

Instrumentation for Basic Oral Surgery

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EXAM-DAY SUMMARY

everything on this page → detail in §§ overleaf

HANDLES & BLADES → §2

- No. 3 handle commonly used; No. 7 longer, slender
- 15 = around teeth / mucoperiosteum; 12 = mucogingival + posterior teeth
- 11 = stab; 10 = large skin incision
- Load/unload blade with needle holder; pen grasp; press firmly

PERIOSTEAL ELEVATION → §3

- Molt no. 9 most common: sharp end = papilla, broad end = bone
- Push stroke most efficient; pull/scrape tears mucosa
- Woodson no. 1 small/delicate · Howarth strips periosteum, pen grasp · Freer thin ends
- Desmotomes: straight = upper anteriors; curved = rest of upper + all lower

RETRACTORS → §4

- Seldin = periosteal shape, dull end; Minnesota = cheek + flap
- Austin right-angled · Langenbeck "L", long handle · C-shaped & cheek retractor plastic
- Tongue: Weider (heart-shaped, serrated one side, medial + anterior) · depressor · mirror · towel clip (LA first)
- Skin hook → ↓ trauma → ↓ infection → better cosmesis

HAEMOSTASIS → §5

- Hemostat: long delicate beak, parallel grooves, locking handle
- Uses: bleeding · granulation tissue from socket · retrieve root tips, calculus, amalgam
- Monopolar: patient in circuit, AC generator >20,000 Hz; bipolar: both electrodes in one instrument, small tissue effect
- Coagulate until slightly pink to pale

CAUTERY PRECAUTIONS → §5

- No point contact / bony ridges under indifferent electrode
- Ether, cyclopropane → sparking risk
- Rubber footwear; tip never touches metal instruments
- Abscess: Lister sinus forceps, Hilton's method → break loculae

GRASPING FORCEPS → §6

- Adson = routine; Stillies = same shape, 7–9 inches, posterior mouth
- Allis: teeth + lock → only tissue to be dissected
- Russian: round-ended → elevated teeth, gauze
- Babcock: flared, smooth → atraumatic viscera/mucosa/nodes

BONE REMOVAL → §7

- Rongeur most commonly used; leaf spring reopens beaks
- Chisel monobevelled (cuts) · osteotome bibevelled (splits)
- Nylon-faced mallet: less shock, less noise
- Bone file: pull stroke only, before suturing
- Burs 557 · 703 · No. 8 round; handpiece must not exhaust air into field

SUTURING & SCISSORS → §8

- Needle holder: short stout beak, cross-hatched face, 6-inch intraoral
- Grip: thumb + ring in rings, index along length, middle aids lock
- Suture/Dean scissors long handles; iris small sharp pointed; Metzenbaum blunt-nosed, undermining
- Never cut sutures with tissue scissors → dulls edges

ACCESS & SUCTION → §9

- Bite block: more posterior = wider opening
- Molt prop: ratchet — opens as handle closes
- Mouth gag: serrated blades on molars, slow gradual force; trismus & GA
- Surgical suction = small orifice for sockets; Fraser = hole in handle; plastic tips available

FIELD & IRRIGATION → §9

- Transfer forceps: right-angled, heavy jaws, sterile-to-sterile
- Swab holder: oblong tip; clean site · swab throat · tonsillar bed haemorrhage · hold tongue
- Towel clip: drapes, suction tubing, tongue; curved points penetrate
- Irrigation = large syringe + blunt 18-gauge needle, sterile saline; cools bur, clears chips, before suturing

DENTAL ELEVATORS → §10

- Parts: blade · shank · handle
- Indications: reflect flap · luxate teeth forceps can't engage · roots/fractured/carious · loosen before forceps · split grooved teeth · remove intraradicular bone
- Coupland · Cryer · Warwick James · Apexo · Winter's crossbar · Crane pick · root tip pick

EXTRACTION FORCEPS → §11

- Beaks · hinge · handle; beak adapts at crown-root junction; American vs British styles
- Upper: 150 universal · 150A premolar · 53 molar · 88 cowhorn · bayonet · upper 3rd molar
- Lower: 151 universal (slide says 150) · 17 molar · lower cowhorn · lower 3rd molar

§1 Instrument classification & guiding principles

KEY POINTS

Every oral-surgery instrument answers one question: **what tissue, what action?** Hard tissue (bone, tooth) vs soft tissue (mucosa, muscle, vessel) — then incise · reflect · retract · grasp · haemostase · cut bone · curette · suture · access · suction · irrigate · transfer.

