



Dr Peter Chapman-Smith

Phlebologist, Whangarei

Surgitron Skin Removals - Concurrent Workshop

Saturday, 11 June 2011

Start 4:30pm

Duration: 60mins

Monet

 **Rotorua GP CME 2011**
New Zealand Medical Association

General Practice Conference & Medical Exhibition



09-12 June 2011 | Energy Events Centre | Rotorua

ELLMANN "SURGITRON" WORKSHOP GPCME ROTORUA JUNE 2011



Dr Peter Chapman-Smith

Skin and Vein Clinic

DISCLAIMER

This workshop is supported by Medtel NZ .
Medtel NZ have provided some clinical slides,
and Ellmann shouted me a fine meal in Paris once.



RF Surgery (Radiosurgery)

- Versatile tool for minor cosmetic procedures
- High frequency AC radiowaves through the body
- Generate heat, vaporise cells
- No painful muscle contraction or nerve stimulation
- Incision, excision, ablation – selected wavelengths
- Electrodes remain cold
- Less post operative pain
- Less fibrous scarring
- No suturing required
- Local anaesthesia

Surgitron EMC

Distinct Benefits for Your Practice and Your Patients

- **Precision** – create precise incisions in a variety of tissue structures³
- **Versatility** – no other energy-based technology has the surgical versatility of ellman^{®2}
- **Quick Recovery** – with less tissue destruction, healing is hastened and your patients can recover quickly⁴
- **Decreased Post-Operative Pain** – radiowave surgery causes less trauma⁵
- **Decreased Post-Surgical Edema** – low temperature equals less tissue destruction⁶
- **Less Burning or Charring of Tissue** – radiowave surgery minimizes burning of tissue, unlike laser or electrosurgery¹
- **Less Smoke and Plume** – Allows better visualization⁷ while reducing odor

Features

- Intuitive, user-friendly design
- Cost-effective reusable handpieces
- Convenient reusable antenna plate that does not require skin contact
- Footswitch activated with optional fingerswitch control



Four Distinct Waveforms for Optimum Results

1. Fully Filtered (Cut)



- Micro-smooth cutting
- Negligible lateral heat
- Minimal cellular destruction
- Best cosmetic results. Fastest healing^{4,6}
- Ideal for skin incision and biopsy



3. Partially Rectified (Coag)



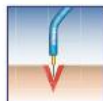
- Coagulation / Shrinkage
- Hemostasis with controlled penetration
- Ideal for cutting with hemostatic control



2. Fully Rectified (Cut/Coag)



- Cutting with hemostasis
- Ideal for sub-cutaneous tissue dissection and planing. Especially useful in vascular areas while producing minimal amounts of lateral heat and tissue damage



4. Fulguration



- Maximum penetration and hemostasis
- Ideal for intentional tissue destruction



Shown with Surgitron® EMC, Surg-e-Vac™ and Surgi-Cart™

Surgitron® EMC Specifications

Dimensions	Output frequency
Height: 6.25 inches	3.8 MHz
Width: 8 inches	
Depth: 9 inches	Line Voltage
Weight: 9.25 lbs	110/120/220/240 volts
Output Power	Line Frequency
RMS: 90 Watts	50 - 60 Hz
Peak: 140 Watts	



Clinical Citations

1. Olivar, A.C., et al, Ann Clin Lab Sci. (1999); 29(4): p281-5.
2. Data on file.
3. Naimis, J., Chapter 48, "Radiowave Surgery in Oral and Maxillofacial Surgery", in Bell, W., et al, Distraction Osteogenesis of the Facial Skeleton, 2007, p30-37.
4. Bridenstine, J.B., Derm Surgery (1999); vol 24, p397-400.
5. Ericson, E., et al, The Laryngoscope (2007); vol 117, p654.
6. Alarcon, M., Derm Surgery (2002); vol 28, p735-738.
7. Eremia, S., et al, Dermatol Surg (2001); 27: p1052-1054.



