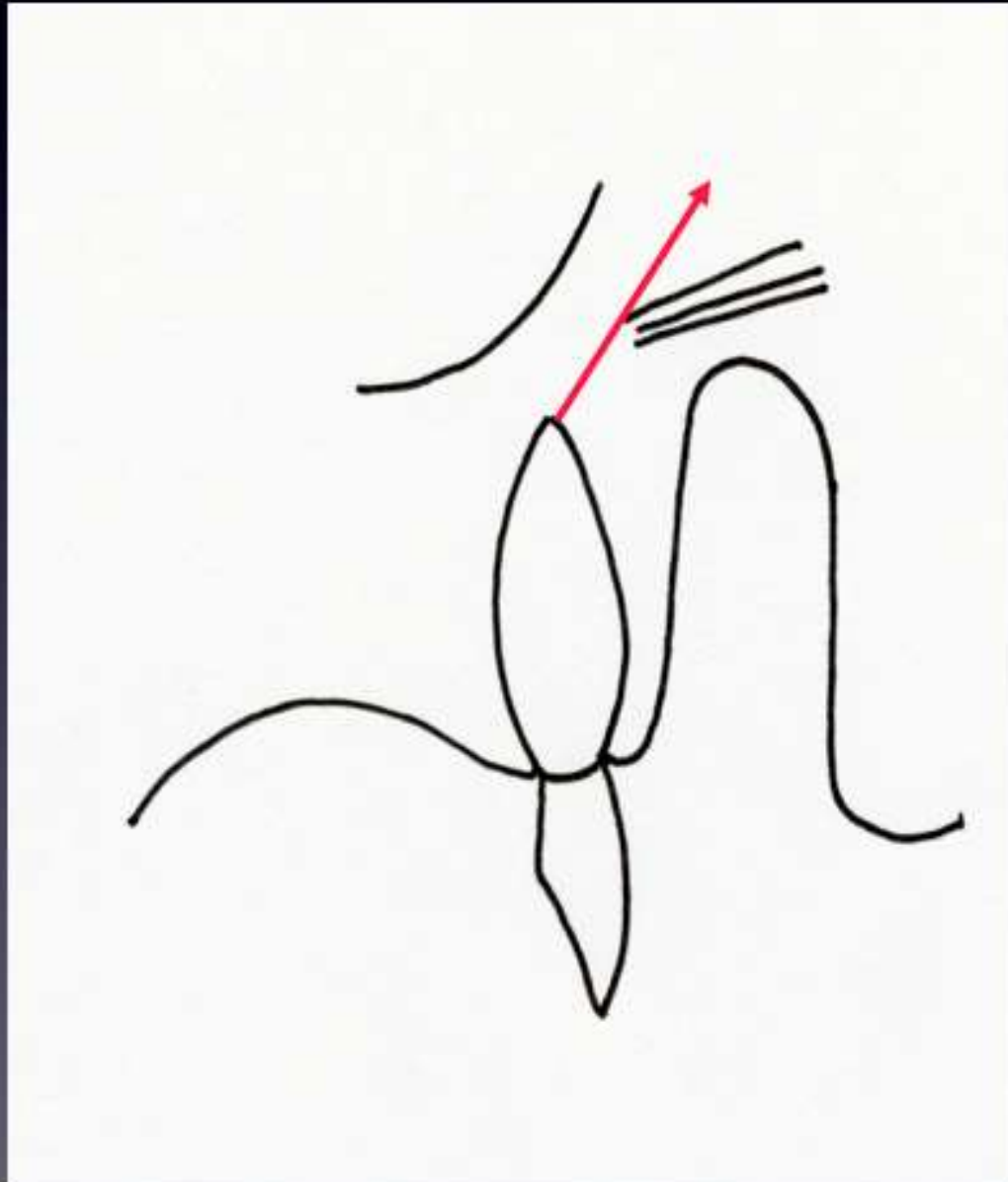
Palatal swelling from upper lateral incisor and buccal swelling from central incisor

Treatment- Aug + Ibu. Drainage by extraction of offending tooth. If not then Incision and drainage- Incision with 3 to 5 mm of gum margin . Palatal pressure post drainage to prevent palatal Haematoma for at least 30 mts.



Extra-oral swelling closing eye

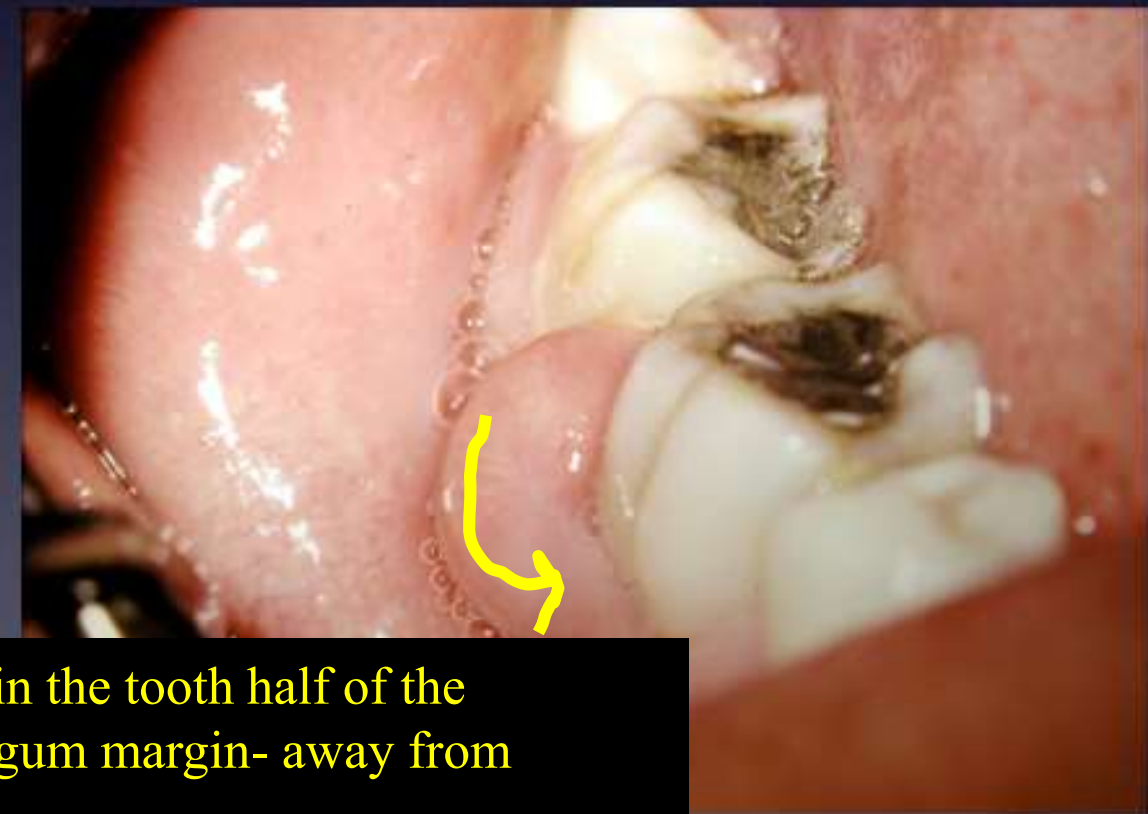
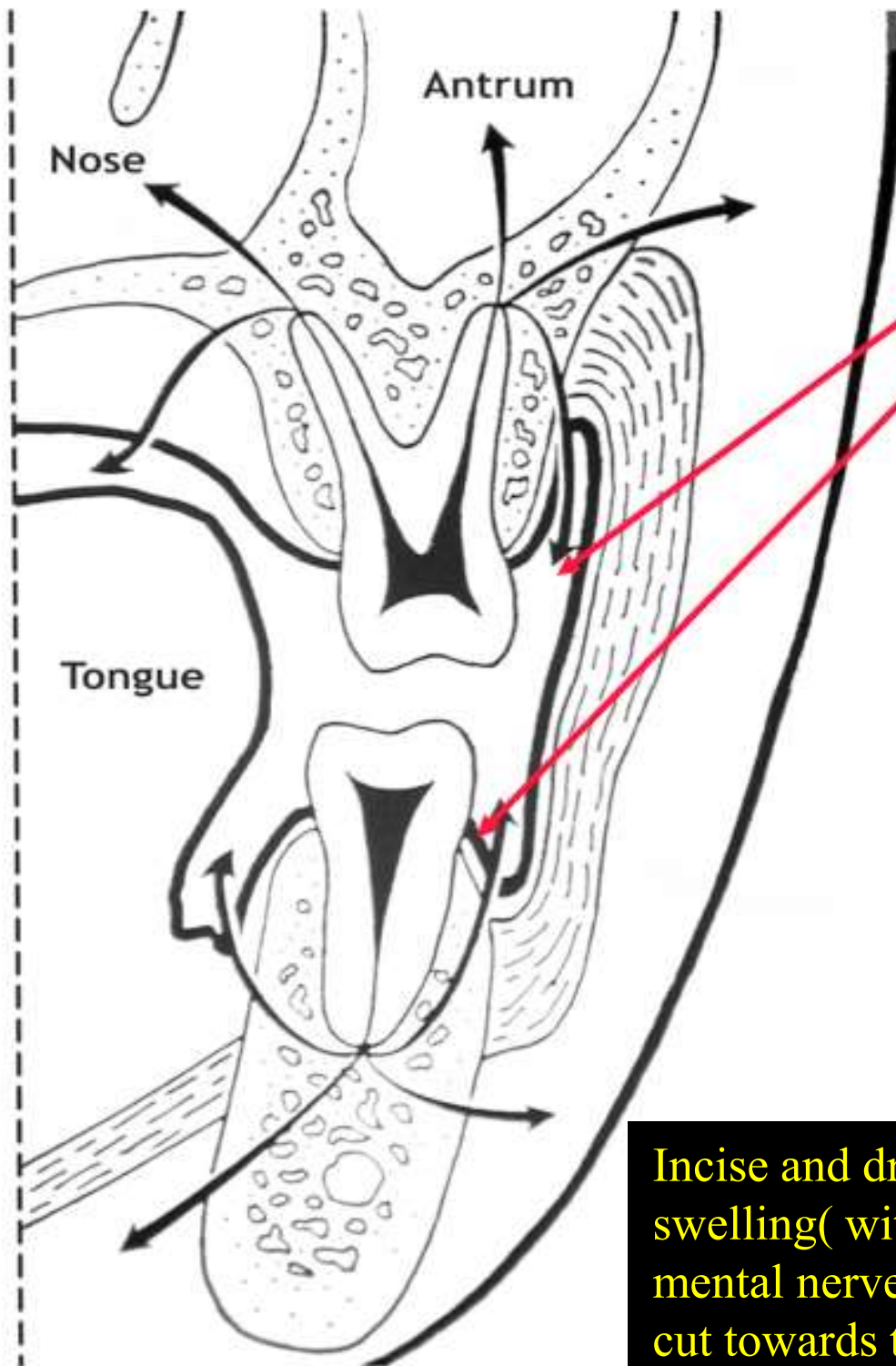
Treatment- Aug + Ibu. Drainage by extraction of offending tooth.