- **Scope:** a myriad of instruments serve oral surgical procedures → grouped by **purpose**, not by appearance
- **Two tissue targets:** hard tissue · soft tissue — many instruments cross over (periosteal elevator reflects *and* retracts)
- **Sixteen functional groups** (the lecture's own scheme): incising · elevating mucoperiosteum · retracting soft tissue · controlling haemorrhage · grasping tissue · removing bone · removing soft tissue from bony defects · suturing mucosa · holding mouth open · suction · transferring sterile instruments · holding towels & drapes · irrigation · dental elevators · extraction forceps · instrument tray systems
 - instrument tray systems are *listed* in the lecture but not covered further — expect only the concept (pre-set trays per procedure)

SOFT TISSUE	HARD TISSUE	FIELD & ACCESS
Incise → scalpel handle + blade	Cut/pinch bone → rongeur	Open mouth → bite block · Molt prop · mouth gag
Reflect → periosteal elevator	Split bone → osteotome (bibevel)	Clear field → surgical / Fraser suction · plastic tips
Retract → Austin · Minnesota · Seldin · Langenbeck · Weider	Cut bone → chisel (monobevel) + nylon-faced mallet	Prepare field → swab holder
Grasp → Adson · Allis · Russian · Stillies · Babcock	Drill bone → bur + handpiece	Secure drapes → towel clip
Haemostasis → hemostat · cautery	Smooth bone → bone file (pull)	Move sterile items → transfer forceps
Drain → Lister sinus forceps	Curette defect → periapical curette	Irrigate → syringe + blunt 18-gauge needle
Suture → needle holder · scissors	Luxate tooth → dental elevators	
Skin hook → atraumatic handling	Deliver tooth → extraction forceps	
	Irrigation protects bone from heat	

Diagram 1 — The lecture's sixteen functional groups, re-sorted into soft tissue, hard tissue and field/access.

1.1 Principles of instrument care

- **Know three things per instrument:** identification · indications for use · technique of use
- **Quality matters as much as skill:** instrument quality is as crucial as the surgeon's knowledge and skill — good instruments are expensive but unavoidable for the expected **standard of care**
- **Shared responsibility:** surgeon *and* assistant handle, store and use instruments with utmost care

§2 Incising tissue

- **Starting point:** most surgical procedures begin with an incision → scalpel = handle + detachable blade
- **No. 3 handle:** the commonly used handle for oral surgery
- **No. 7 handle:** longer and more slender → deeper/more delicate work
- **Supply:** blades are sterile-packed, single-use carbon steel (boxes of 100) → mounted on a reusable handle



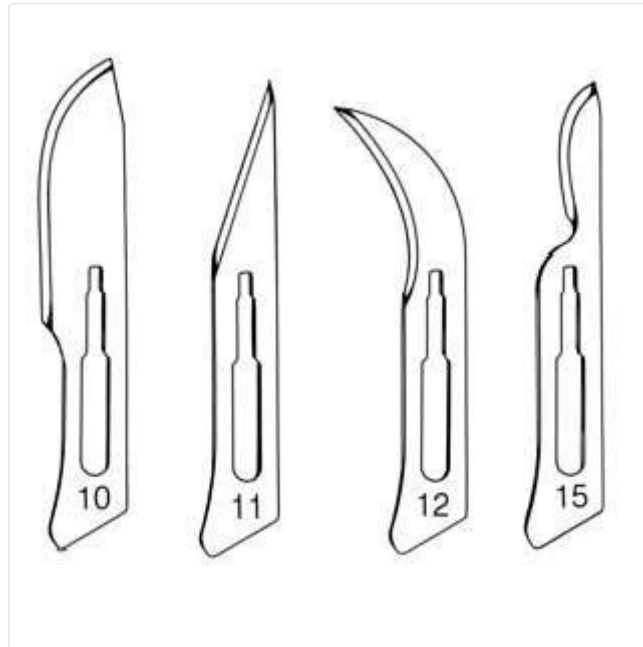
Fig. 114 — No. 3 scalpel handle — the routine oral-surgery handle.



Fig. 115 — No. 7 handle — longer and more slender.

Table 1 — Scalpel blades and their intended incisions

Blade	Shape	Used for
No. 10	Broad curved belly	Large skin incisions
No. 11	Straight pointed spear	Small stab incision
No. 12	Curved hook	Mucogingival procedures · incisions on the posterior aspect of teeth
No. 15	Small curved belly	★ Small incisions around teeth & through mucoperiosteum — the routine intraoral blade

**Fig. 1** — Blade profiles: 10 (broad belly) · 11 (pointed stab) · 12 (hooked, cuts on withdrawal) · 15 (small belly, the intraoral workhorse).**Fig. 2** — Blades supplied individually sterile-wrapped.**Fig. 3** — Carbon-steel blades, box of 100.**Fig. 4** — No. 10 in use — large skin incision.