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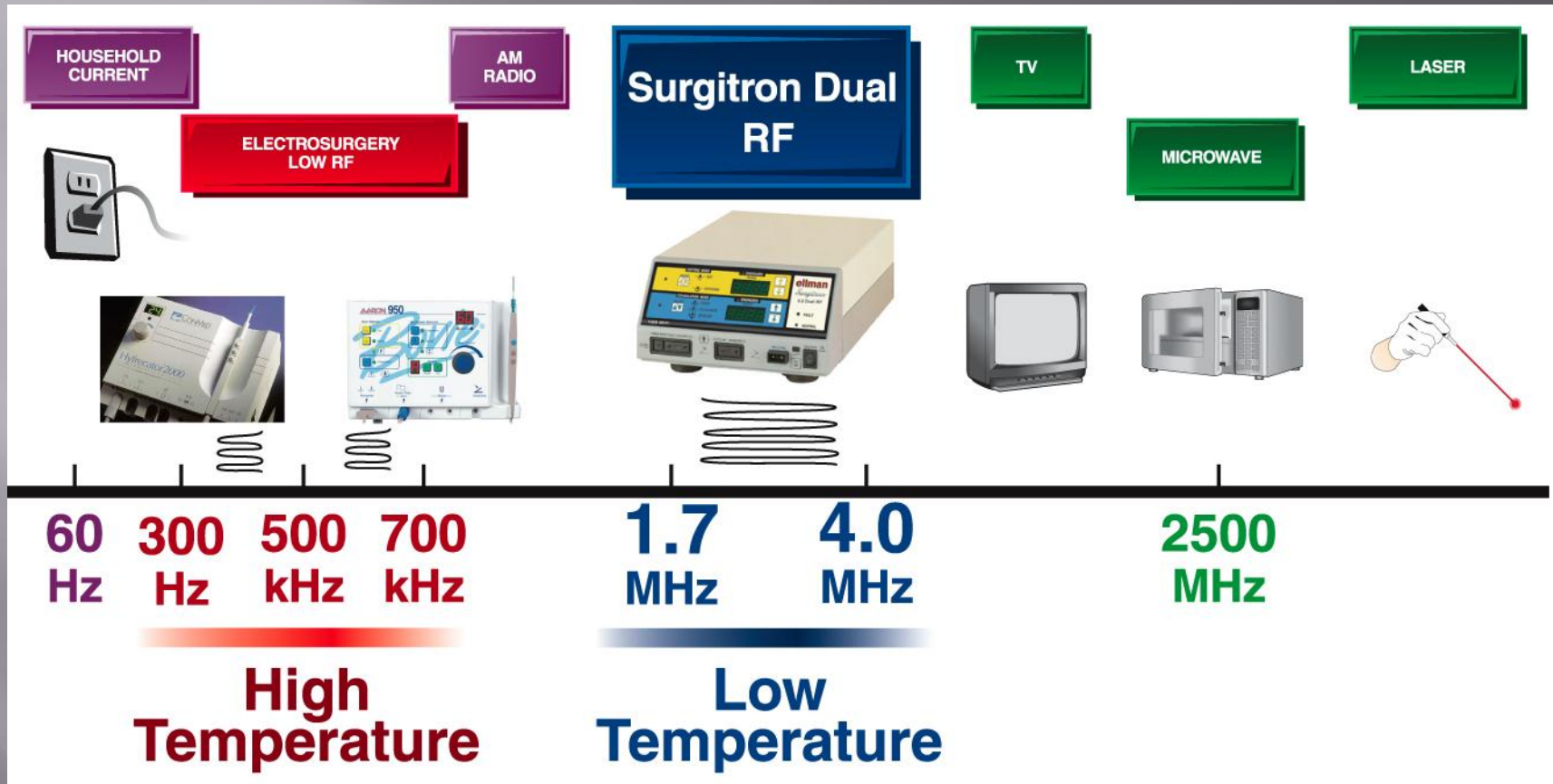
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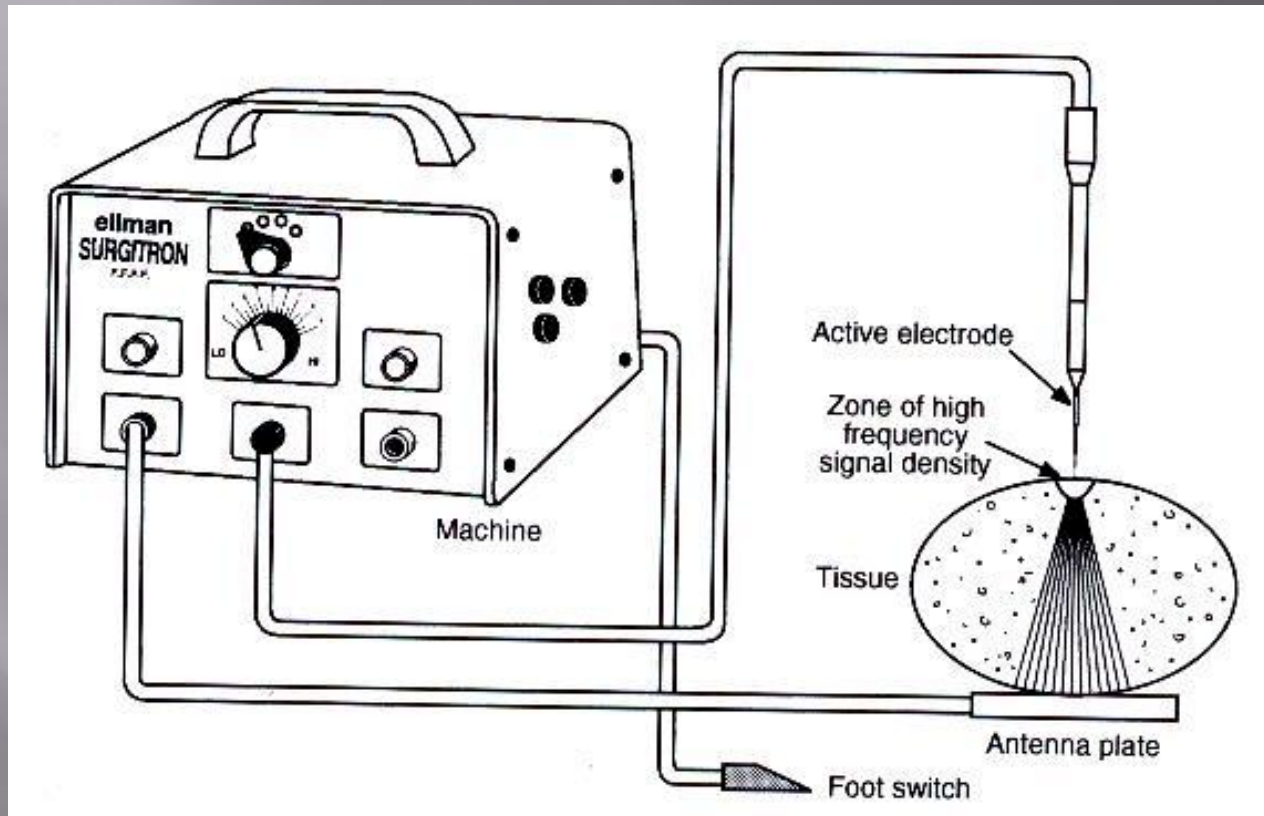
Surgitron Dual RF



The Full Spectrum



Mechanism of Action



Pure frequency of 3.8 Mega Hz

The Current



- ▣ Not “grounded”
- ▣ Recycles
- ▣ Less power for cutting .
- ▣ Current flows into the patient, increasing Pt voltage, lessens gradient of flow to the Pt.
- ▣ Less “push” of current flow, less performance.

Waveforms

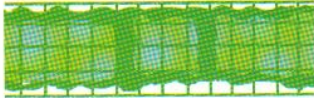
- ▣ High frequency sine wave output
- ▣ Fully rectified... cuts best
- ▣ Partial rectified... electrocoagulates
- ▣ Filtered fully rectified...cts. , uniform, haemostasis.
- ▣ Different tissue effects.

Waveforms

Tissue can be delicately removed or totally ablated.

Selection of waveform and current intensity allows excision, ablation, coagulation or fulguration.

1. PURE FILTERED WAVEFORM (Pure Micro-Smooth Cutting)



Skin Incisions, Biopsy, Cysts, Abscesses, Tumors, Cosmetic Repairs, Development of Skin Flaps, Skin Tags, Nevi, Keratosis, Oculoplastic Procedures, Blepharoplasty, Aponeurotic Repair, Levator Resection.

2. FULLY RECTIFIED WAVEFORM (Blended Cutting and Coagulation)



Skin Tags, Papilloma, Keloids, Keratosis, Verrucae, Basal Cell Carcinoma, Nevi, Skin Tags, Fistulas, Epithelioma, Cosmetic Repairs, Cysts, Abscesses, Development of Skin Flaps, Oculoplastic Procedures.

3. PARTIALLY RECTIFIED WAVEFORM (Hospital-Type Control of Bleeders)



Hemostasis, Epilation, Telangiectasia.

4. FULGURATING CURRENT (Spark-Gap Type Tissue Destruction)



Basal Cell Carcinoma, Papilloma, Cyst Destruction, Tumors, Verrucae, Hemostasis.

5. BIPOLAR (Bipolar Coagulator)



Precise, Pinpoint Coagulation for Micro-Surgery. Pinpoint Hemostasis in any field - wet or dry.

Waveforms

Type 1 90/10 cut & coag : Cosmetic cutting. Minimal lateral heat avoiding carbonisation and cellular destruction