Intra-oral swelling adjacent to molars and premolars

Tooth firm, 2 rooted, extraction would be challenging

Above and below buccinator will result in intra-oral swelling

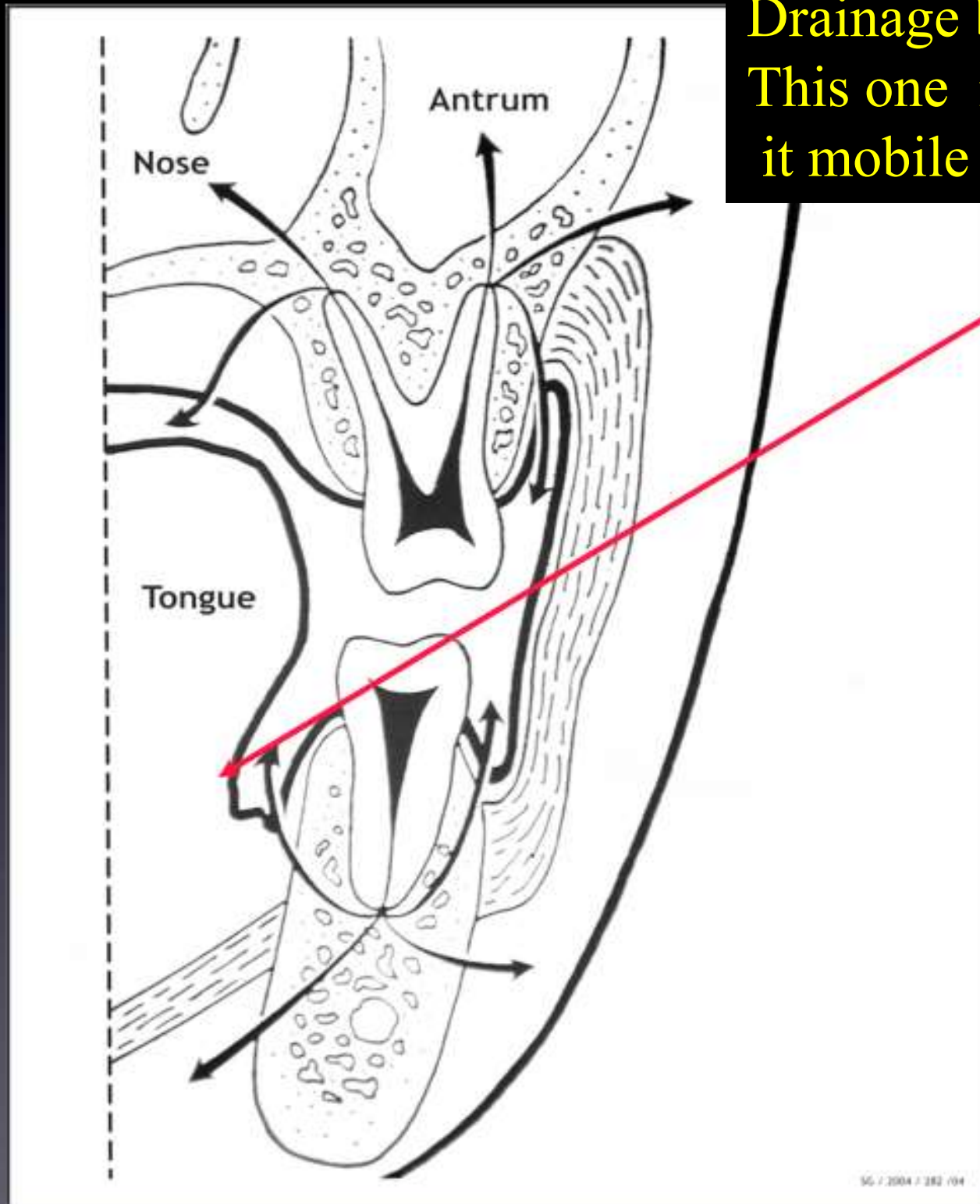


Incise and drain- incision in the tooth half of the swelling(within 5 mm of gum margin- away from mental nerve)- cut towards the tooth(away from blood vessels in cheek) – go down till bone (pus will be there)

Swelling below the tongue

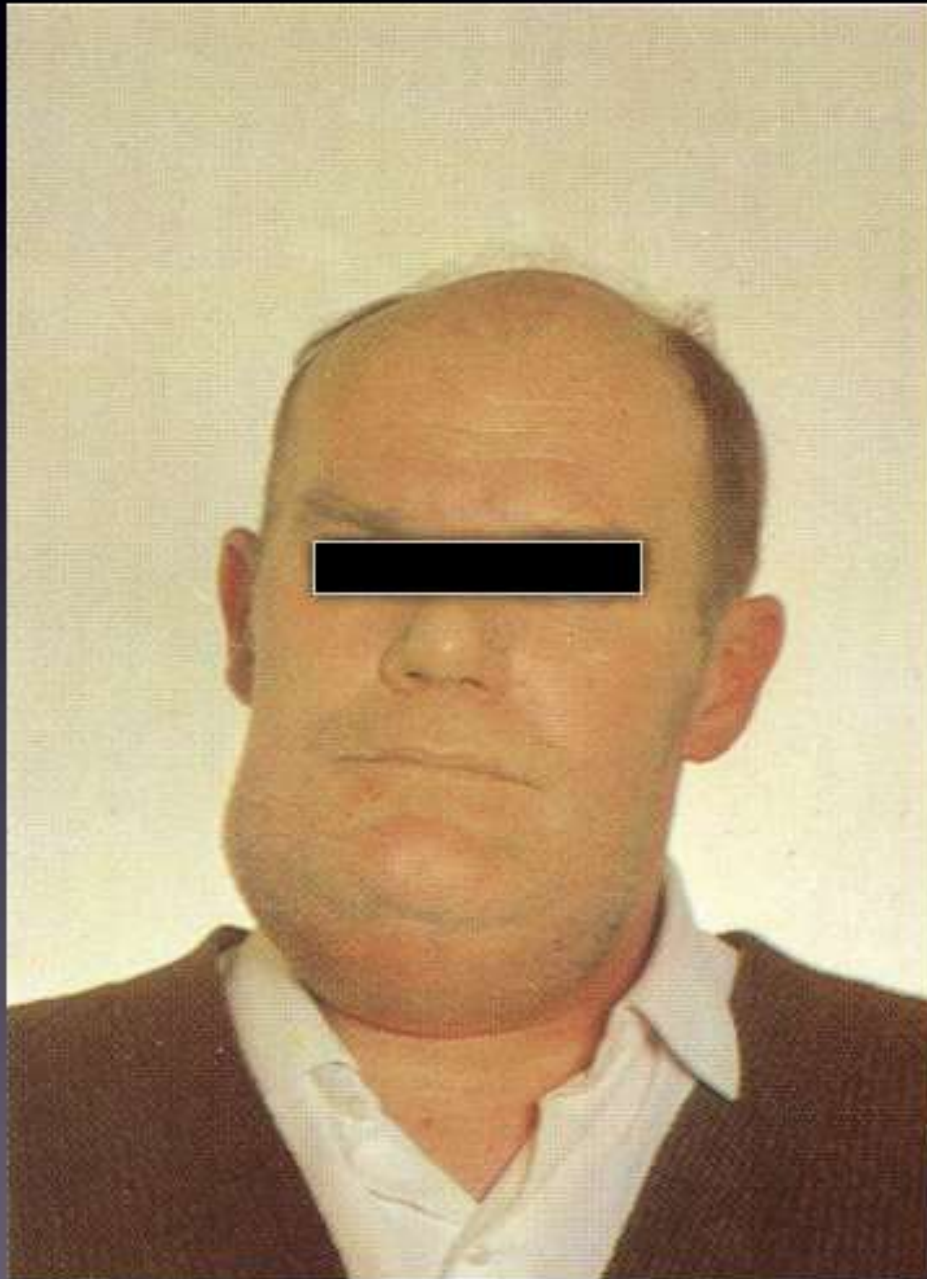
Drainage by extracting the offending tooth.
This one is 2 rooted. But if the abscess has made it mobile and options are limited you can do it.

**above mylohyoid will
result in sublingual
swelling**



Ludwigs Angina

Intubation very difficult, beware of possible parapharyngeal abscess



Infection in both spaces
in the floor of the
mouth.

Real dental emergency

Rarely seen today

Airway compromise

MEDEVac

Extract offending tooth ASAP to
establish drainage

This is a cellulitis don't expect any drainage
from extra oral incisions

Simple Tooth Extraction Module

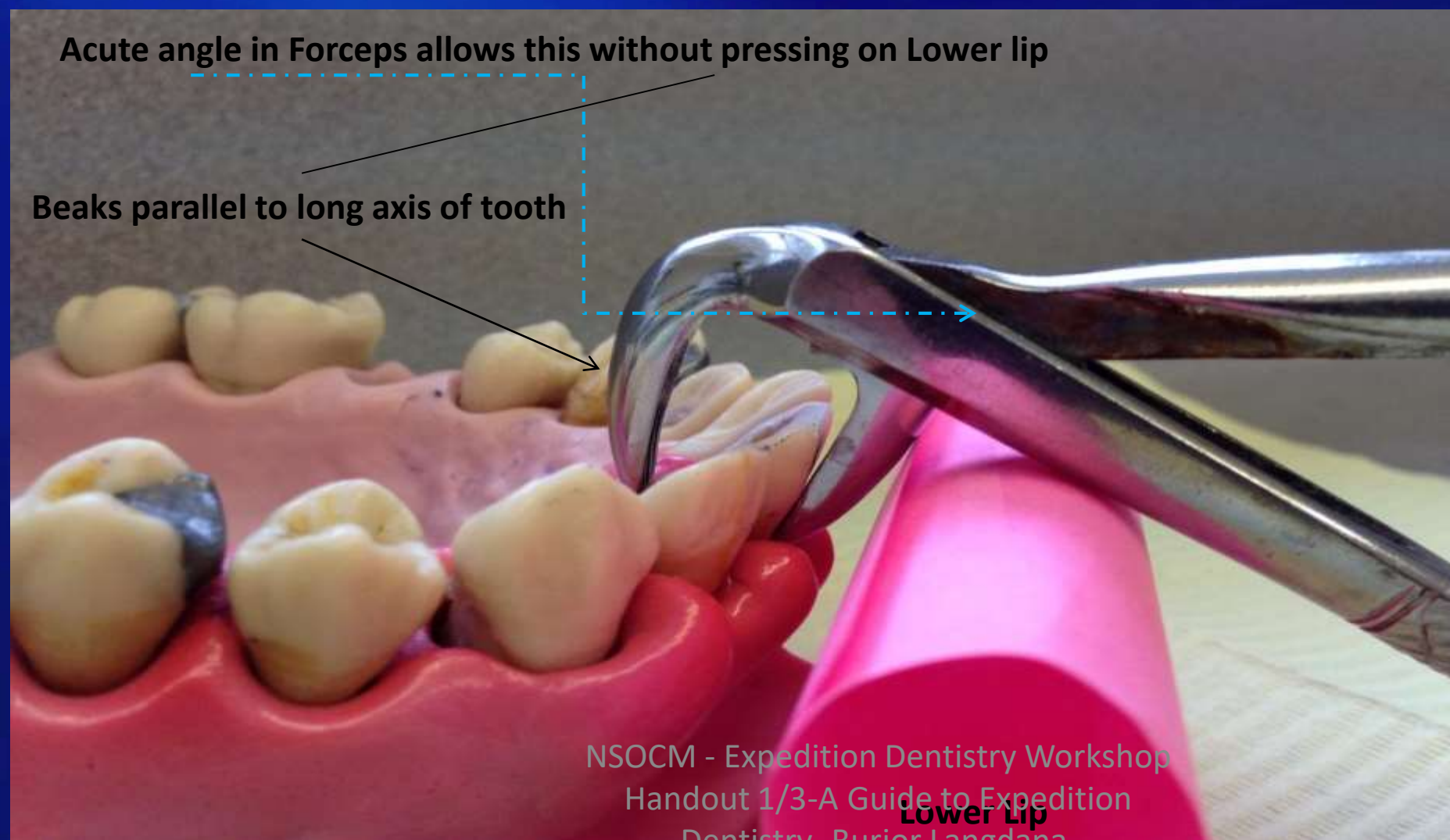
Burjor Langdana

Aims and Objectives

- 1) To familiarise you guys with the instruments carried on an expedition for extracting teeth
- 2) Briefly explain procedure
- 3) Give you the hands on feel regarding position and use of elevators and forceps
- 4) Essentially a brief guide to extract teeth on an expedition

Extraction Forceps

- **Lower forceps** with fine blades are used to extract lower incisors, premolars. All these teeth have one root.