2.1 Loading, unloading and holding

1. **Load:** grip blade at its widest, thickest part with a **needle holder** → slide onto the handle groove — never with fingers
2. **Unload:** lift the blade base off the handle bead with the needle holder → direct away from all personnel
3. **Hold in pen grasp:** gives **maximal control** of the blade
4. **Stabilise the tissue:** mobile tissue held firmly so the blade cuts rather than pushes
5. **Press firmly:** mucoperiosteal incisions need the knife pressed down firmly → one clean stroke to bone



Fig. 7 — No. 10 blade in its sterile pack.



Fig. 8 — No. 11 blade in its sterile pack.



Fig. 9 — Opening the pack — blade presented for pick-up.



Fig. 10 — Loading: blade gripped at its widest, thickest part with a needle holder.



Fig. 11 — Loading: blade slid onto the handle groove until it seats.



Fig. 12 — Unloading: blade base lifted off the handle bead, directed away from personnel.



Fig. 5 — Intraoral incision through mucoperiosteum.



Fig. 6 — Scalpel in pen grasp — maximal blade control.

★ EXAM PEARL

Blade numbers are near-guaranteed single-best-answers. **15 = around teeth / through mucoperiosteum**; **12 = posterior and mucogingival** (hooked, so it cuts on withdrawal); **11 = stab**; **10 = skin**. Blades are always loaded and unloaded with a **needle holder**, never fingers.

§3 Elevating the mucoperiosteum

- **Molt no. 9 periosteal elevator**: ★ **most commonly used** — double ended
 - **Sharp/pointed end** → reflect the dental papilla from between the teeth
 - **Broad end** → elevate tissue from bone

- **Round-ended Molt:** preferred by some surgeons — same instrument, blunter working end
- **No. 1 Woodson periosteal elevator:** small and delicate → release soft tissue around the tooth
- **Howarth's periosteal elevator:** designed to strip mucoperiosteum from bone · used in **pen grasp**
- **Freer's elevator:** reflect the gingiva surrounding a tooth before extraction · easy to use · thin ends
- **Desmotomes:** straight or curved
 - **Straight** → anterior teeth of the upper jaw · **curved** → the rest of the upper teeth and **all** lower teeth



Fig. 13 — Molt no. 9 periosteal elevator: pointed end (left) for the interdental papilla, broad end (right) for stripping periosteum off bone.

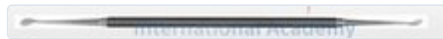


Fig. 14 — Round-ended Molt periosteal elevator.

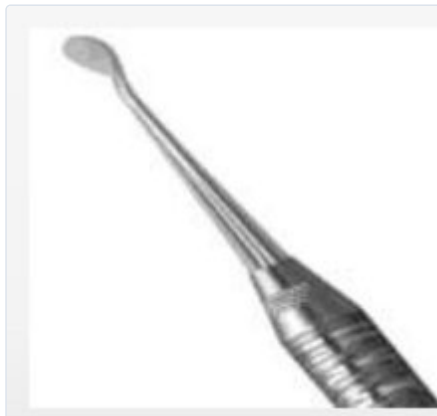


Fig. 15 — Round-ended Molt — working end close-up.



Fig. 16 — No. 1 Woodson periosteal elevator — small and delicate.



Fig. 17 — Howarth's periosteal elevator — strips mucoperiosteum from bone, used in pen grasp.



Fig. 18 — Freer's elevator — thin ends, reflects gingiva before extraction.



Fig. 19 — Desmotomes — straight and curved patterns.

3.1 The three reflection strokes

Table 2 — Reflecting periosteum from the flap

Stroke	End used	Verdict
Prying motion	Pointed end	Reflects the dental papilla
Push stroke	Broad end	★ Most efficient — reflects periosteum off underlying bone
Pull / scrape stroke	Either	Most likely to tear the mucosa



Fig. 20 — Flap reflection in progress — periosteum lifted cleanly off buccal bone.

★ EXAM PEARL

Push = efficient, pull/scrape = torn flap. The pairing "**Molt no. 9 · sharp end papilla · broad end bone · push stroke**" is the standard four-part answer on periosteal reflection.

§4 Retracting soft tissue

- **Purpose:** good vision + access → retract **cheek · tongue · mucoperiosteal flaps**
- **Improvised retractor:** the periosteal elevator is often used to retract soft tissue once the flap is raised

Table 3 — Retractors and what each is for

Instrument	Design	Retracts
C-shaped retractor	Plastic C	Cheek
Cheek retractor	Plastic, two arms	Cheeks & lips
Austin's retractor	Right-angled blade	Cheek / flap
Minnesota retractor	Broad contoured blade	Cheek + flap together (third-molar surgery)
Seldin retractor	Looks like a periosteal elevator but the end is dull	Designed specifically for soft-tissue flaps
Langenbeck retractor	"L" shaped, long handle; sizes vary by handle length & blade width	Flap edges → visualise deeper layers and structures
Weider retractor	Broad, heart shaped, serrated on one side	Tongue — engaged firmly, retracted medially & anteriorly
Tongue depressor	Broad, flat, rounded blade	Tongue
Mouth mirror	Standard	Tongue (light retraction)
Towel clip	Locking, penetrating points	Tongue for biopsy of its posterior aspect
Skin hook	Fine single/double hook	Skin edges — atraumatic



Fig. 21 — Bar-type soft-tissue retractor.



