Epworth Dermatology

Epworth HealthCare

Biopsy, Curettage and Electrocautery

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Informed consent

- 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

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Handling sharps

- Protocols are essential for the handling of sharps, prevention and management of needlestick injuries, and correct disposal of sharps boxes

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Preparation

- **Disinfect the skin surgery trolley**
- **Set up the trolley**

DermNet NZ. Surgical procedures. 2009. http://dermnetnz.org/doctors/lesions/procedures.html

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Local anaesthesia for skin biopsy

- **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**

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Using adrenaline with lignocaine

- **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**

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Using adrenaline with lignocaine

- **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**

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Topical anaesthesia

- **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**

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Adverse events

- **Although rare, hypersensitivity reactions to local anaesthetic agents may be due to additives (e.g. preservatives)**

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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**

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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**

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Minimising discomfort

- **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**

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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

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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

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Injection technique

- Infuse into the intralesional area slowly, then move slowly from the treated to untreated areas to reduce the pain of reinsertion

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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

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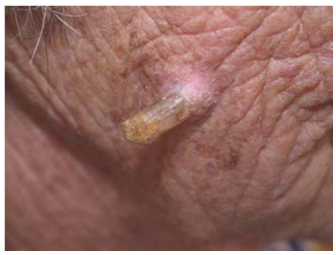
Lesion suitable for removal by shaving



Cutaneous horn

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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

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Punch biopsy techique

- 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

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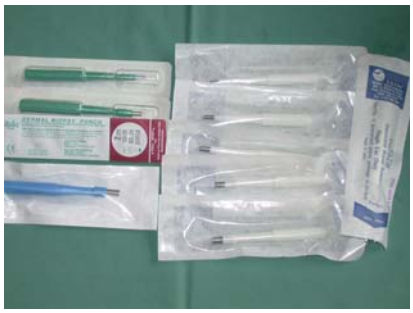
Biopsy punches



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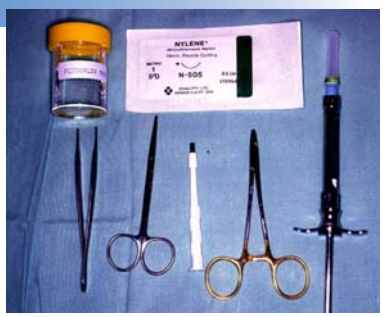
Tray for punch biopsy



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Punch biopsy

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Advantages:

- Ease of performance
- Obtaining uniformly shaped tissue

Disadvantages:

- The material obtained may be insufficient
- Often biopsy may not include deeper tissue

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Incisional biopsy

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- 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

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Non-excisional biopsies

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- 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

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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

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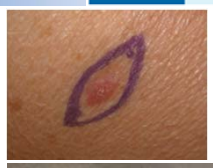
Excisional biopsy

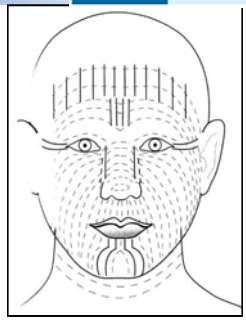
Ellipse drawn around the lesion



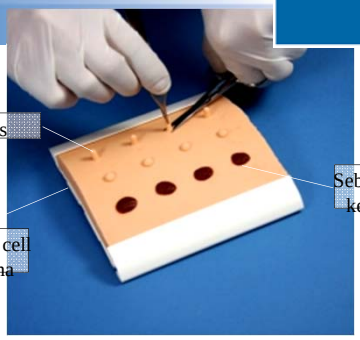
Aseptic technique followed

Direction of closure of excisions

- 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]



A. Penington, *Local Flap Reconstruction 2e*,
© McGraw-Hill Australia, 2010



http://www.limbsandthings.com.