Extraction Forceps

- **Lower molar forceps** have pointy beaks that fits in the furcation between the front and back roots of the molars.
- Can be used on the right or left side.



Extraction Forceps

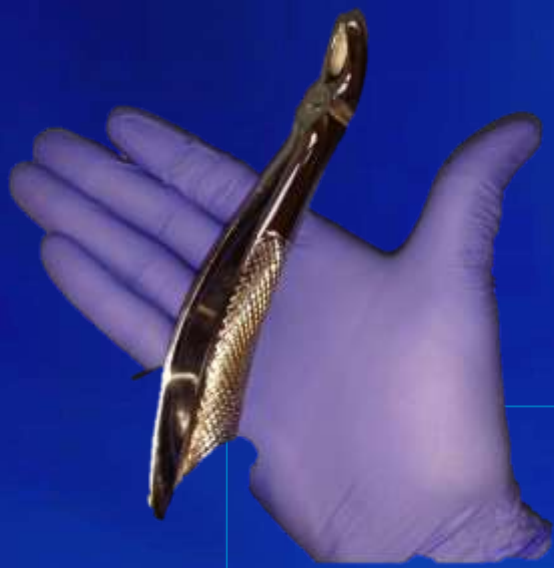
- The maxillary incisor to Premolar teeth are extracted with the a **straight or slightly curved** forceps



Upper Lip

Beaks parallel to long axis of tooth

Forceps are Straight, allowing this, as interference from lips is minimal



Upper Molar Extraction Forceps are also relatively straight (compared to lowers)

The buccal(outer) beak of each forceps has a pointed design, which fits into the buccal(Cheek side) bifurcation of the two buccal roots. Remember pointy bit outside, roundy bit inside 😊



Maxillary right molar forceps



Maxillary left molar forceps



Elevators (Like small screw drivers)

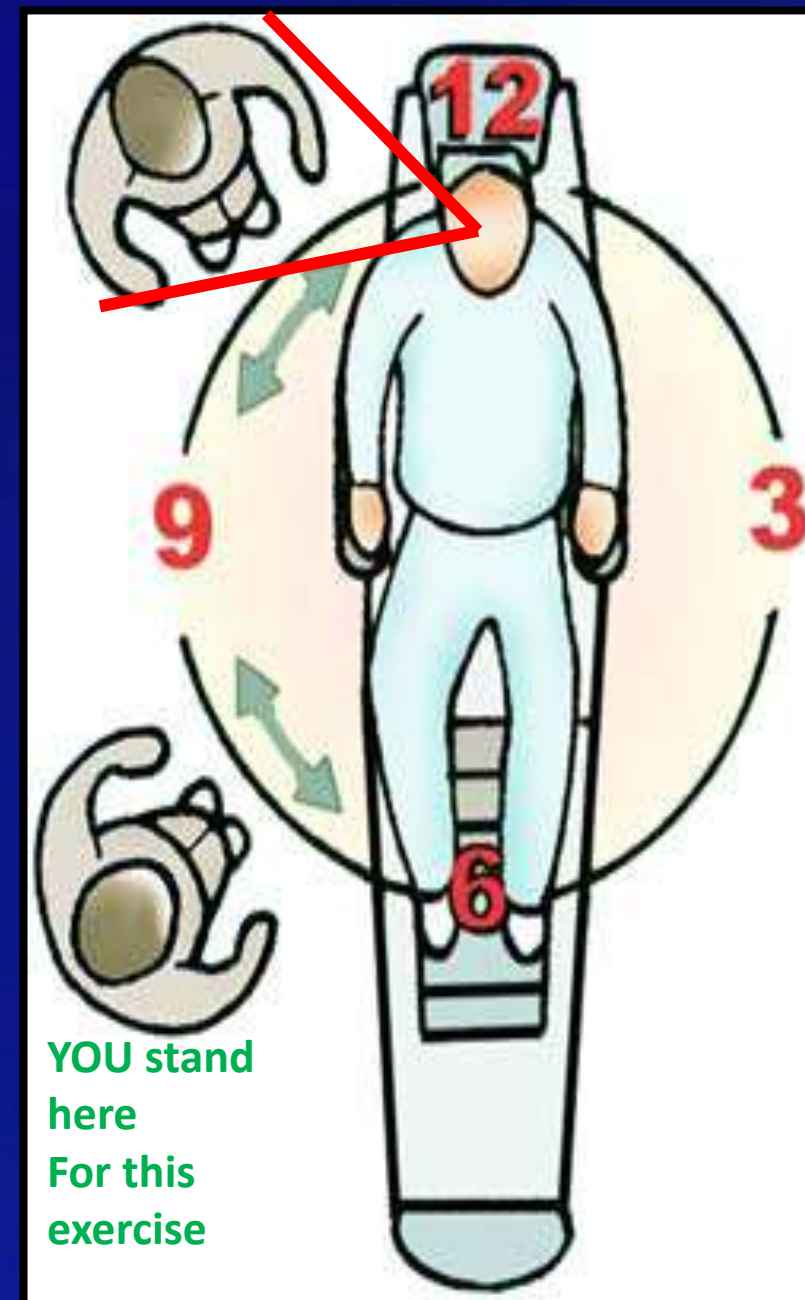
CONCAVE or FLAT side of the elevator FACES the TOOTH to be EXTRACTED



Elevator Excercise

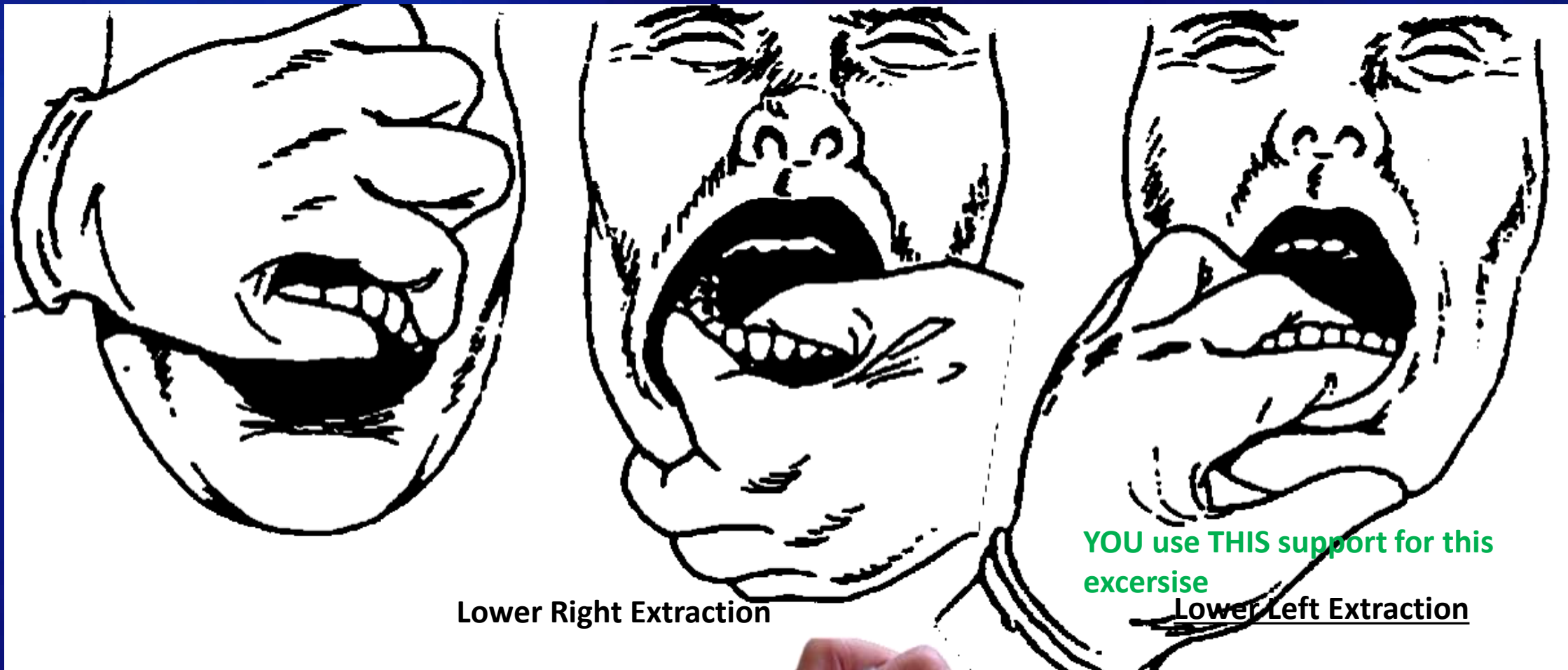
Where Will You Stand?

- For all maxillary teeth and anterior mandibular teeth, the dentist is to the front and right (and to the left, for left-handed dentists) of the patient.
- For the posterior RIGHT mandibular teeth the dentist is positioned in front of or behind and to the right (or to the left, for left-handed dentists) of the patient



Elevator Exercise

How Will You Support The Jaw?



Left Hand



NSOCM - Expedition Dentistry Workshop
Handout 1/3-A Guide to Expedition
Dentistry- Burjor Langdana.

Elevator Exercise

The **WRONG** way and the **RIGHT** way of Elevator placement

The Elevator is jammed straight between the teeth.