Fig. 22 — C-shaped retractor — cheek.



Fig. 23 — Cheek retractor in place — cheeks and lips.



Fig. 24 — Austin's retractor — right-angled blade.



Fig. 25 — Minnesota retractor — holds cheek and flap together.



Fig. 26 — Seldin retractor — periosteal profile, deliberately dull end.



Fig. 27 — Langenbeck retractors — “L” shaped, sizes vary by handle length and blade width.



Fig. 28 — Langenbeck in use — flap edges retracted to expose deeper structures.



Fig. 29 — Weider retractor — broad, heart shaped, serrated on one side.



Fig. 30 — Tongue depressor — broad, flat, rounded blade.



Fig. 31 — Towel clip — used on the tongue for posterior biopsy (under LA).

- **Skin hook rationale:** undesirable trauma to skin reduced to a minimum → decreased incidence of wound infection and inflammation → better healing + more desirable **cosmetic result**



Fig. 32 — Skin hooks — single and double; minimise skin trauma.

CAUTION

Towel clip on the tongue: **local anaesthetic must be given in the area where the clip is placed** — the points penetrate tissue.

§5 Controlling haemorrhage & draining abscesses

5.1 Hemostat

- **Indication:** small arteries and veins are cut → bleeding requires more than simple pressure
- **Design:** long delicate beak to grasp tissue · beak face carries **parallel grooves** · straight or curved · available in different sizes
- **Locking handle:** surgeon can let go of the instrument once the vessel is clamped
- **Uses:** controlling bleeding · removing granulation tissue from tooth sockets · picking up small root tips, pieces of calculus, fragments of amalgam restorations or any other small particles dropped into the mouth or wound



Fig. 33 — Hemostats in a range of sizes.



Fig. 34 — Straight and curved patterns.



Fig. 35 — Beak face — parallel grooves.



Fig. 36 — Long delicate beak — grasps tissue.



Fig. 37 — Locking handle — the vessel stays clamped hands-free.

5.2 Electrocautery / thermal cautery

- **Principle:** current passed through a resistant metal wire electrode → heated electrode applied to tissue → haemostasis
- **End point:** applied across the lesion until **slightly pink to pale coagulation** occurs
- **Electrocoagulation:** uses **monopolar** or **bipolar** electrodes

Table 4 — Monopolar vs bipolar

	Monopolar	Bipolar
Electrodes	Active electrode + separate indifferent (return) electrode	Active and return electrodes in a single handheld instrument
Circuit	★ The patient is part of the electrical circuit	Current passes only between the two tips
Tissue affected	Wider	Only a small amount of tissue
Other parts	High-frequency AC generator ★ (over 20,000 Hz) · regulator · foot control	—
Tips	Interchangeable — loops, fine tips, needle tips	Forceps tips



Fig. 38 — Electrosurgical generator.



Fig. 39 — Monopolar pencil with active electrode and interchangeable tips.

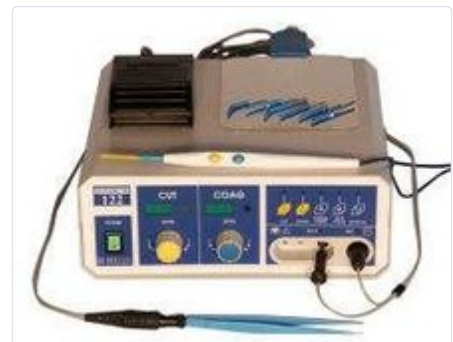


Fig. 40 — Bipolar unit — both electrodes in the handheld forceps.

CAUTION

Cautery precautions: avoid **point** contact with the indifferent electrode · do not place the indifferent electrode over **bony ridges** · **ether** and **cyclopropane** anaesthesia → sparking/explosion risk · operator wears **rubber footwear** · never let the tip touch metal instruments.

5.3 Draining an abscess

- **Lister sinus forceps**: open an abscess by **Hilton's method** → blunt insertion, then open the beaks to break down the loculae
- **Also**: hold small gauze to clean the cavity · dissect out sinus and fistulous tracts in soft tissue



Fig. 41 — Lister sinus forceps.



Fig. 42 — Lister beaks — serrated, blunt, opened to break loculae.

