Biopsy, Curettage and Electrocautery

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• Obtaining written informed consent is advisable before any surgical procedure

• The patient should be informed about the reasons for the procedure, possible risks of adverse effects, and possible complications
• Protocols are essential for the handling of sharps, prevention and management of needlestick injuries, and correct disposal of sharps boxes
• Disinfect the skin surgery trolley
• Set up the trolley
Lignocaine is the most commonly used local anaesthetic agent for skin infiltration.

Adding adrenaline (epinephrine)
- Prolongs the duration of anaesthesia
- Restricts blood loss
- Decreases the rate of absorption and therefore:
  - Reduces peak concentration in the blood
  - Decreases systemic toxicity; and
  - Increases the safety margin
• There is a risk of necrosis secondary to vasoconstriction of end-arterioles if adrenaline is used when anaesthetising fingers, toes, the tip of the nose, ears, and penis

• However, supplemental adrenaline has been used safely when anesthetising the nose and periphery of the ear
Using adrenaline for digital block is controversial. However, evidence suggests that lignocaine with adrenaline may be used for digital anaesthesia except for patients with:

- peripheral vascular disease
- connective tissue disease
- Raynaud’s disease
- antiphospholipid syndrome
• Anaesthesia may be achieved by topical eutectic mixture of local anaesthetics (EMLA)

• Depth of anaesthesia is approx 5 mm after application of EMLA under occlusion (after 2 hours). This is sufficient when performing skin biopsy on the knees, elbows, chest, abdomen, face and genitals

• Topical anaesthesia may be less effective in areas of thick epidermis and dermis, e.g. back, palms and soles
• Although rare, hypersensitivity reactions to local anaesthetic agents may be due to additives (e.g. preservatives)
Pain/discomfort

- Pain or discomfort associated with administration of local anaesthetics may be due to:
  - trauma of needle penetrating the skin
  - sudden stretching of tissue due to local anaesthetic
  - the local anaesthetic agent itself
Minimising discomfort

Pain can be minimised by:

- using a small-gauge needle
- slowly administering the anaesthetic to reduce sudden expansion of tissue
- avoiding injecting the area with an excess of the anaesthetic agent
- warming the agent to body temperature before administration
- pre-cooling the skin with ice cubes
- using a topical anaesthetic
- buffering the anaesthetic with bicarbonate
• **Pain can be minimised by:**
  - distracting the patient
  - pinching the skin, which stimulates local sensory nerves, partially blocking transmission of other painful stimuli
  - counter-irritating the skin by very gently scratching the skin approximately 1–2 cm from the injection site while injecting
  - vibration of the skin
Minimising discomfort

- Injections on the palmoplantar aspect are very painful. If the lesion is close to the side of the palm/sole, the needle can be introduced through the dorsal skin.

- When injecting on the palmoplantar surface, it is better to inject a small amount of local anaesthetic, wait for the area to be anaesthetised, and then push the needle in further.
Prior to injection

- Check for underlying vessels and nerves in the biopsy area in order to avoid them
- Disinfect the relevant skin area and vial (e.g. using alcohol wipes)
- Scrub for 10 seconds with 70% isopropyl alcohol
- Draw anaesthetic solution using a large-gauge needle, then change to a small-gauge needle before injection
• Infuse into the intralesional area slowly, then move slowly from the treated to untreated areas to reduce the pain of reinsertion
Shave biopsy

- In a shave excision, the elevated part of a cutaneous growth is shaved off
- Common indications include seborrhoeic keratoses and skin tags
- Shave biopsies are also taken of superficial lesions where depth is not required to provide the pathologist with maximum surface area for examination
Lesion suitable for removal by shaving

Cutaneous horn
Punch biopsy

• A disposable biopsy punch is used to remove a cylinder of skin tissue, including the epidermis, dermis, and sometimes the subcutaneous fat.

• Can be used for any solid lesion or small vesicle that can be contained within the punch.

• A 2 mm punch is adequate for non-facial lesions; however, in granulomatous conditions or those with atypical features, ≥3 mm biopsies are preferable.
– After anaesthetising, tighten the skin around the biopsy site by stretching it in a direction perpendicular to the resting skin lines
– Punch biopsy of the scalp should be performed parallel to the direction of emergence of hairs from the scalp
– The punch is inserted using rotational movements until a “give” is felt where it enters the subcutaneous tissue
Biopsy punches
Tray for punch biopsy
Advantages:

- Ease of performance
- Obtaining uniformly shaped tissue

Disadvantages:

- The material obtained may be insufficient
- Often biopsy may not include deeper tissue
• **Involves taking part of the tissue to confirm the diagnosis**

• **Commonly used when an inflammatory dermatosis of deeper tissue is suspected and where excisional biopsies cannot be conducted because of the size or location of the lesion**

• **The incision may extend into the surrounding normal skin**
For a non-excisional biopsy it is best to obtain normal skin, part of the lesion, and the intervening transition zone.