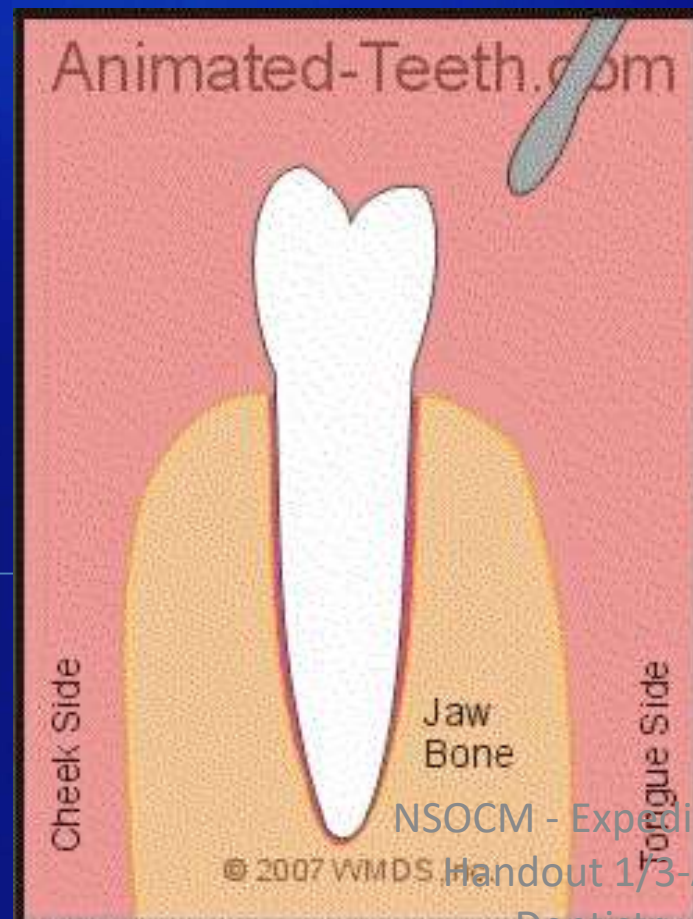
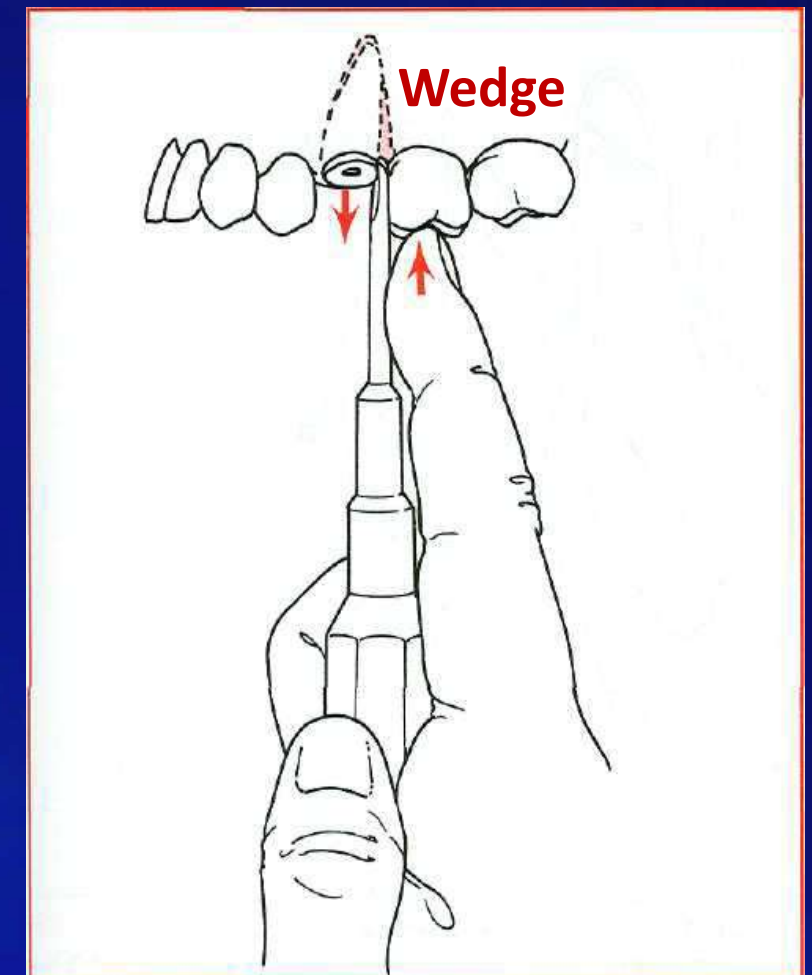
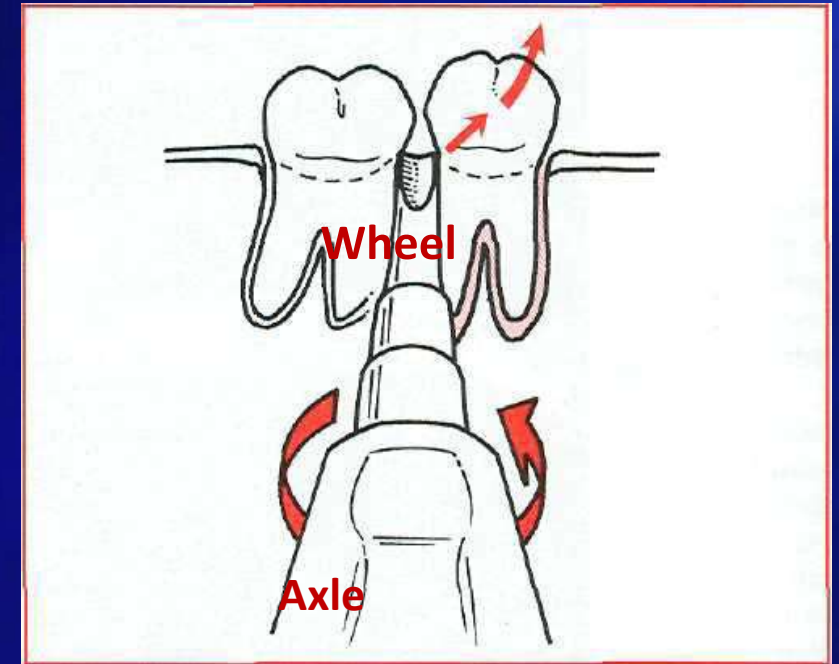
The Elevator is placed at an angle towards the root. Engaging the root surface between the tooth and bone.



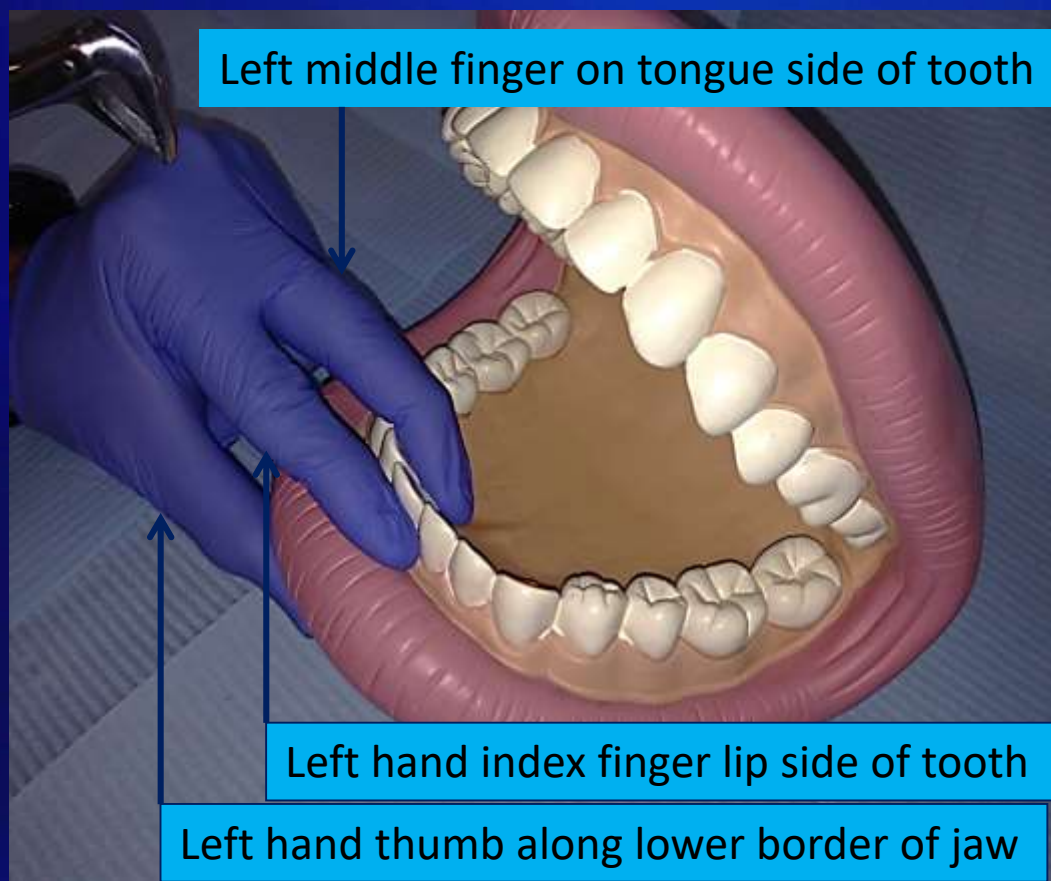
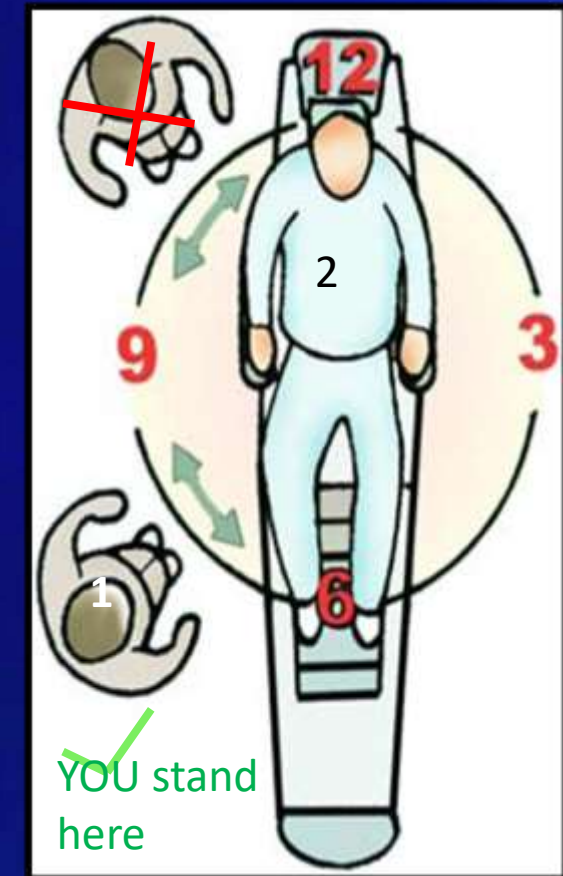
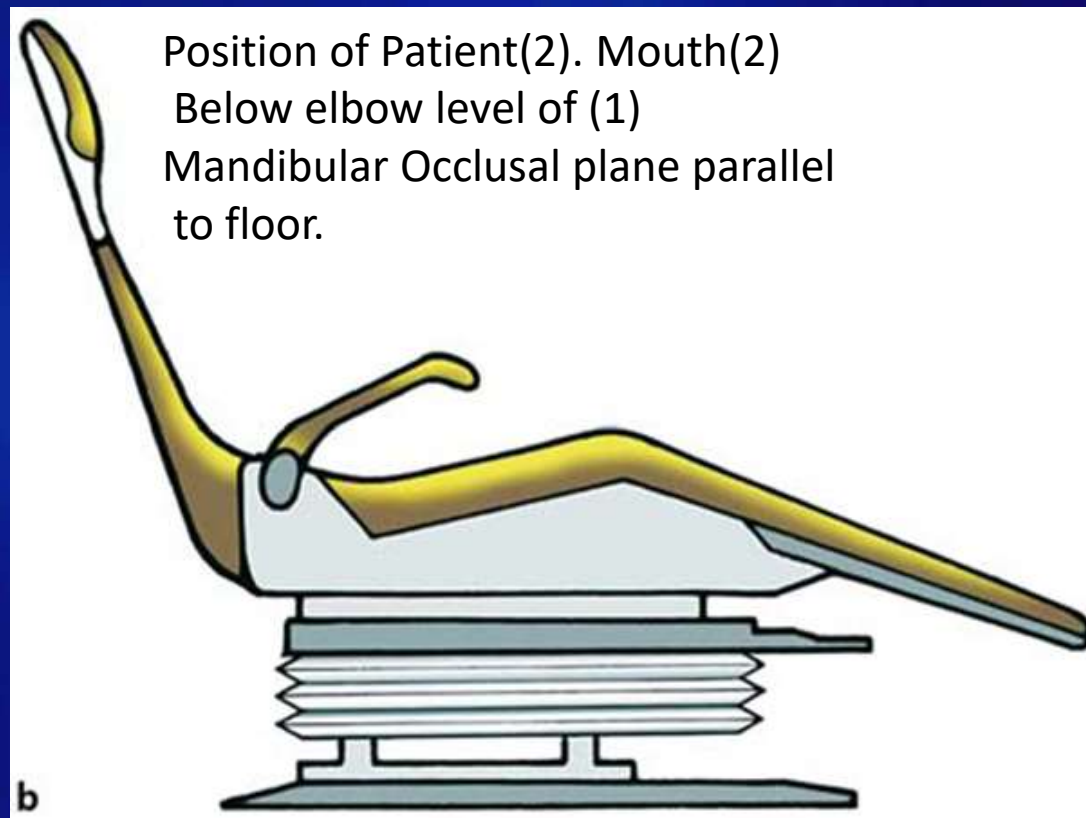
Elevator Exercise

What happens then?