★ **EXAM PEARL**

Terminology trap: true **electrocautery** heats a wire and passes no current through the patient, whereas **electrosurgery**/**electrocoagulation** passes current through the patient (monopolar) — the lecture uses "electrocautery" for both. If an item hinges on "the patient is part of the circuit", the answer is **monopolar electrosurgery**, and the earthing/indifferent-electrode precautions follow from it.

§6 Grasping tissue

- **Why**: during soft-tissue surgery it is frequently necessary to **stabilise soft-tissue flaps**

Table 5 — Tissue-grasping forceps

Forceps	Features	Use
Adson	Fine tips, thumb type	Commonly used tissue forceps — stabilise flaps
Stillies	Shape similar to Adson but ★ longer, 7–9 inches	Working in the posterior part of the mouth
Allis	Locking handles + teeth	Removing large amounts of fibrous tissue — only on tissue that is to be dissected/excised
Russian	Round-ended tissue forceps	Pick up teeth already elevated from the socket · place gauze in the mouth
Babcock's	Broad flared ends, smooth tips	Atraumatic hold on viscera, mucosa, lymph nodes

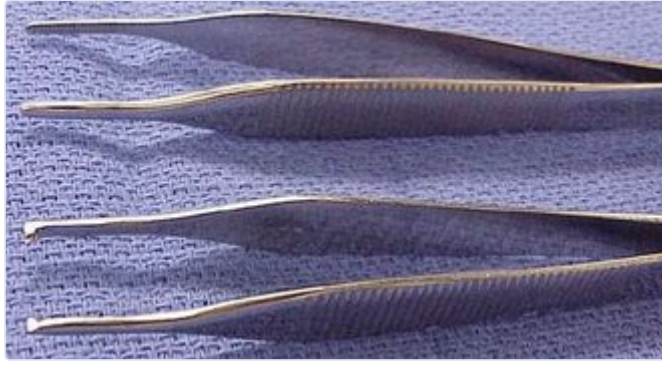


Fig. 43 — Adson tissue forceps.



Fig. 44 — Stillies forceps — Adson shape, 7–9 inches, for the posterior mouth.



Fig. 45 — Allis tissue forceps — locking handles.



Fig. 46 — Allis tips — interlocking teeth (crushing).



Fig. 47 — Russian forceps — round ended.



Fig. 48 — Babcock's forceps — broad flared ends with smooth tips (atraumatic).

★ EXAM PEARL

Traumatic vs atraumatic is the discriminator: **Allis has teeth** → crushing, so it may only touch tissue being removed; **Babcock is flared and smooth** → the atraumatic choice for tissue that must survive.

§7 Removing bone & clearing bony defects

7.1 Rongeur forceps

- **Status:** ★most commonly used bone-removal instrument
- **Action:** sharp blades squeezed together by the handles → cut or pinch through bone
- **Leaf spring:** sits between the handles → beaks reopen on release of hand pressure (one-handed operation)
- **Two designs:** side-cutting forceps · Blumenthal rongeurs — separate patterns for **maxilla** and **mandible**



Fig. 49 — Side-cutting rongeur forceps with leaf spring.



Fig. 50 — Blumenthal rongeur — maxillary pattern.

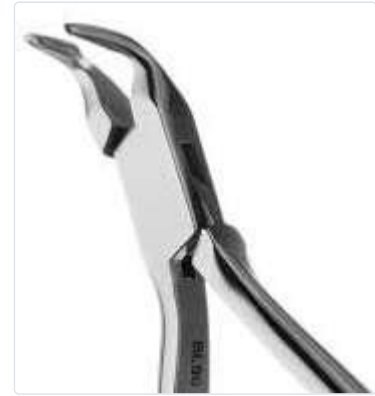


Fig. 51 — Blumenthal rongeur — mandibular pattern.

7.2 Chisel, mallet and osteotome

- **Chisel:** removes bone · **monobevelled** · success depends on the **sharpness** of the instrument
- **Mallet:** nylon-faced version recommended → imparts less shock · less noisy
- **Osteotome:** bone-splitting instrument · **bibevelled**
 - osteotomy cuts — orthognathic surgery, refracturing a malunited fracture · osteoplasty / bone recontouring



Fig. 52 — Chisel and mallet set — nylon-faced mallet recommended.



Fig. 53 — Osteotome — bibevelled, bone-splitting.

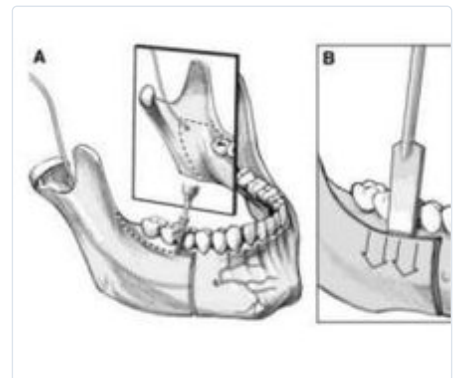


Fig. 54 — Osteotomy cut with osteotome (sagittal split).