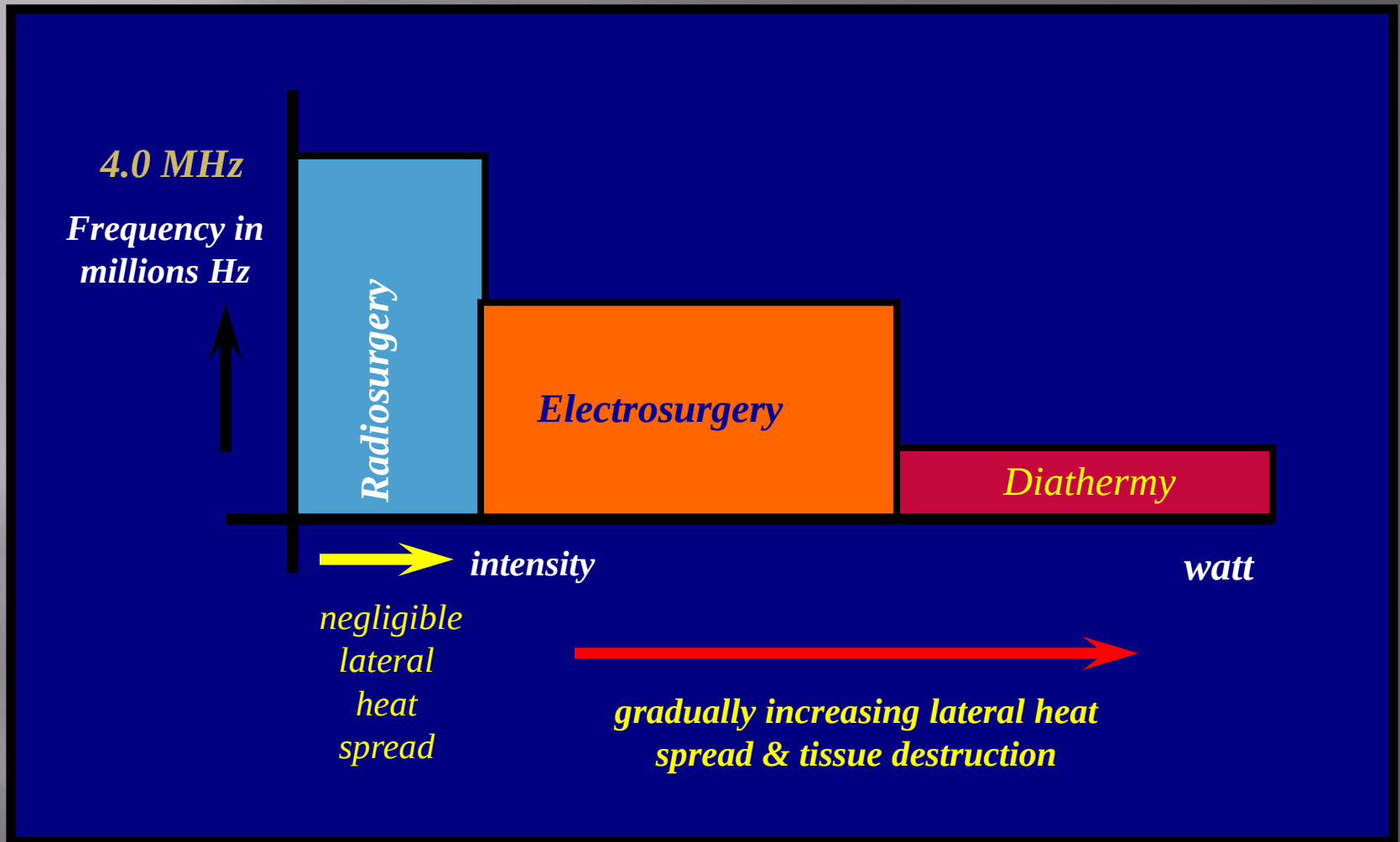
Type 2 50/50 cut & coag : More collateral heat

Type 3 10/90 cut & coag : Haemostasis and coagulation

Type 4 Fulguration : Destruction of tissue by desiccation

Type 5 Bipolar : Microsurgery and haemostasis in wet areas
Combination of first 3 waveforms. Lower frequency.

Frequency vs. Power Intensity



Aerial Plates

- Passive dispersive electrode
- Return plate
- More reliable results during electrocoagulation and electrosection.

Completes a circuit -starts and finishes in the unit.

Reusable Antenna Plate



- *Passive electrode draws the radio signal back .*
- *Plate best close to the surgical site - less power required .*
- *No bare skin contact -no risk of burning (cf hyfrecators)*