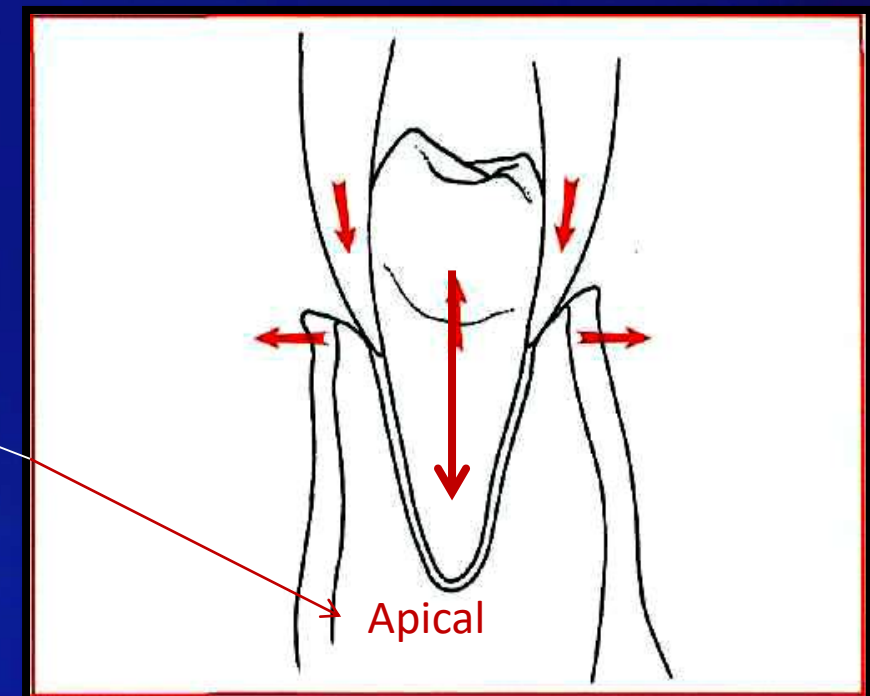
- The handle serves as the **axle** and the tip of the elevator acts as a **wheel** and engages and loosens the tooth.
- The elevator acquires a contact point on the root surface as a **wedge** to loosen tooth from socket



Exercise For Lower Front Tooth Extraction

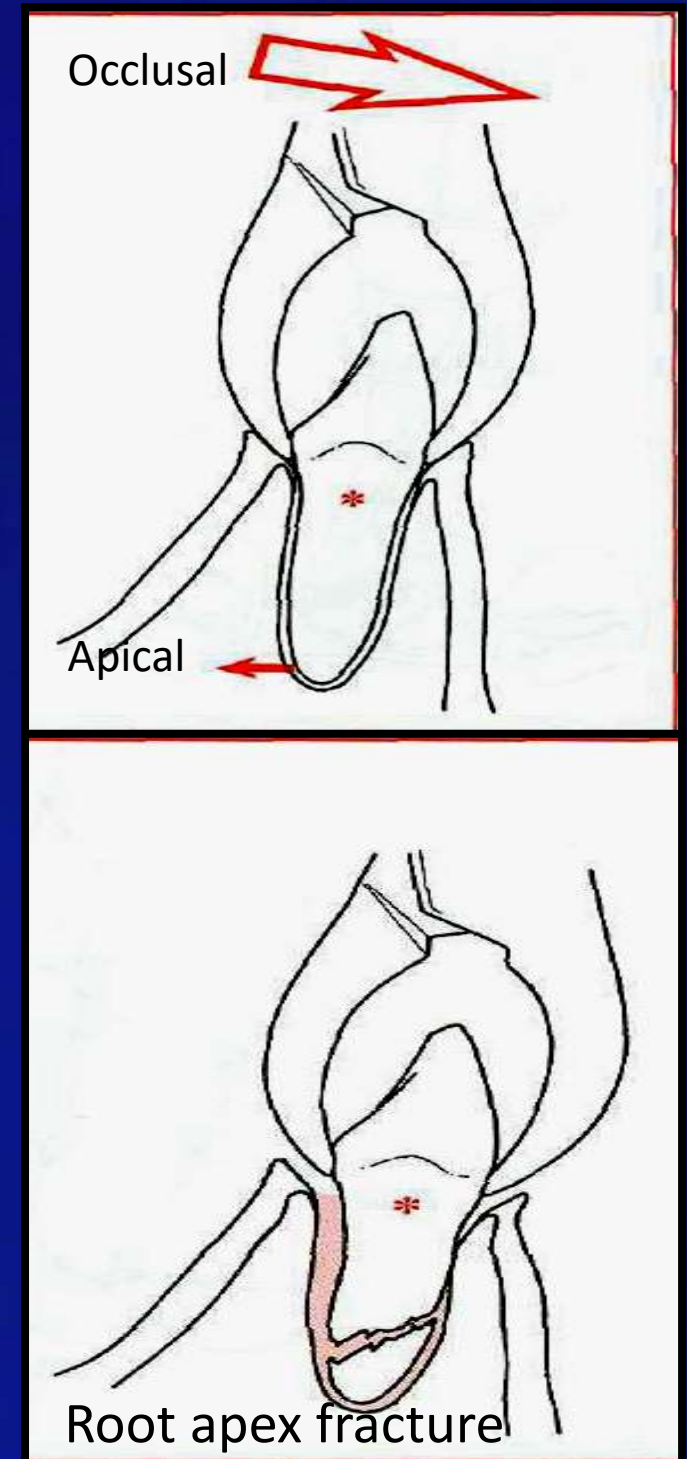


First Pressure is=
Strong apical pressure
to expand bone and to
displace centre of
rotation as apically as
possible .

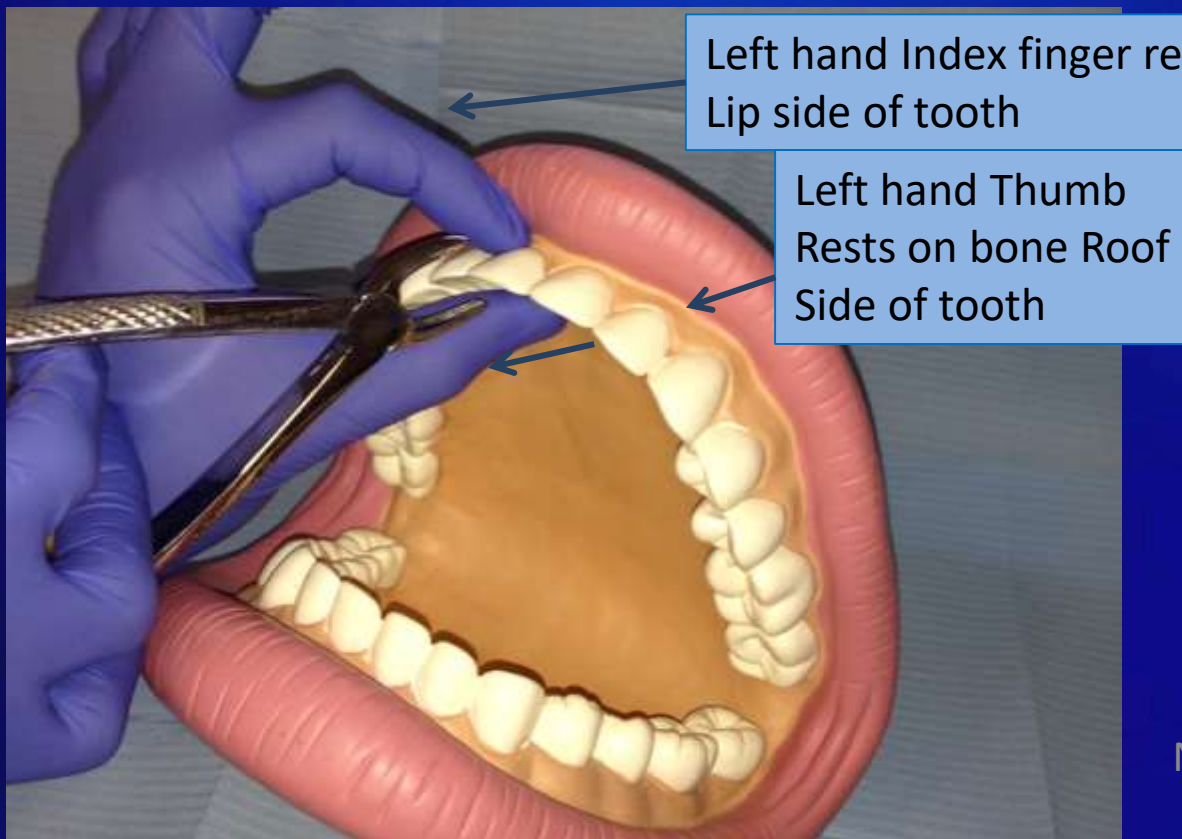
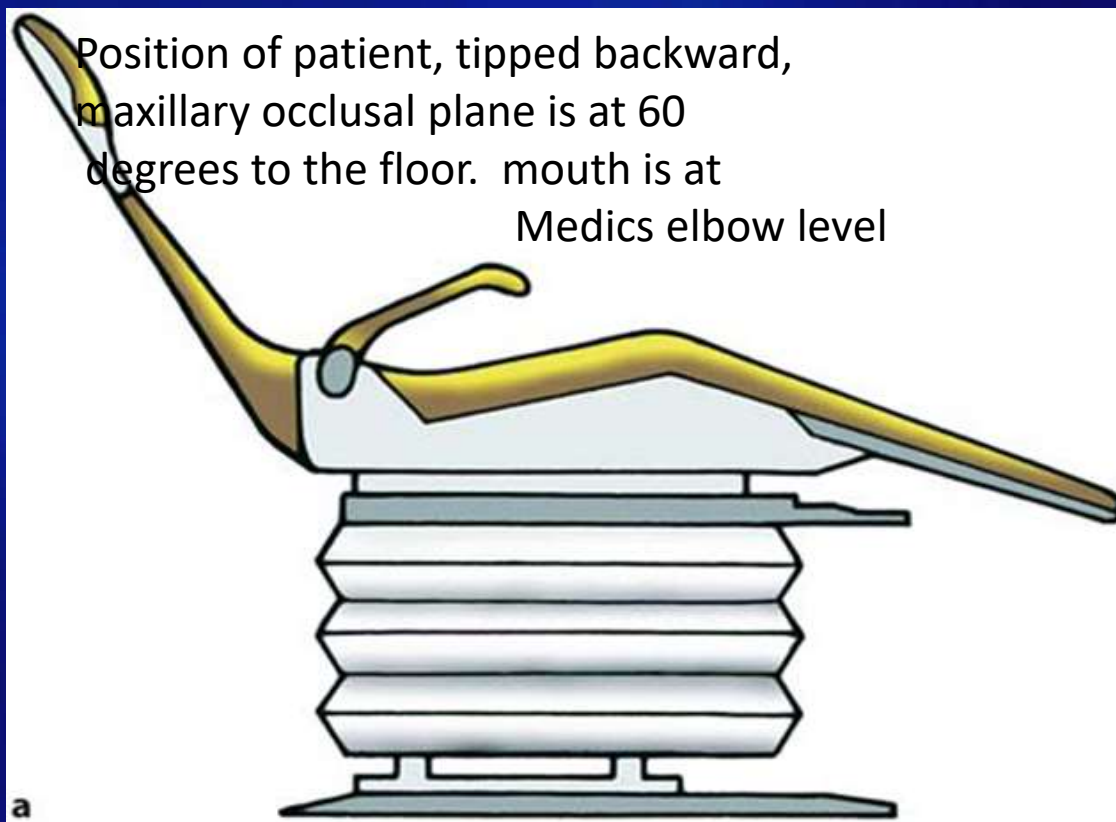


Why strong apical pressure ?