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Possible complications

- Bleeding
- Infection
- Scarring
- Slow healing
- Wound dehiscence

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Bleeding

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

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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

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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

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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

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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

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Suturing

- 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

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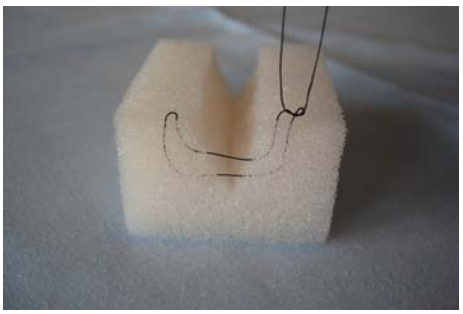
Vertical mattress suture



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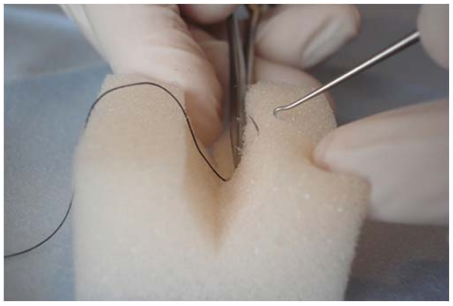
Buried suture: step 1



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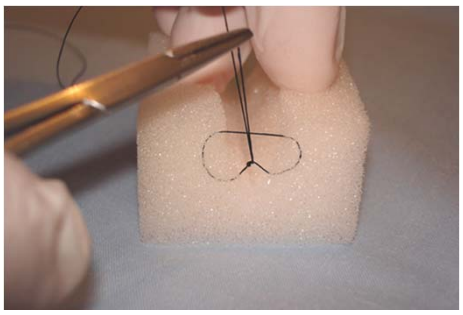
Buried suture: step 2



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Time to suture removal

- **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**

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Time to suture removal

Location	Approximate time to suture removal (days)
Face	5–7
Neck	7
Scalp	10
Trunk and upper extremities	10–14
Lower extremities	14–21

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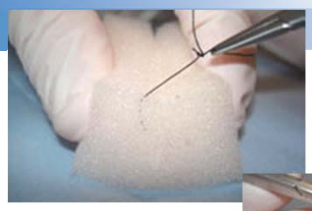
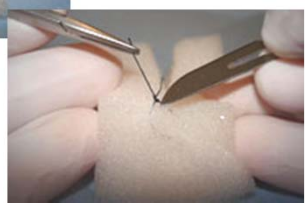
Suture removal





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Use of tape to prevent scarring

- **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**

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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]

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Curettage

Technique of tissue removal using a curette

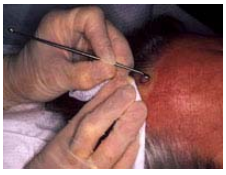
Purpose
- obtain biopsy
- debulk lesion
- remove lesion

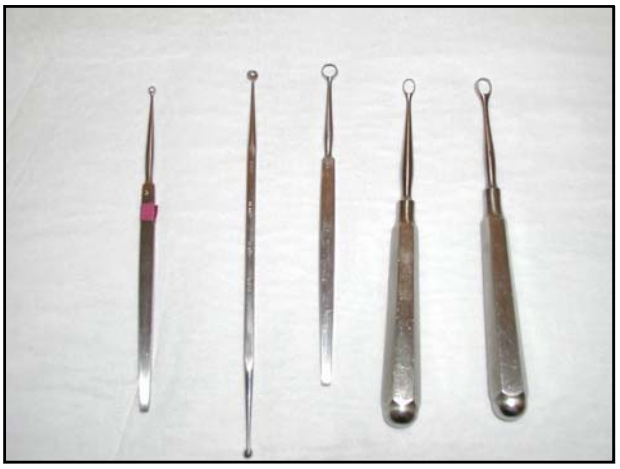
Methods
- Simple
- Serial
- With diathermy
- With cryotherapy