Switches

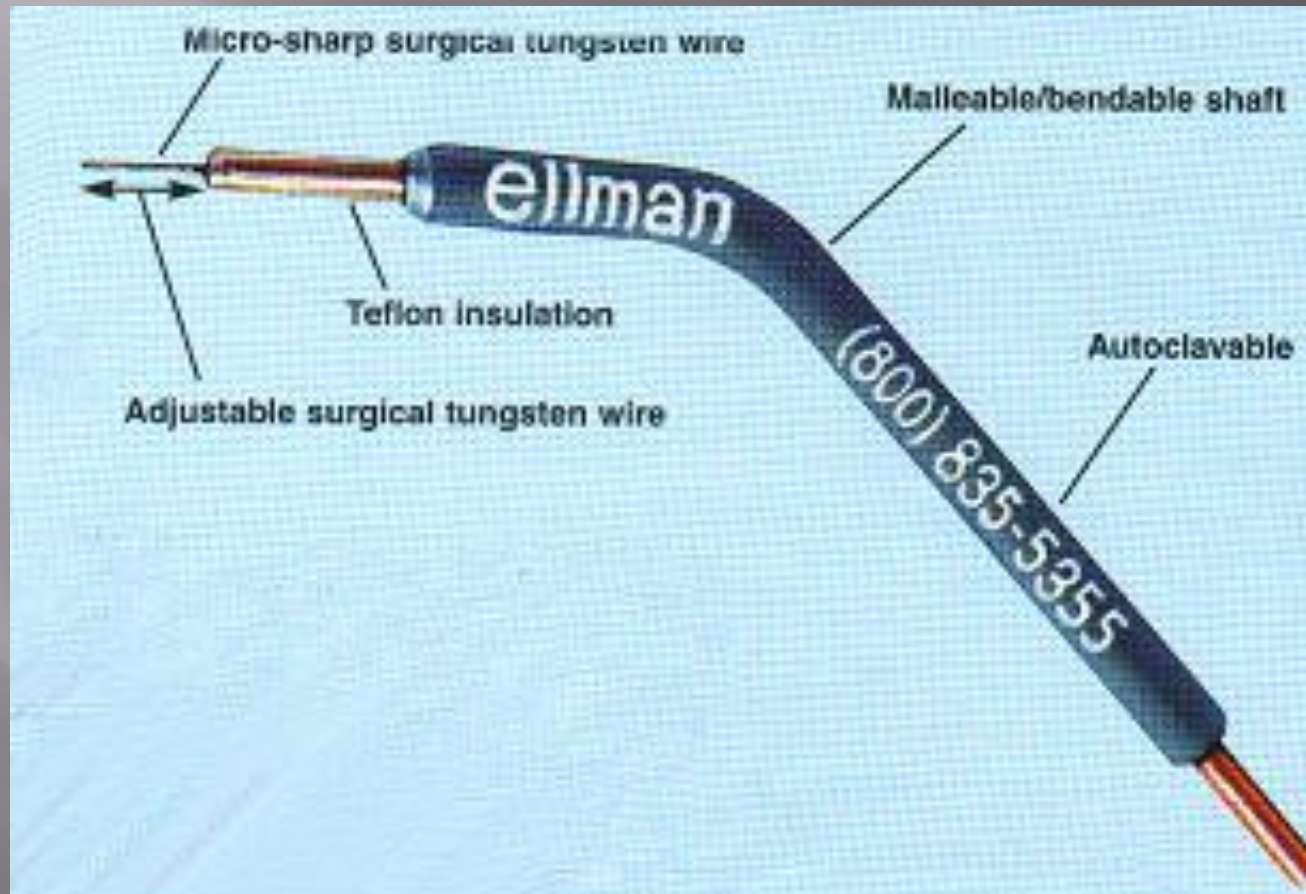
- Finger switches
- Foot pedals



Electrodes



Electrodes



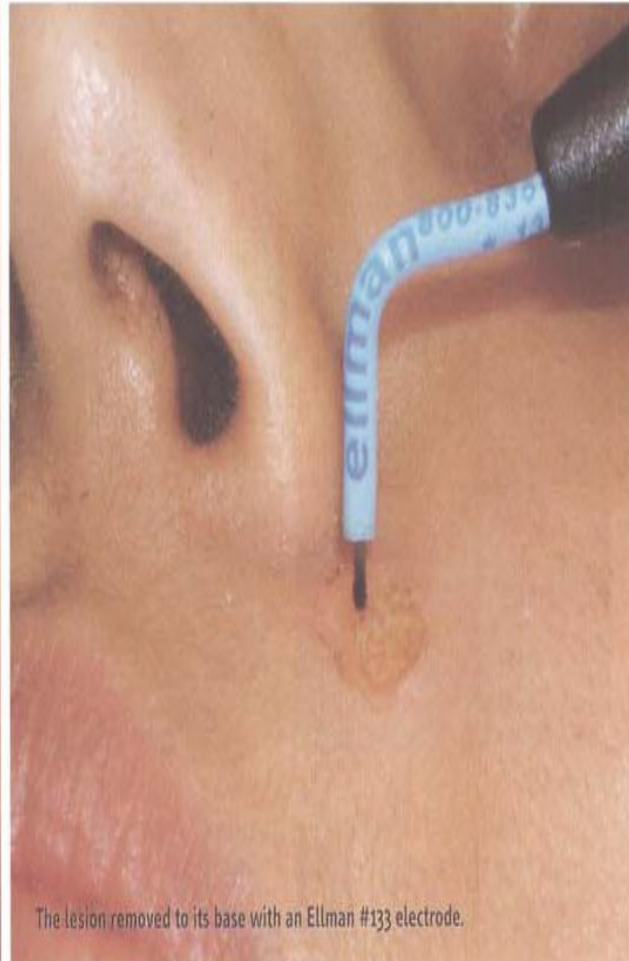
Versatility and Precision



Electrodes



RF Ablation Process



CUTTING & COAGULATION

Atraumatic

No post op pain

No tissue destruction

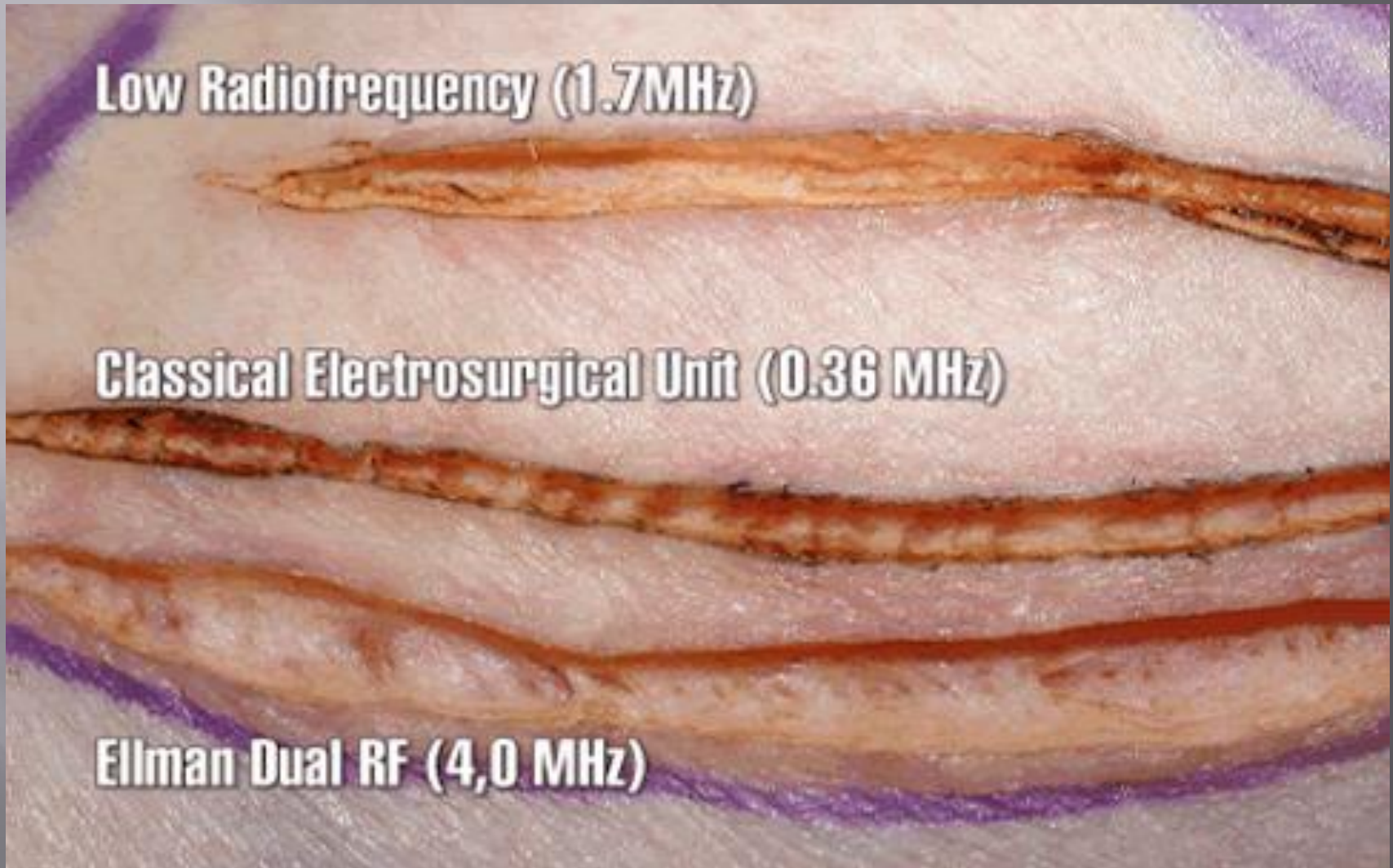
Moist field required

Local anaesthetic

Electrosection.

- Cutting method – wire, scalpel blade
- No manual pressure
- No crushing of tissue

Comparison of Incisions on Soft Tissue

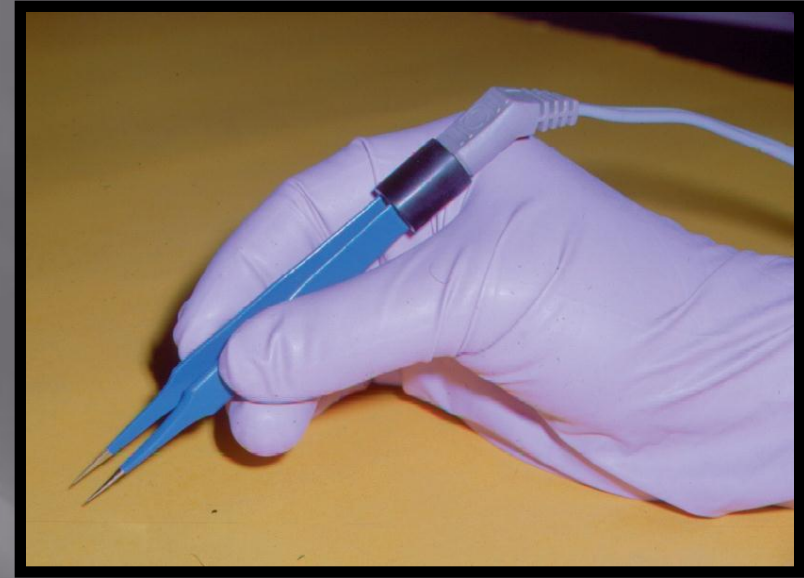


Electrocoagulation

Non volatilising destruction of tissue cells by the passage of a radiofrequency wave.