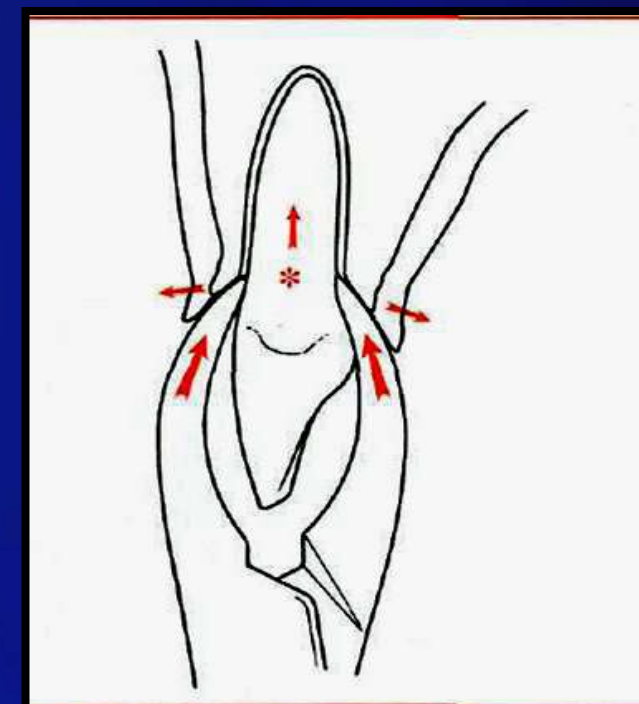
- If center of rotation is not far enough apically, it is too far occlusally, which results in excess movement of tooth apex.
- Excess motion of root apex caused by high center of rotation results in fracture of root apex.



Exercise For Upper Front Tooth Extraction.

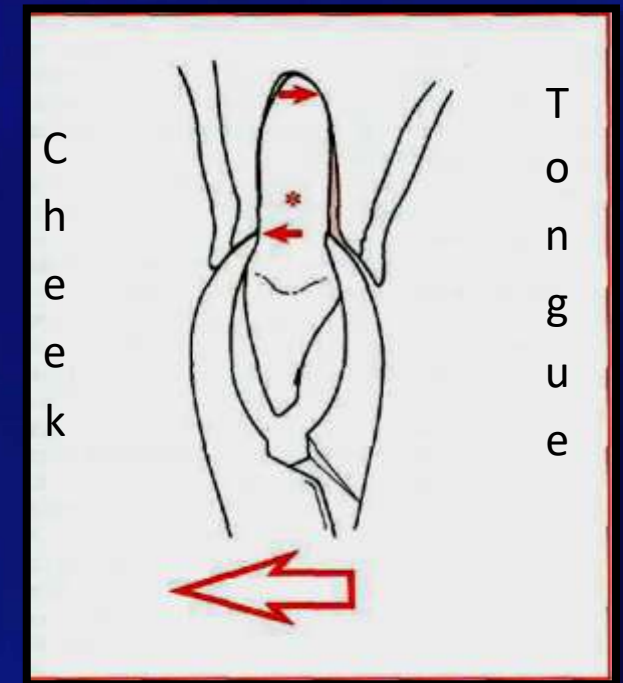


First Pressure is=
Strong apical pressure
to expand bone and to
displace centre of
rotation as apically as
possible .

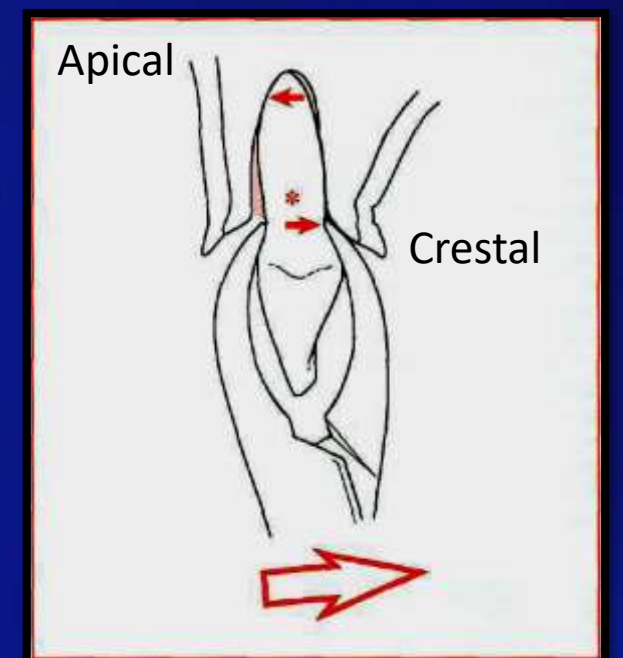


What happens then?

- **Buccal (Cheek) or labial (Lip)** pressure applied to tooth will expand the buccal cortical plate toward the crestal bone with some lingual (Tongue side) expansion at apical end of the root.

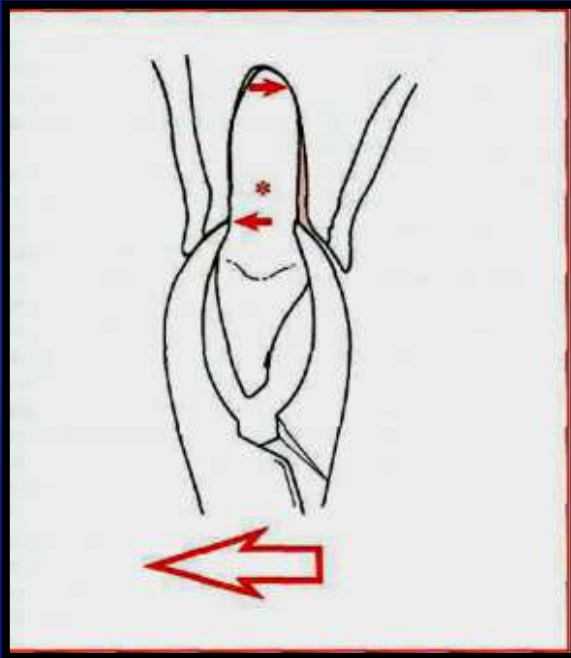


- **Lingual (Tongue side) or palatal (Roof of Mouth side)** pressure will expand lingual cortical plate at crestal area and slightly expand buccal bone at apical area.

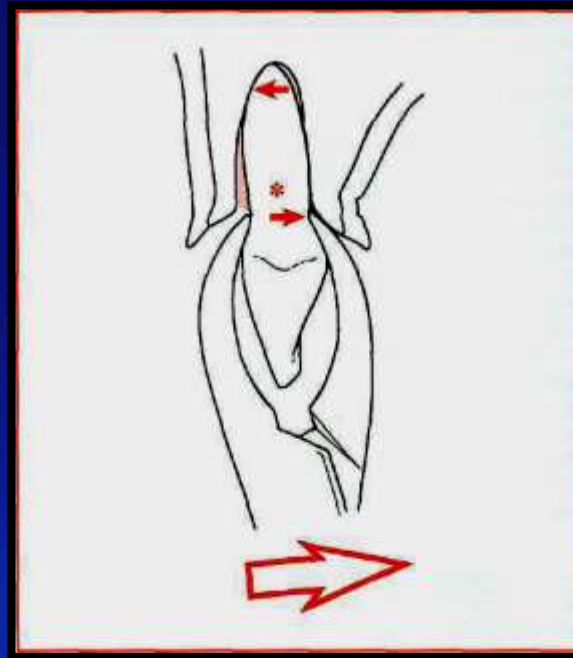


And Finally! After some...

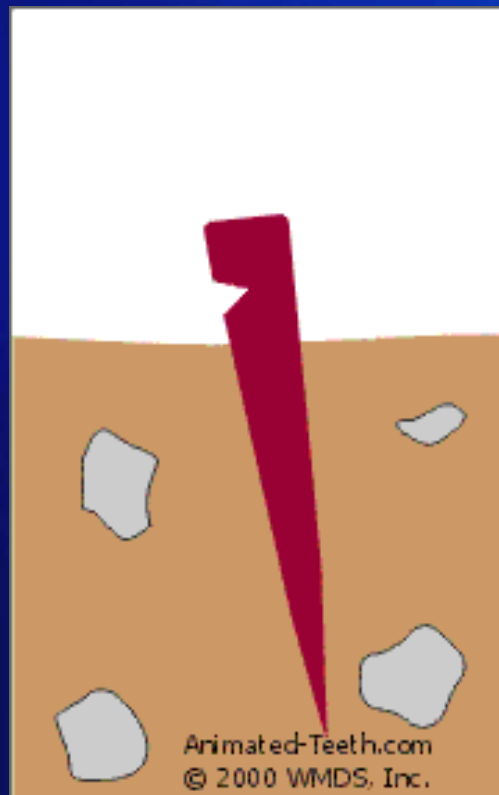
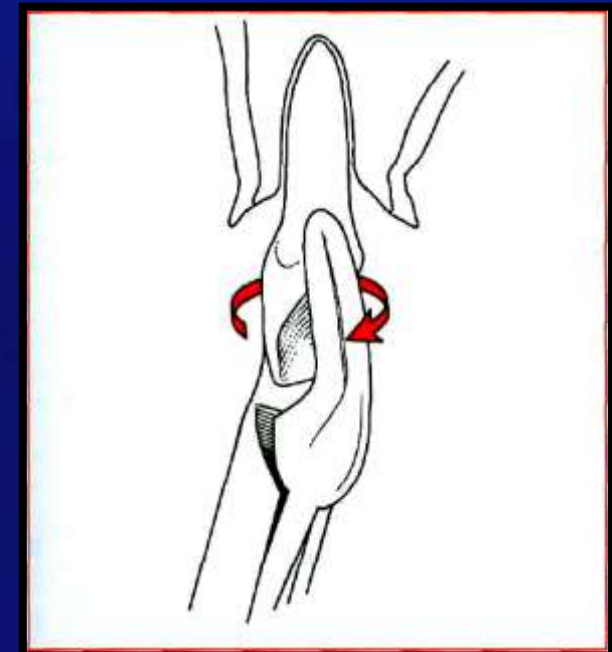
Outward Movement