If the centre of the lesion appears to be most severe or malignant, the centre can be biopsied.
Excisional biopsy

- The whole lesion is removed via an elliptical excision, with a margin of normal skin, down to the subcutis

- Recommended excision margins:
  - 3 mm for BCC
  - 4 mm for SCC
  - 1 mm initially for suspected melanomas
  - Definitive excision margins of confirmed melanoma depend on the histological depth of the tumour

- Excision is the preferred method for a suspected melanoma
Excisional biopsy

Ellipse drawn around the lesion

Aseptic technique followed
• Langer’s lines, and relaxed skin tension lines (RSTL) of Borges, show the direction in which excisions can be closed with least tension\(^1\)

• Scars parallel to Langer’s lines and Borges’ RSTL generally give the best cosmetic outcome\(^1\)

• Asking patient to smile can help identify RSTL lines on the cheek\(^2\)

Seborrhoeic keratosis
Cutaneous horn
Squamous cell carcinoma
Seborrhoeic keratosis
Possible complications

- Bleeding
- Infection
- Scarring
- Slow healing
- Wound dehiscence
In the following cases, incisions may carry an increased risk of bleeding:

- On the scalp, face or genitals
- In elderly patients with atrophic skin
- In patients taking medications that affect clotting (e.g. anticoagulants, antiplatelet agents, PLAVIX)
- In patients with bleeding disorders
Controlling bleeding

• Application of pressure for about 2–3 minutes usually stops oozing
• Electrocautery/hyfrecation
• Fibrous absorber (e.g. calcium/sodium alginate dressing) helps reduce bleeding and promotes wound healing
• On the scalp, apply the ring of a large artery forceps around the biopsy site, with pressure
Reducing risk of scarring

- Note any history of hypertrophic scars or keloidal tendency
- Areas with good vasculature (e.g. the face, genitals, mucosa) usually heal quickly, with little scarring
- Some sites have higher rates of keloidal scarring (e.g. sternum, deltoid region and upper back)
- Using fine sutures reduces scarring
- Occlusive dressings for at least 4 days promote healing of sutured wounds
- Uncovered wounds have more scab formation, more infection and worse scarring
Reducing risk of infection

- The chances of secondary infections are low, if aseptic precautions are taken

- **Systemic antibiotics may be considered for patients:**
  - with diabetes mellitus
  - with extensive eczema
  - who are debilitated
  - with artificial or abnormal heart valves
  - on immunosuppressants

- **Prophylaxis could be considered for all procedures below the knee, for wedge excisions of the lip and ear, and lesions in the groin**

- **Apply antiseptic ointment on a wound before an occlusive dressing**
Specimen handling

- Volume of formalin required for optimal fixation is approximately 10 times the volume of the biopsy specimen
- Ensure minimal handling of tissue when transferring to the formalin container. Take care not to crush the specimen with forceps.
- Beware using a skin hook or needle
- When removing or sampling many lesions, photographing and numbering the lesions and removing/sampling in numbered order assists in matching them accurately to the histology report
When choosing sutures and needles, consider:

- the location of the lesion
- the amount of tension exerted on the wound

Absorbable sutures lose most of their tensile strength in less than 60 days. They are generally used for buried sutures and do not require removal.

Non-absorbable sutures maintain most of their tensile strength for more than 60 days. They are generally used for skin surface sutures.
Vertical mattress suture
Buried suture: step 1
Buried suture: step 2
• Sutures should be removed within 1–2 weeks, depending on the anatomical location

• The risk of suture marks, infection, and tissue reaction is reduced by prompt removal, but premature removal risks dehiscence and spread of the scar

• The greater the tension across a wound, the longer the sutures should remain in place
<table>
<thead>
<tr>
<th>Location</th>
<th>Approximate time to suture removal (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face</td>
<td>5–7</td>
</tr>
<tr>
<td>Neck</td>
<td>7</td>
</tr>
<tr>
<td>Scalp</td>
<td>10</td>
</tr>
<tr>
<td>Trunk and upper extremities</td>
<td>10–14</td>
</tr>
<tr>
<td>Lower extremities</td>
<td>14–21</td>
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</tbody>
</table>
Suture removal
• After suture removal, scars are susceptible to skin tension, which may be the trigger for hypertrophic scarring

• A study found that paper tape, applied to Caesarian section scars after suture removal and left in place for 12 weeks, prevented hypertrophic scar formation
Vitamin E and aloe vera creams

• There is little evidence to support the use of topical vitamin E cream to reduce scar formation\(^1\)

• Effects of aloe vera on wound healing are mixed. Some studies report positive results; others show no benefit or potential negative effects\(^2\)
Curettage