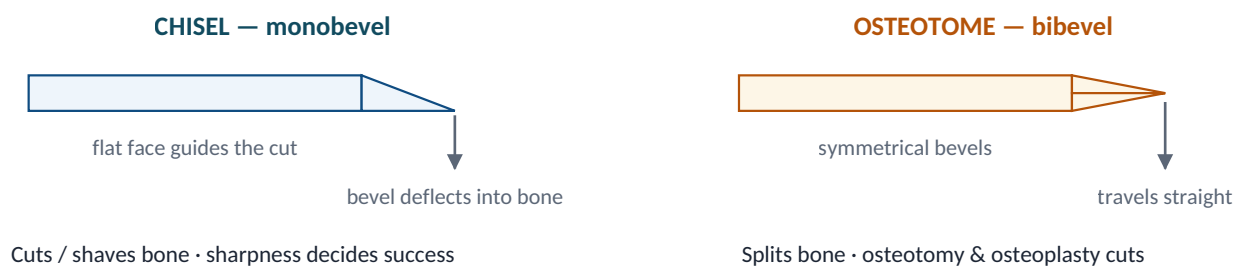


Diagram 2 — One bevel deflects the blade into bone (chisel, cutting); two bevels drive it straight through (osteotome, splitting).

7.3 Bone file, bur and handpiece

- **Bone file:** final smoothing of bone **before suturing** · double ended — small & large end · ★ **removes bone only on the pull stroke**
- **Bur + handpiece:** the technique **most surgeons use** for bone removal in surgical removal of teeth
 - relatively high-speed handpieces + sharp **carbide** burs → remove cortical bone efficiently
 - burs used: **No. 557** (straight fissure) · **No. 703** (tapered fissure) · **No. 8 round**
- **Handpiece requirement:** must **not exhaust air into the surgical field**



Fig. 55 — Bone file — double ended; removes bone only on the pull stroke.



Fig. 56 — Surgical burs: No. 557 (straight fissure) · No. 703 (tapered fissure) · No. 8 round.



Fig. 57 — Surgical handpiece — must not exhaust air into the field.

7.4 Removing soft tissue from bony defects

- **Periapical curette**: angled, double ended → removes **granulomas** · **small cysts** · **granulation tissue from the socket**
- **Overlap**: the hemostat also removes granulation tissue from sockets (§5)



Fig. 58 — Periapical curettes — angled, double ended.

★ EXAM PEARL

"Air-driven handpiece must not exhaust into the field" is asked for its consequence — driven air forced into the tissue planes causes **surgical emphysema** (and can seed infection). Pair it with the irrigation rule (§9): burs cut bone only under a steady stream of sterile saline.

§8 Suturing mucosa & cutting sutures

- **Needle holder**: locking handle + **short stout beak** · ★ **6-inch needle holder recommended for intraoral use**



Fig. 59 — Needle holder — locking handle, short stout beak; 6-inch recommended intraorally.

Table 6 — Needle holder vs hemostat (the classic pair)

	Needle holder	Hemostat
Beak	Shorter & stronger	Long & delicate
Beak face	Cross-hatched → positive grip on the needle	Parallel grooves
Job	Drive the needle; load/unload blades	Clamp vessels; grasp tissue and small fragments



Fig. 60 — Needle-holder beak — short and stout.



Fig. 62 — Hemostat beak — long and delicate.

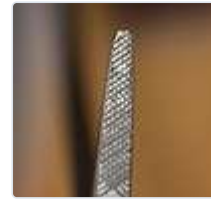


Fig. 61 — Needle-holder beak face — cross-hatched.



Fig. 63 — Hemostat beak face — parallel grooves.

8.1 Holding a needle holder

1. **Thumb & ring finger** inserted through the rings
2. **Index finger** held along the length → steadies and directs the instrument
3. **Second (middle) finger** aids control and the locking mechanism



Fig. 64 — Needle-holder grip: thumb and ring finger in the rings, index along the length, middle finger on the lock.

8.2 Scissors

- **Selection:** various types are used in oral surgery depending on the procedure · straight or curved blades

Table 7 — Scissors in oral surgery

Scissors	Features	Use
Suture scissors	Relatively long handles ; held the same way as the needle holder	Cutting sutures
Dean	Sharp cutting edges, angled handles	Cutting sutures
Iris	Small · sharp pointed · delicate	Soft tissue; very fine skin sutures
Metzenbaum	Blunt-nosed tips	Undermining and cutting soft tissue



Fig. 65 — Dean scissors — angled handles, sharp cutting edges.



Fig. 66 — Suture scissors held like a needle holder.