BIPOLAR COAGULATION

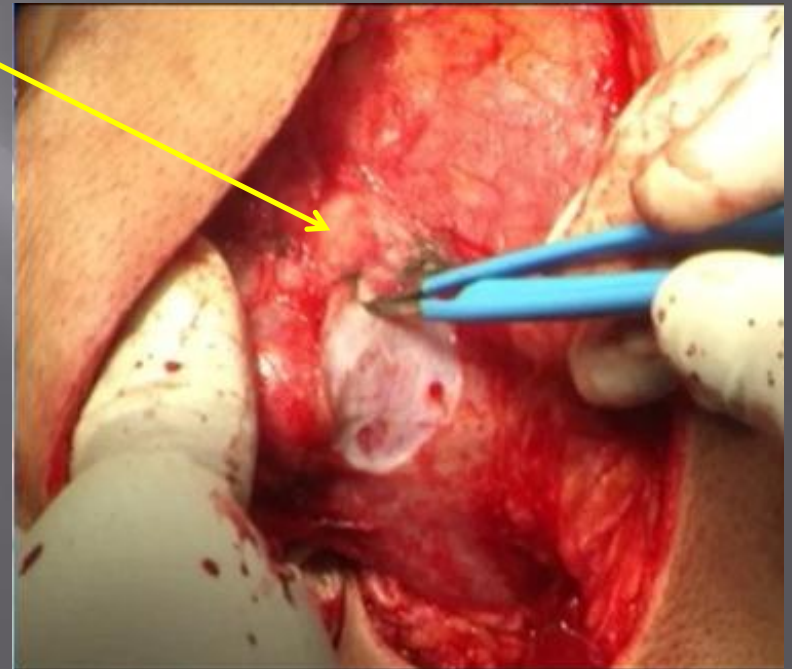
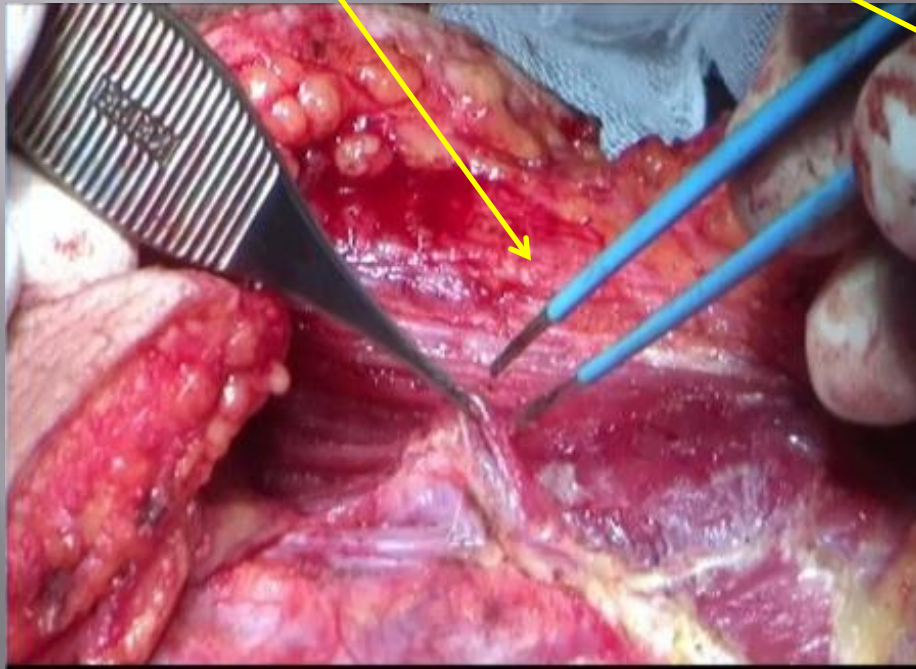
- ✓ *RF between 2 poles of the forceps. No antenna .*
- ✓ *Pin-point coagulation in a wet field*
- ✓ *No tissue adherence to forceps*
- ✓ *No charring or tissue necrosis*
- ✓ *Ideal for coagulation near critical anatomy*



Surgitron Dual RF& S5 units, BIPOLAR waveform operates at 1.7 MHz, with sl. more lateral heat than 4.0MHz (increased coagulation)

Monopolar vs. Bipolar

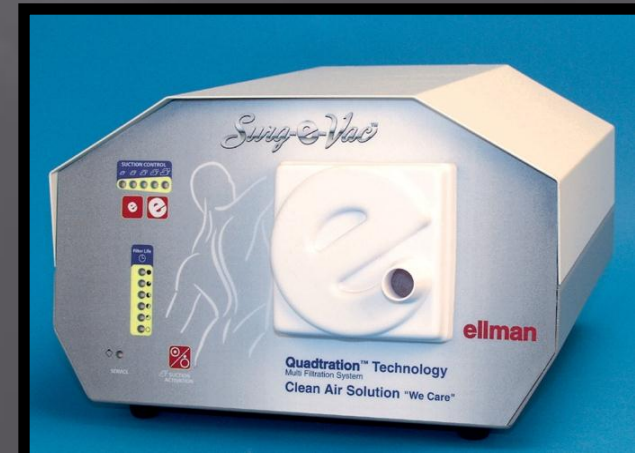
Bipolar Forceps : Precise coagulation between the tips
Monopolar- wide area, less postop bleeding