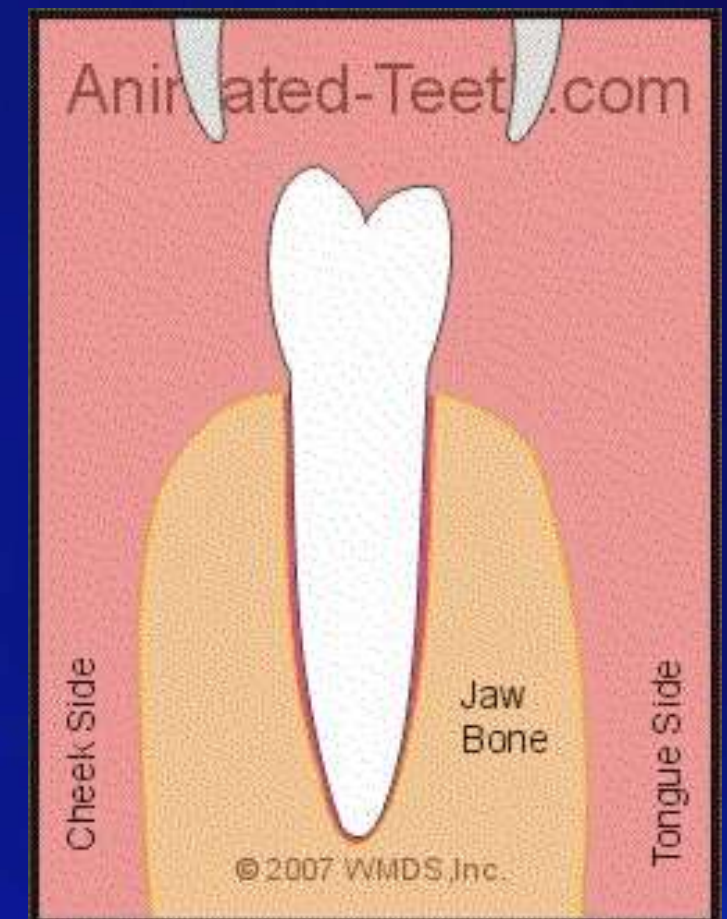
Inward Movement



Rotary Movement

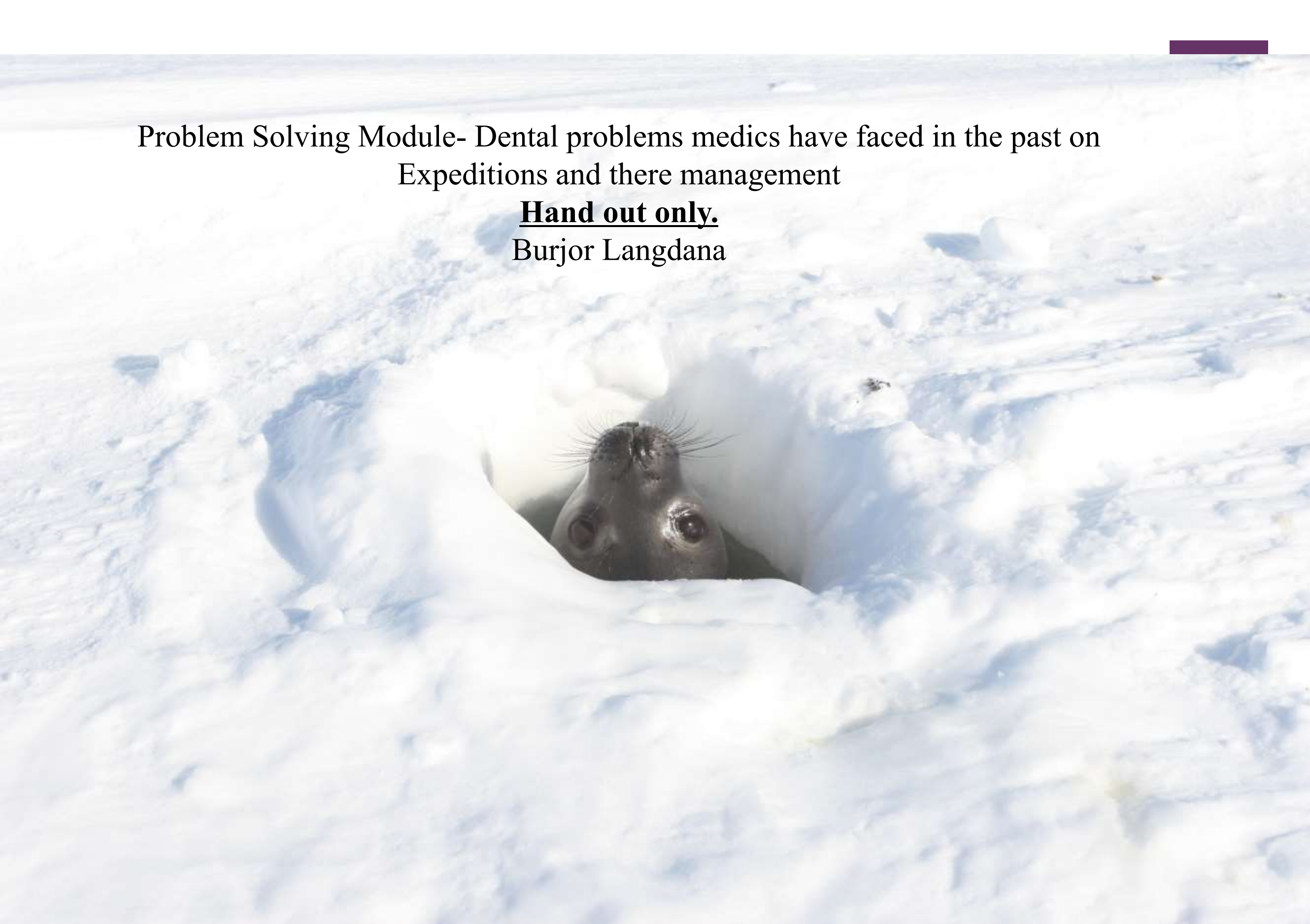


Like rocking a tent stake back and forth so to widen (expand) the hole in the ground where it is lodged. Once hole has sufficiently enlarged, stake comes out easily.



Problem Solving Module- Dental problems medics have faced in the past on
Expeditions and there management

Hand out only.
Burjor Langdana



Mr Rudolph- Base camp- Fractures Fillings from front teeth

**Not sensitive/ Marginally sensitive- Anti sensitivity toothpaste/
Duraphat Varnish**

**Base Camp to Camp 1 –Camp 2- Base Camp-unbearable sensitivity-
Wants some thing done**

Glass ionomer filling (sticky/good retention)- 1) Preparation

**a)Cold Freezing temperatures affect setting time of filling material, so
try to locate then temporarily to bring them up to body temp.**

b) Do a practice mix

c) Make sure stainless steel instruments are not freezing cold.

d) Sore Lips (cold/altitude) Vaseline

**e) Care NO vaseline on your finger or tooth(use cotton rolls to isolate)
or filling wont stick .**

**f)Tell patient to breathe thru nose or exhaled moisture will affect filling
sticking to tooth and affect vision**



The Filling

Bulky (not a work of art), Bulk towards the lip side for support and strength.
Flat and less towards tongue side and incisally (interfere in bite)

Join both together (bad for gums, but will improve retention, its for a short time)

Flatten and smoothen before fully set with a vaseline coated finger
(making sure it does not interfere with breathing apparatus)



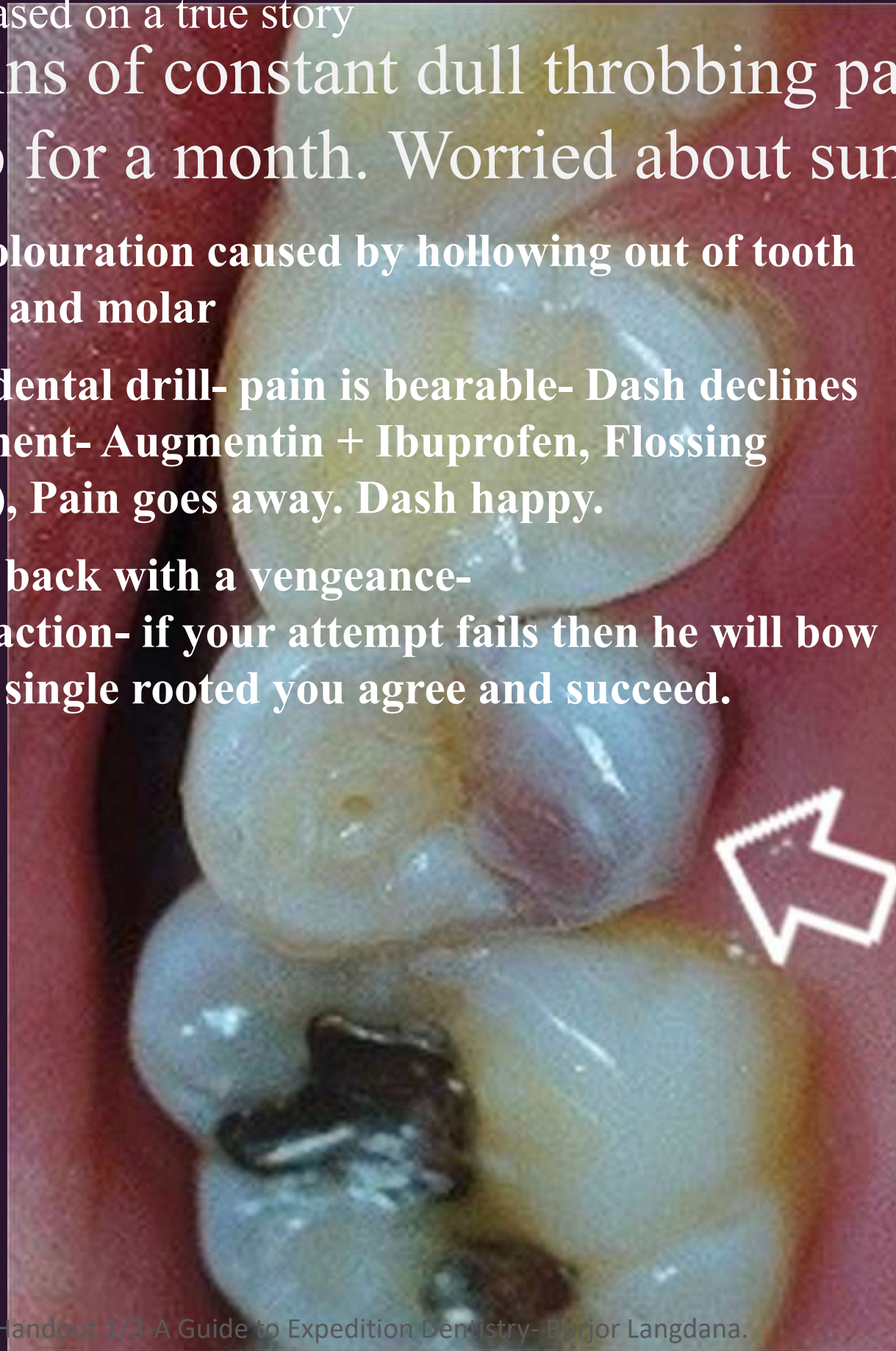
Based on a true story

+ Mr Dasher complains of constant dull throbbing pain rt upper area. Been in base camp for a month. Worried about summit attempt

UR 5 TTP, Note the discolouration caused by hollowing out of tooth cavity between premolar and molar

You don't have xray or dental drill- pain is bearable- Dash declines leaving for dental treatment- Augmentin + Ibuprofen, Flossing (reduce food impaction), Pain goes away. Dash happy.

After 2 week pain comes back with a vengeance- he wants you to try extraction- if your attempt fails then he will bow down to medivac, Being single rooted you agree and succeed.