Fig. 67 — Iris scissors — small, sharp pointed, delicate.



Fig. 68 — Metzenbaum scissors — blunt-nosed, for undermining.

CAUTION

Never cut sutures with soft-tissue (iris/Metzenbaum) scissors — it **dulls the edges** → less effective and more traumatic dissection thereafter.

§9 Access, suction, field preparation & irrigation

9.1 Holding the mouth open

Table 8 — Mouth-opening devices

Device	Mechanism	Indication
Rubber bite block	Rubber block the patient rests his teeth on; place more posteriorly for wider opening	Patient-maintained opening
Molt / side-action mouth prop	Ratchet action — mouth opens wider as the handle is closed	Operator opens the mouth wider when necessary
Mouth gag	Broad serrated blades rest on the occlusal surfaces of the molars; instrument opened with slow, gradual force	★ Forcefully open mouth in trismus · keep mouth open under GA



Fig. 69 — Rubber bite blocks — adult and child.



Fig. 70 — Bite block in place — sited posteriorly for wider opening.



Fig. 71 — Molt / side-action mouth props — ratchet action.



Fig. 72 — Mouth gag — broad serrated blades rest on the molars.

9.2 Suction

- **Purpose:** blood, saliva and irrigating solutions must be suctioned from the operating site → good visualisation
- **Surgical suction tip:** smaller orifice → allows suctioning of tooth sockets when needed
- **Fraser suction:** hole in the handle portion, covered as the requirement dictates → variable suction control
- **Plastic suction tips:** also available (disposable)



Fig. 73 — Surgical suction tip — small orifice for tooth sockets.



Fig. 74 — Fraser suction — hole in the handle, covered as required.



Fig. 75 — Disposable plastic suction tips.



Fig. 76 — Suction unit with collection jars and foot control.

9.3 Sterile transfer, field preparation and draping

- **Transfer forceps:** heavy forceps to move instruments from one sterile area to another
 - usually **right-angled with heavy jaws** → extraction forceps can be moved and small items handled without dropping

- **Swab holder:** long blades expanded at the ends forming an **oblong tip**
 - hold a swab and clean the area of operation · swab the throat in an unconscious/GA patient · press on the **tonsillar bed to arrest haemorrhage** · hold the tongue in an unconscious patient
- **Towel clip:** holds drapes together around the patient · stabilises suction tubes, micromotor etc. · holds & retracts the tongue in an unconscious patient
 - locking handle + finger and thumb rings · sharp or blunt action ends · **curved points penetrate towels & drapes**



Fig. 77 — Transfer forceps — right-angled, heavy jaws.

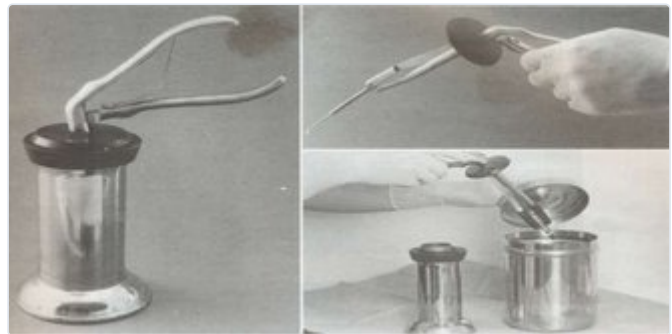


Fig. 78 — Transfer forceps in use — moving items between sterile areas.



Fig. 79 — Swab holder — long blades with an oblong tip.



Fig. 80 — Towel clips — locking, with curved penetrating points.

9.4 Irrigation

- **Kit:** ★ large plastic syringe + blunt 18-gauge needle with sterile saline
- **During bone removal:** steady stream of sterile saline → cools the bur · prevents bone-damaging heat build-up
- **Increases bur efficiency:** washes away bone chips · lubrication
- **At completion:** irrigate the site **before suturing**



Fig. 81 — Irrigation: large plastic syringe with a blunt 18-gauge needle.

§10 Dental elevators

- **Status:** one of the **most important** instruments in the extraction procedure
- **Three parts:** blade · shank · handle



Fig. 82 — Parts of a dental elevator: blade (works the tooth) · shank (transmits force) · handle (palm grasp).

10.1 Indications

- **Reflect** the mucoperiosteal membrane
- **Luxate and remove** teeth that **cannot be engaged by the beaks of forceps**
- **Remove** roots, fractured or carious teeth
- **Loosen** teeth prior to application of forceps
- **Split** teeth in which grooves have been cut
- **Remove** intraradicular bone



Fig. 83 — Partially erupted wisdom tooth — forceps beaks cannot engage it.



Fig. 84 — Retained roots on radiograph — an elevator indication.