Smoke Evacuators

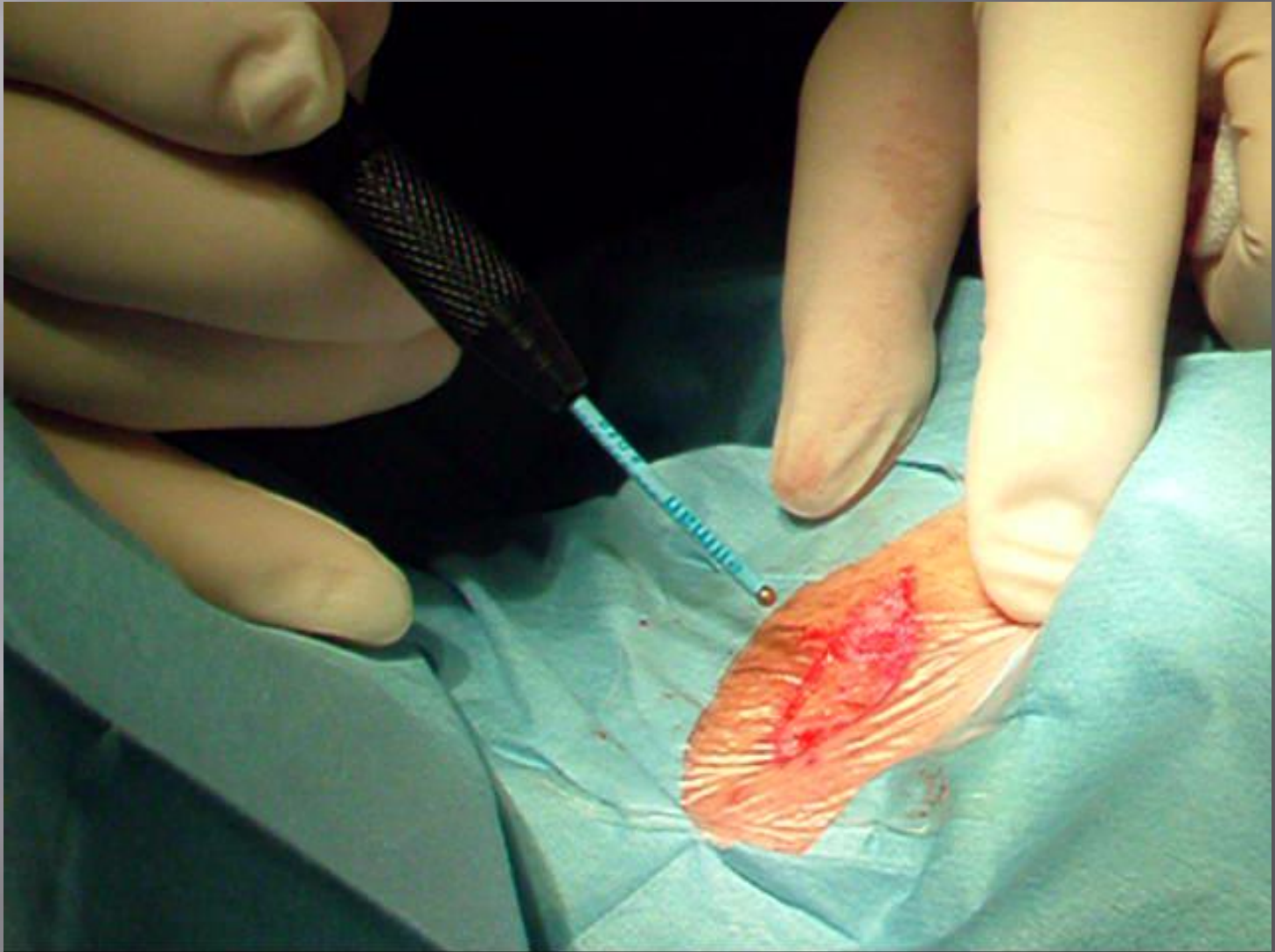
- Plume - risk of viral infection .
- Like ablative laser surgery
- ? Pulmonary damage, particulate fine matter
- Recommended:-
 - Smoke evacuation
 - Masks
 - Adsorptive filters.



Haemostasis

1. Monopolar

*2. Bipolar – beware implanted
defibrillators and pacemakers
- Good for very wet fields*



Equipment

- ▣ Plug into power
- ▣ Aerial plate under patient
- ▣ Handpiece
- ▣ Electrode: size, shape, bendable or rigid
- ▣ Power setting
- ▣ Adequate lighting
- ▣ Local anaesthetic, gloves
- ▣ Skin cleanser/ antiseptic
- ▣ +/- dressings / Hypafix

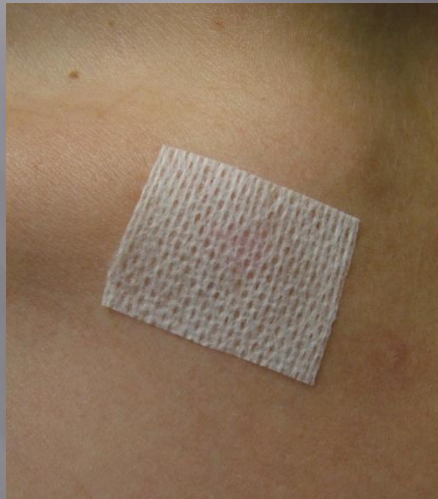
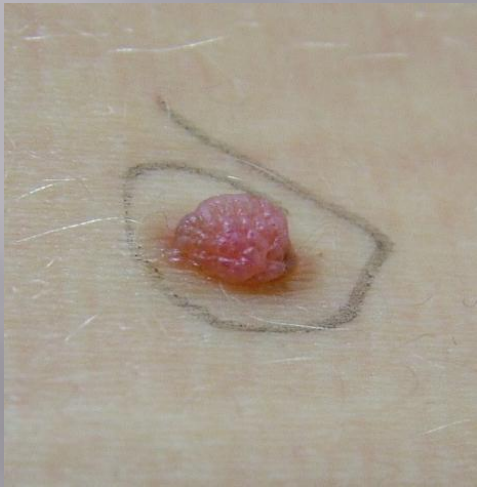


Uses

- ♦ Benign skin tumours
- ♦ BCCs, SCCs , Bowen's Disease
- ♦ Verrucae
- ♦ Trichoepitheliomata
- ♦ Ingrown toenails
- ♦ Spider naevi , vascular naevi , red veins.
- ♦ Electroepilation
- ♦ Snore op – RF palatoplasty
- ♦ Haemostasis – minor surgery
- ♦ Rhinophyma