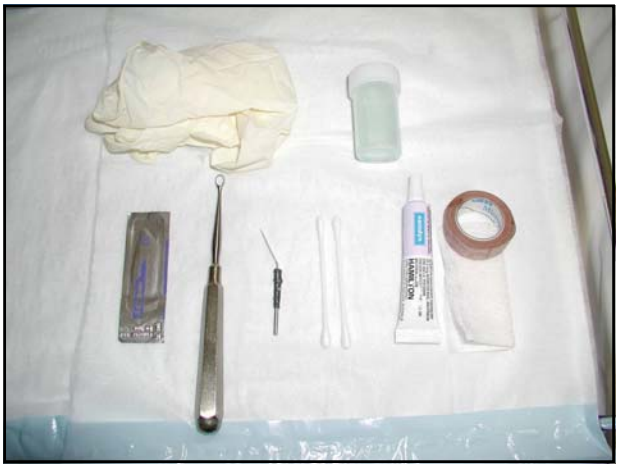
Technique

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

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

Curettage

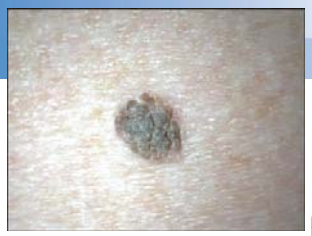
Lesion selection
- Suitable pathology
- Easily distinguished from normal skin
- Size (usually < 1cm)

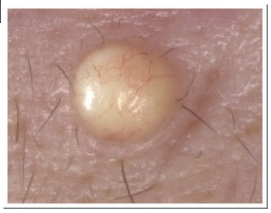
Site considerations
- Skin thickness – not for thin areas
- Ability to fix skin – scalp, back, forehead
- Resultant scar
- Implications of recurrence

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

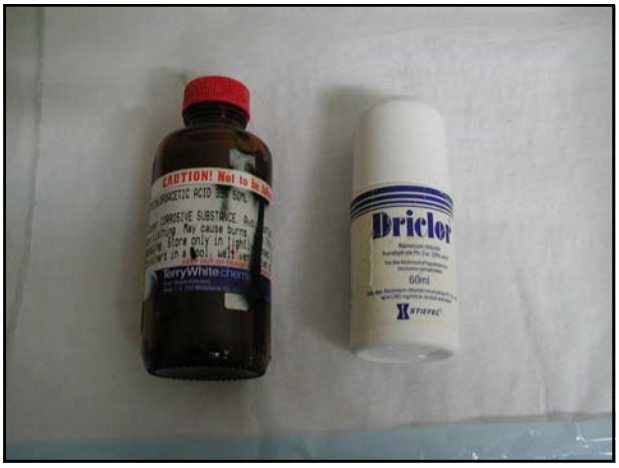
Short-term
- Pain
- Bleeding
- Delayed healing
- Infection

Medium-long term
- Scar – hypertrophic
- Hypopigmentation
- Recurrence

"Cautery"

"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, Electrodessication, Electrofulguration, Electrosection, Electrolysis)
- **Chemical**
  - TCA 35 – 50%
  - Aluminium chloride hexahydrate 20% DRICLOR
  - Ferric subsulphate (Monsel's solution)
  - Silver nitrate



Electrosurgery

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- **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

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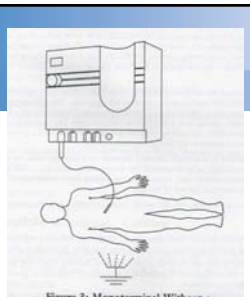

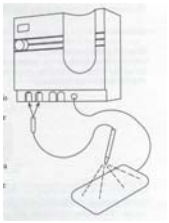

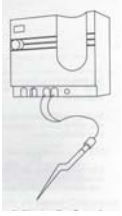

Electrofulguration

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

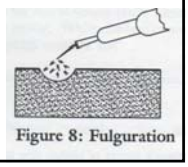

Figure 8: Fulguration

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

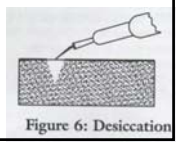

Figure 6: Desiccation

Electrocautery

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

- For pacemakers, Implantable Cardia 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

- CONTRAINDICATED 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

Dressing & Post-op

- **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