Technique of tissue removal using a curette

Purpose
– obtain biopsy
– debulk lesion
– remove lesion

Methods
– Simple
– Serial
– With diathermy
– With cryotherapy
Technique

**Simple curettage**
- Local anaesthetic
- Mark out lesion
- Firmly fix skin
- Scraping motion inwards to centre of lesion
- Identify and remove extensions of lesion
- Stay within the dermis
- Haemostasis
- Dressing, Post-op instructions

**Serial curettage**
- Multiple passes of the curette
- Cautery to base of defect
- Repeat
Blunt vs disposable curettes

- **Blunt curette** – does not create false planes – finds plane of natural cleavage eg. for seb ks, BCCs

- **Sharp curette** – sharp, cutting
Curettage

Lesion selection
– Suitable pathology
– Easily distinguished from normal skin
– Size (usually < 1cm)

Site considerations
– Skin thickness – not for thin areas
– Ability to fix skin – scalp, back, forehead
– Resultant scar
– Implications of recurrence
Indications

**Benign lesions**
- Seb keratoses
- Solar keratoses
- Molluscum contagiosum
- Pyogenic granuloma
- Milia
- Warts
- Sebaceous hyperplasia

**Malignant lesions**
- BCC
  (<1cm, sBCC or nBCC, not previously treated, non risk sites)
- Bowens
- SCC’s (in general not suitable)
Side-effects/ Complications

**Short-term**
- Pain
- Bleeding
- Delayed healing
- Infection

**Medium-long term**
- Scar – hypertrophic
- Hypopigmentation
- Recurrence
“An agent or instrument used to destroy abnormal tissue by burning, searing, or scarring, including caustic substances, electric currents, lasers, and very hot or very cold instruments. “

- **Electrical**
  - Electrocautery = hot wire
  - “Diathermy” = electrosurgery (Electrocoagulation, Electrodesiccation, Electrofulguration, Electrosection, Electrolysis)

- **Chemical**
  - TCA 35 – 50%
  - Aluminium chloride hexahydrate 20% DRICLOR
  - Ferric subsulphate (Monsel’s solution)
  - Silver nitrate
Electrosurgery

- **Diathermy**
  - Monopolar without dispersive plate
  - Monopolar with dispersive plate
  - Bipolar
  - Voltage/ Amperage / Damped / AC DC

- **Result depending on above variants:**
  - Electrodesiccation
  - Electrofulguration
  - Electrocoagulation
  - Electrosection
  - Electrolysis
Electrofulguration

- “fulgur” – act of lightning
- monoterminal without dispersive plate
- Electrode not in contact with tissue, spark produced
- Superficial effect, least damaging
- Coagulation

Figure 8: Fulguration
Electrodesiccation

- “disiccare” – to dry
- Monopolar mode without dispersive plate
- Electrode in direct contact with tissue
- No spark
- Evaporates and chars tissue
- Deeper effect – degree damage related to contact time
- “Epilation” is a variant

Figure 6: Desiccation
Electrocautery

- Heating filament tip
- Low V High A DC (battery)
- Heat – protein denaturation, tissue coagulation
- Pt not in electrical loop

- For pacemakers, Implantable Cardiac Defibrillators, non-conductive tissue cartilage, bone, nose
Indications

– As for curettage plus
  – Skin tags
  – Dermatosis papulosa nigra
  – Small seb ks
  – Sebaceous hyperplasia
  – Comedones – closed & open
  – Spider naevi
  – Cherry angiomas
  – Telangiectasia
  – Syringoma
Side-effects/ Complications

Immediate / short term
– Pain
– Electric Shock – patient or operator
– Burns – avoid alcoholic prep
– Pacemakers / implanted defibrillators – use electrocautery or bipolar / get technician
– Hearing aids - remove
– As for curette – red, swollen, scab, wound, infection, delayed healing

Long-term
– Scar – hypertrophic
– Pigment – hyper, hypo
– Failure
– Recurrence
Curettage and Diathermy of Bowen’s disease

- Cure rates 85-95+%  
- 2-3 cycles

- CONTRAINDIATED TUMOURS
  - Eyebrow
  - Hair bearing area
  - Recurrent tumour
Curettage and Diathermy of BCC

- Cure rates 85-95+%  
- 2-3 cycles

- CONTRAINDICATED TUMOURS
  - Large > 1-2 cm
  - Site – poor result, higher recurrence, thin dermis
  - Morphoeic, recurrent, ill-defined
  - Penetrating into fat or other deeper tissue
  - Unknown diagnosis
- **Ointment**
  - Vaseline petroleum jelly
  - Chlorsig/ Bactroban ung
  - then

- **Non-stick dressing**
  - Kaltostat
  - Melolin
  - Gauze

- **Later when dry scab**
  - Medipulv

- **Patient instructions**
  - Consent – scar, pigmentary disturbance, f/u

  - Non-stick absorbent dressing or Medipulv for a few days when still moist weepy