Mole Removal

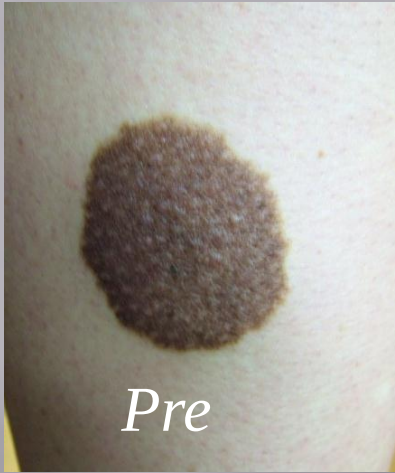




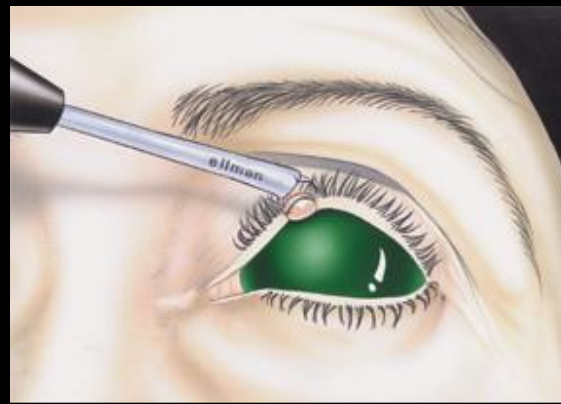
Loop Electrode Biopsy



Congenital Naevus



Corneal Eye Shields

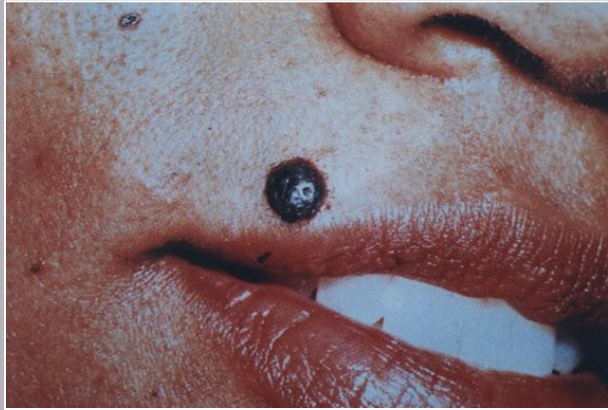


Telangiectasia

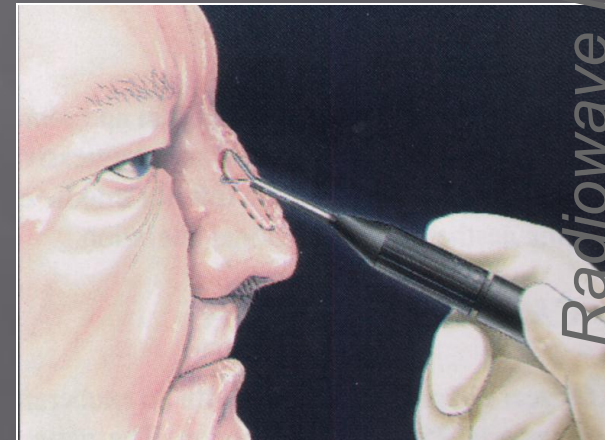


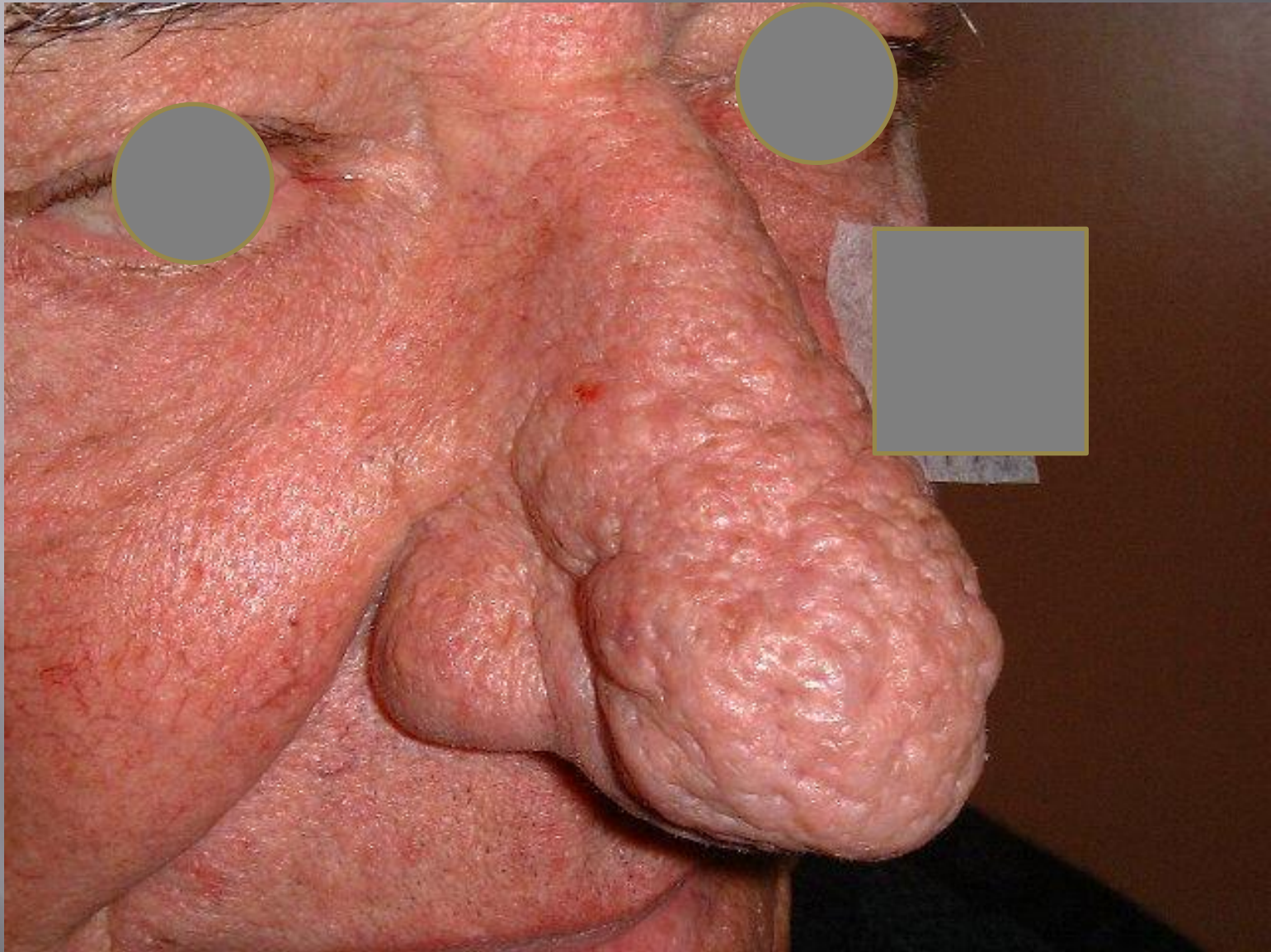
Telangiectasia





Giant Rhinophyma





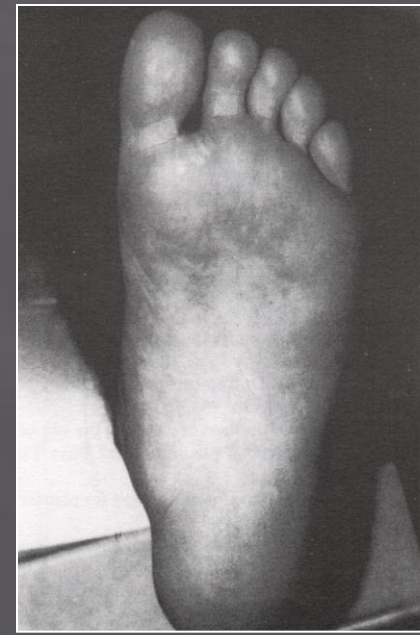


Day 1



Day 30