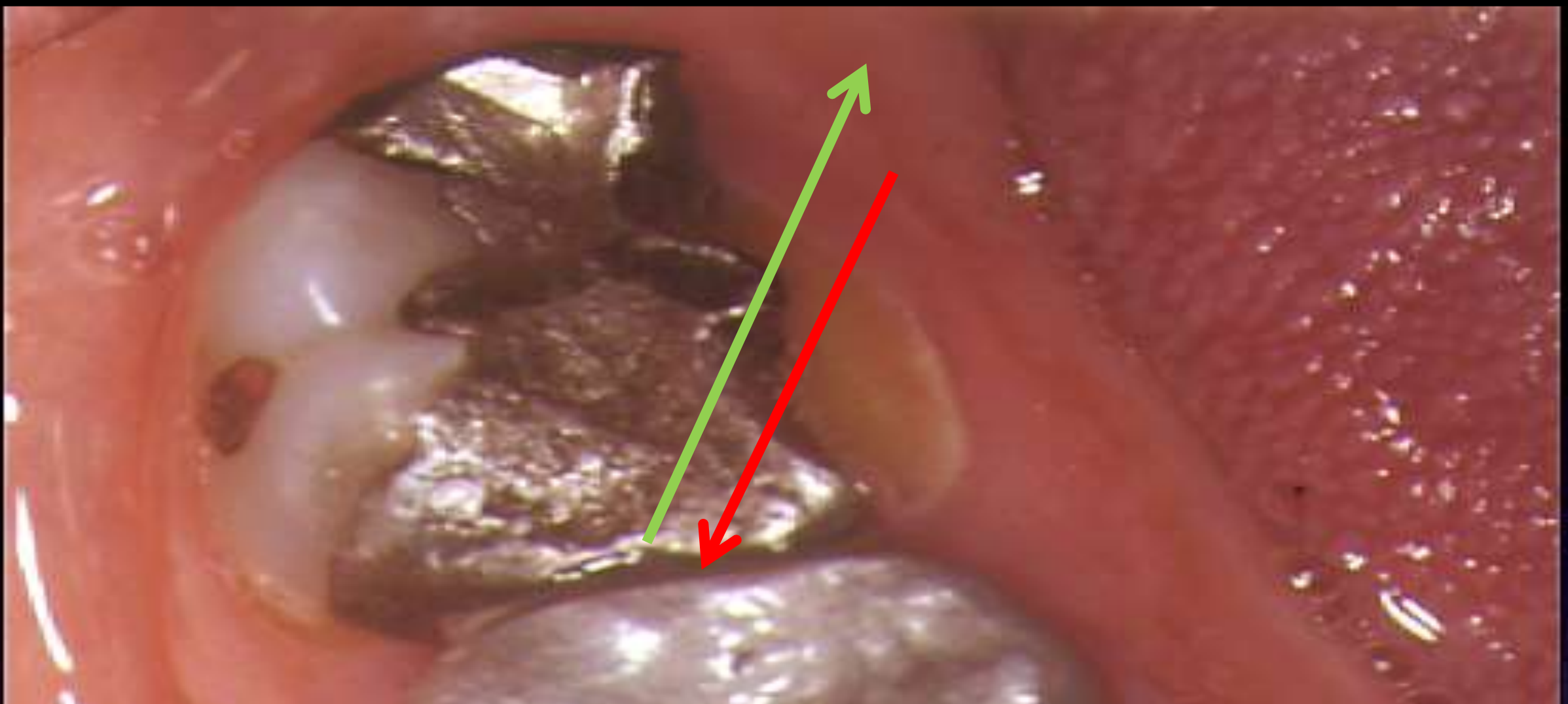
Dashers tail with a twist

If the hollow part of the tooth crumbles, if you and the patients is not that keen on jumping straight to extraction. You could try.

Ledermix/ Odontopaste with Cavit,

- a) In cold weather Cavit can get very hard, massage into a ball to soften before you place it in.
- b) In case you don't have matrix band, push between the teeth, helps retention
- c) After placing, coat with Vaseline, tell patient to bite and grind to flatten it. Remove any high points





- 1) Get the finest file you can find. Its likely you wont find a fine one
- 2) Coat it lightly in vaseline so that it reduces the friction
- 3) Practice a few strokes without touching the tooth
- 4) Using **a feather touch**, **file towards the tooth not away from the tooth smoothly**. As this would pull filling away
- 5) Try not lacerating the gums filing, Pt will jump at filing sensation

Miss Prancer complains of an ulcer on the side of his tongue. You have tried repairing the fractured filling with Cavit, Glass inomer. They have all fallen out. She is getting very irritated. Filing it down is your only option. There is no sandpaper

Mrs Dasher on the Inca Trail- Complains of Food keeps getting stuck between my teeth, Bleeding and irritation
Lost filling noted- Dental Kit left with the main baggage-Floss regularly to remove debris, leave behind some
toothpaste
(Can try Chewing gum, softened tempered cooled wax)
Get to the main baggage realise no Matrix band-Clean cheesy leathery debris- Temporary filling- Cavit- Roll into
ball- Excess on cheek and roof side. Remove
Excess from Occlusal surface.



Mrs Vixen on the transatlantic tall boats. Complains of constant ache, pus discharge around her lower right molar. But this tooth was root canal treated is therefore dead and should not give any probs

Root canal treated teeth, especially without crowns are brittle, weak, can crack and fracture

Fracture sucks bugs from saliva in, this can reinfect the tooth, infect the adjacent bone

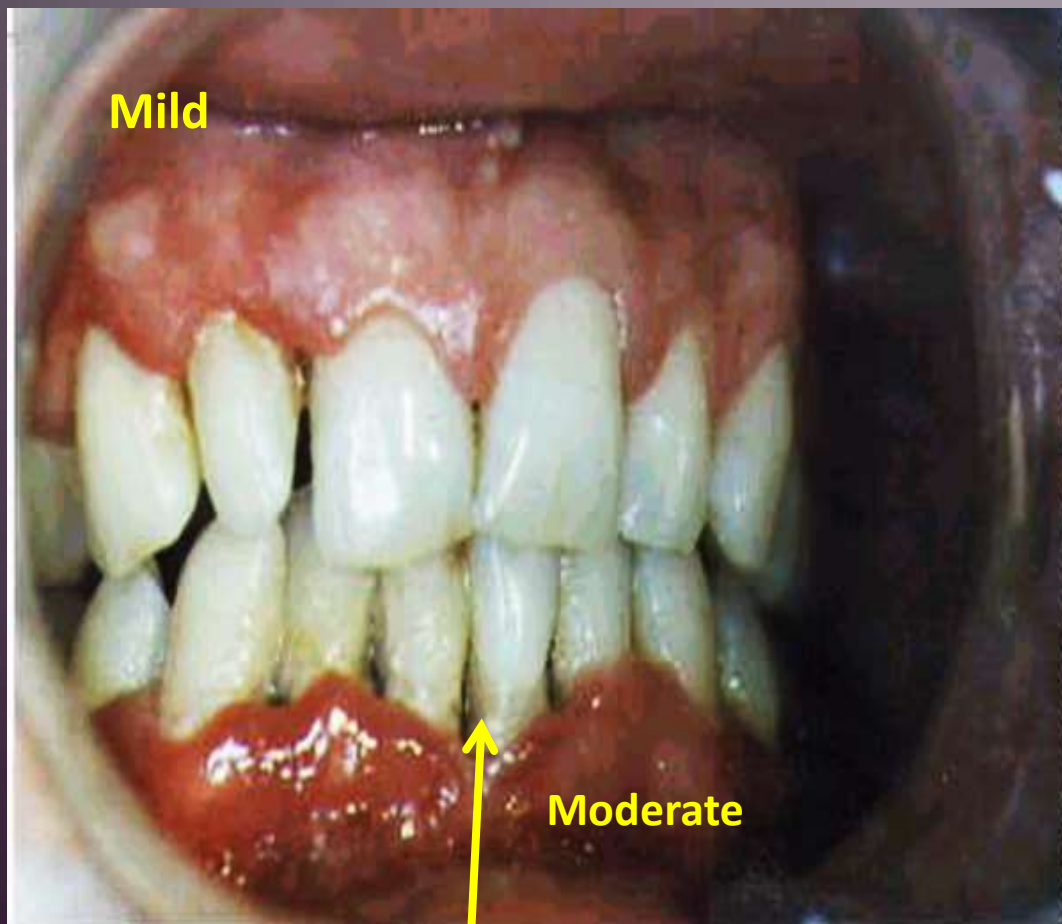
Extraction will be challenging, Aug + Ibu + Corsodyl+ Warm Saline (to encourage drainage), not to eat or chew on that side



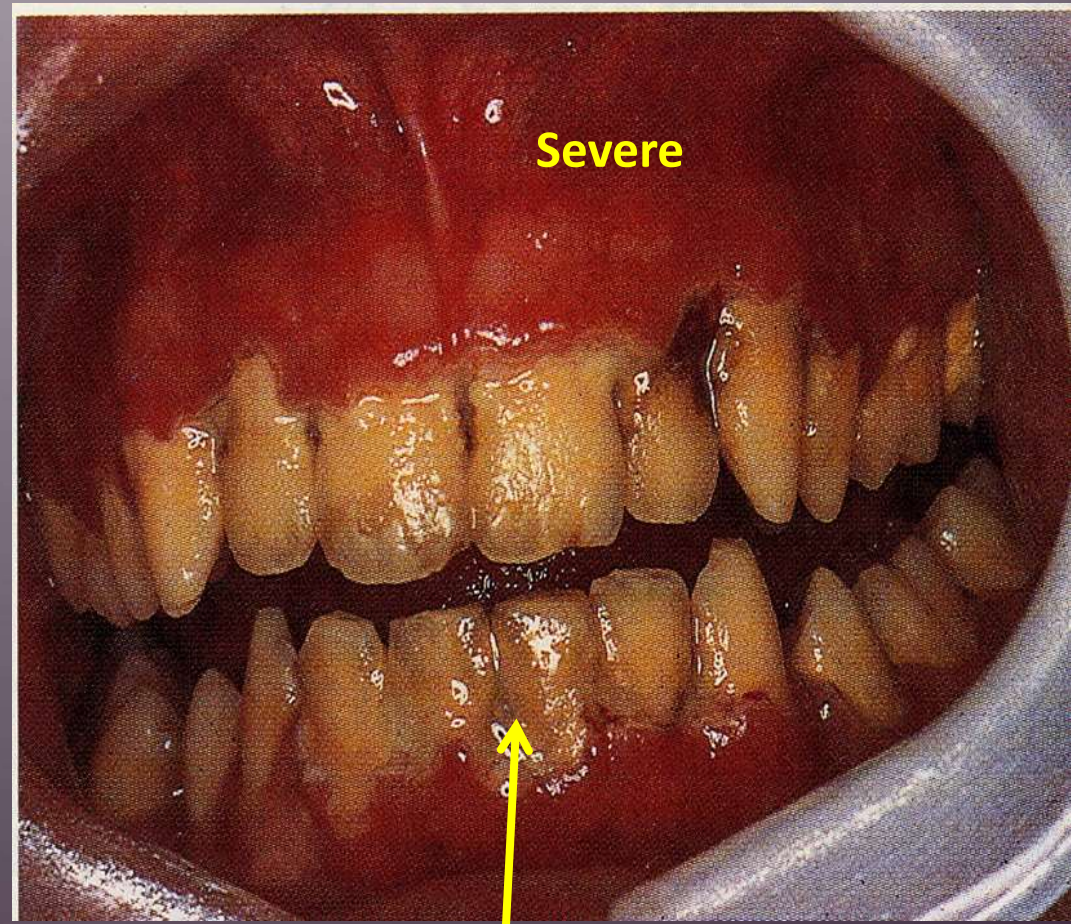
Mrs Vixen a heavy smoker on her year long walk across India. Complains of generalised pain, bleeding, Foul smelling breath. So painful that she cant brush her teeth.

Diagnosis is Necrotising Ulcerative Periodontitis- Mild – Moderate- Severe
Cause- Bacterial Infection-Fusobacteria and Spirochaetes

Treatment- Stop smoking- Maintain sufficient food and fluid intake- Improve Oral Hygiene- Metro + Ibu+ Corsodyl Mouthwash



Loss of Gingival Contour



Tissue destruction

THE END.....



For remote access dental queries you can contact me at expeddental@gmail.com