Table 9 — Elevator types named in the lecture

Elevator	Form	Typical role
Coupland	Straight, gouge-shaped blade; sizes 1–3	Luxation — driven along the periodontal space
Cryer's	Triangular blade, paired left & right	Retained roots, interradicular bone
Warwick James	Set of three — straight, right, left	Fine luxation, third molars
Apexo	Angled blade, paired	Root apices / root fragments
Winter's crossbar	Triangular blade + T-shaped crossbar handle	High-torque removal of roots and interradicular bone
Crane pick	Sharp pointed pick	Engages a purchase point cut in the root
Root tip pick	Fine delicate tip	Teasing out small root tips



Fig. 85 — Coupland elevator — straight gouge-shaped blade.



Fig. 86 — Coupland in use — driven along the periodontal space.



Fig. 87 — Cryer's elevators — triangular blades, paired left and right.



Fig. 88 — Cryer in use — engaging interradicular bone.



Fig. 89 — Warwick James elevators — straight, right and left.



Fig. 90 — Apexo elevators — angled, paired, for root apices.



Fig. 91 — Winter's crossbar elevator — T-handle, high torque.



Fig. 92 — Crane pick — engages a purchase point cut in the root.



Fig. 93 — Root tip picks — fine delicate tips.

CAUTION

Winter's crossbar generates very high torque through the crossbar handle — uncontrolled use risks fracturing the alveolus or displacing the root into an adjacent space. Controlled force with a defined fulcrum applies to every elevator.

§11 Extraction forceps

- **Function:** remove the tooth from the **alveolar bone**
- **Three components:** **beaks** · **hinge** · **handle**
- **Beak design:** adapts to the tooth root at the **junction of the crown and root** · beak **width varies** with the tooth it is intended for
- **Grip varies:** handles are held differently depending on the position of the tooth to be removed (maxillary vs mandibular, anterior vs posterior)
- **Two styles:** **American type** · **British type** (British = handles in line with beaks, "vertical" pattern)



Fig. 94 — Components of an extraction forceps: beaks · hinge · handle.



Fig. 95 — Grip for maxillary anterior teeth.



Fig. 96 — Grip for maxillary posterior teeth.



Fig. 97 — Grip for mandibular teeth.



Fig. 98 — British-pattern forceps in the hand.



Fig. 99 — American-pattern forceps.



Fig. 100 — British pattern — handles in line with the beaks.

Table 10 — Forceps numbers given in the lecture

Arch	Tooth	Forceps
Maxilla	Incisors, canines, premolars (single-rooted)	Universal ★no. 150
Maxilla	Premolars	no. 150A
Maxilla	Molars (3-rooted)	no. 53 (R & L — buccal beak pointed for the buccal bifurcation)
Maxilla	Molars, cowhorn pattern	no. 88
Maxilla	Third molars	Upper third molar forceps
Maxilla	Roots / deep access	Bayonet forceps
Mandible	Anteriors (universal)	no. 151 — <i>the slide prints "no. 150"</i>
Mandible	Molars	★no. 17
Mandible	Molars, cowhorn pattern	Lower cowhorn (no. 23) — beaks engage the buccal/lingual bifurcation
Mandible	Third molars	Mandibular third molar forceps



Fig. 101 — Maxillary universal forceps no. 150.



Fig. 102 — Beak adapting to the root at the crown-root junction.



Fig. 103 — Maxillary premolar forceps no. 150A.



Fig. 104 — Upper molar forceps no. 53 — right and left.

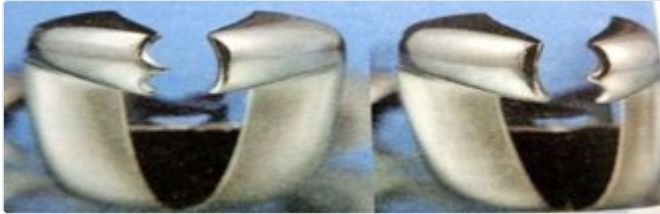


Fig. 105 — Molar beaks compared — pointed buccal beak for the buccal bifurcation.



Fig. 106 — Maxillary forceps applied clinically.



Fig. 107 — Upper third molar forceps.



Fig. 108 — Bayonet forceps — roots and deep access.



Fig. 109 — Upper cowhorn forceps no. 88.



Fig. 110 — Mandibular anterior (universal) forceps — no. 151 (the slide prints "150").



Fig. 111 — Mandibular molar forceps no. 17.



Fig. 112 — Mandibular third molar forceps.



Fig. 113 — Lower cowhorn forceps — beaks engage the bifurcation.

★ **EXAM PEARL**

Slide correction: the deck labels the mandibular anterior forceps "no. 150". No. 150 is the **maxillary** universal forceps; the **mandibular** universal is **no. 151**. Remember the pair **150 = upper**, **151 = lower** — verify against Peterson before the exam.