Plantar Warts



Seborrheic Keratoses





Pre, D2 D30



Snoring Palatoplasty

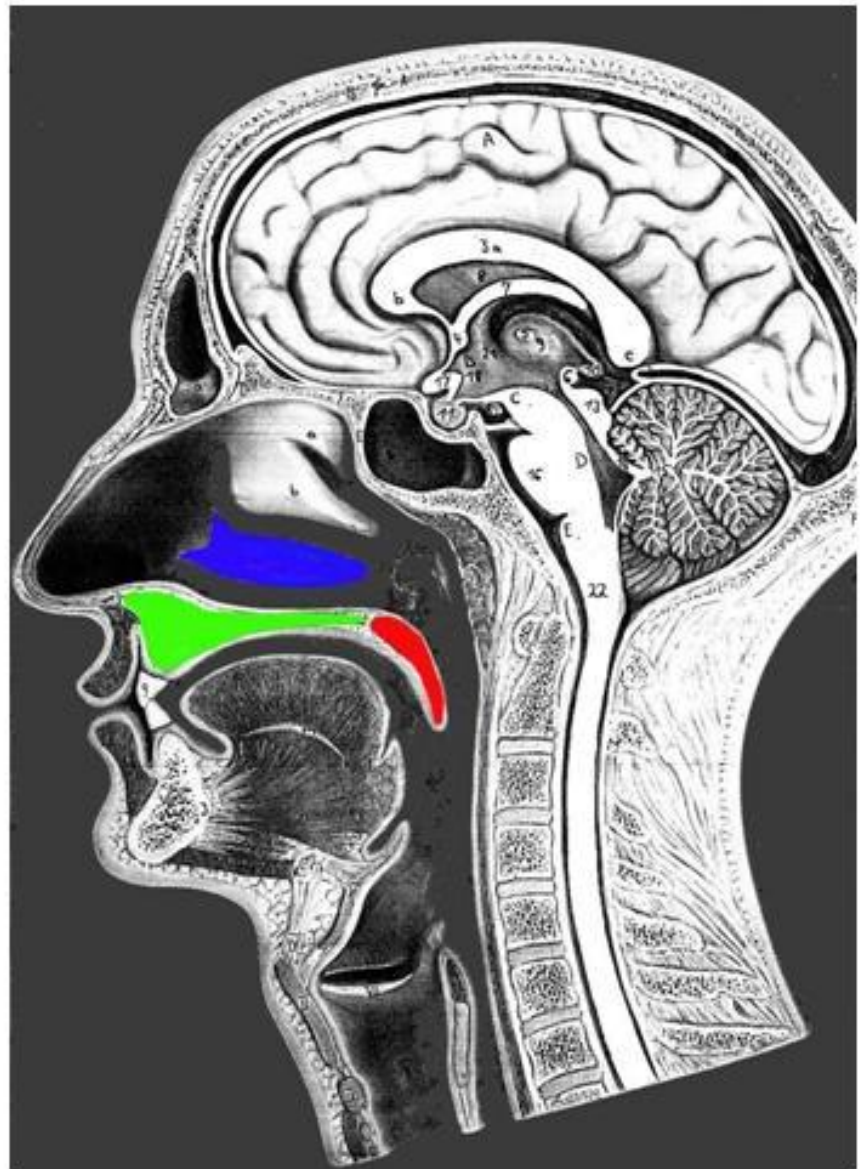
Well established Rx of snoring
Dedicated electrode 45 o
80% success
LA only
Minimal discomfort postop
Outpatient Rx

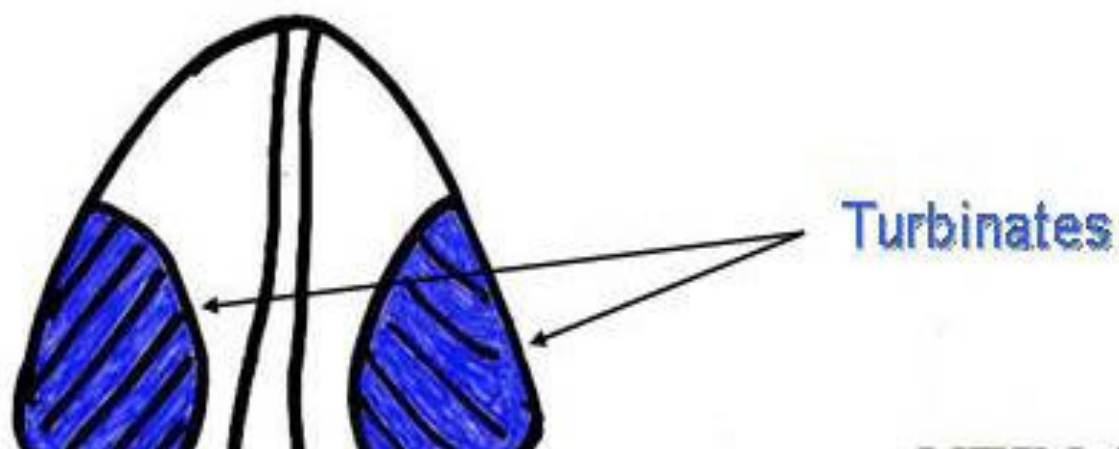
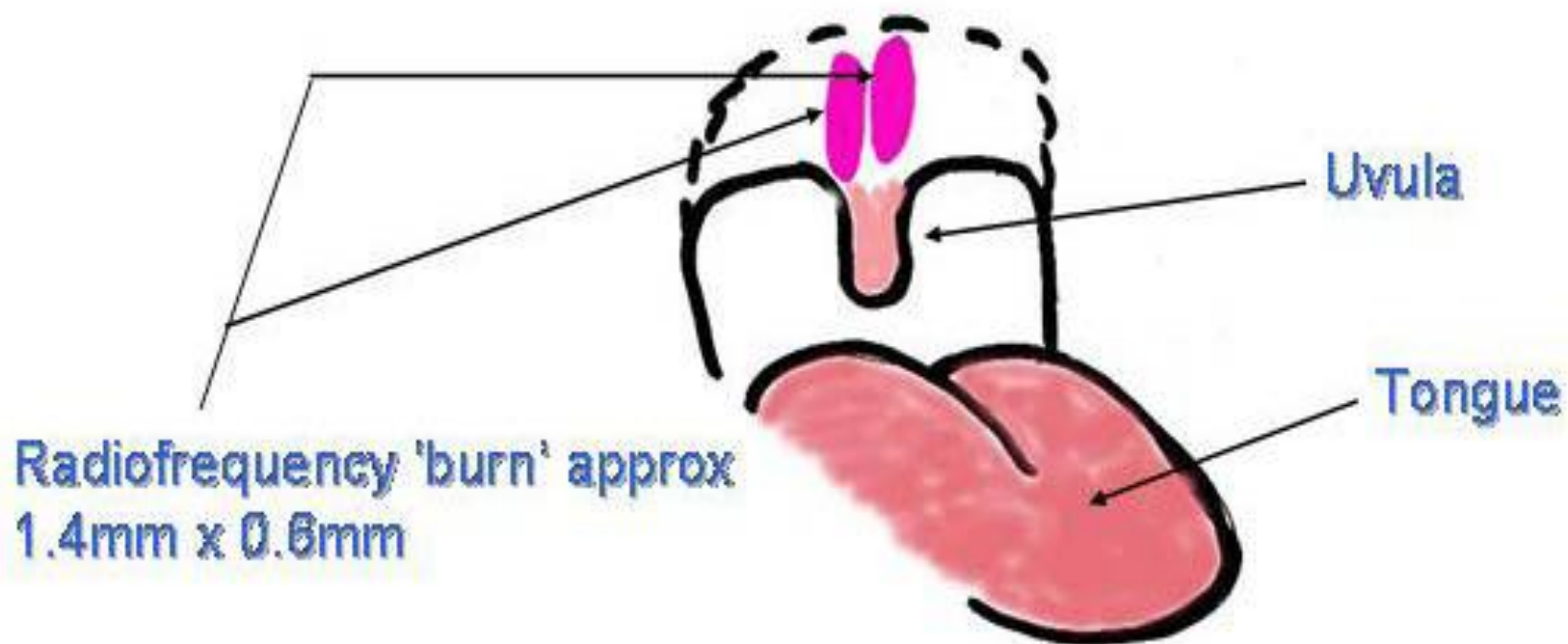
Radiowave Uvulopalatoplasty

 Turbinates

 Hard palate

 Soft palate





Cautery turbinates

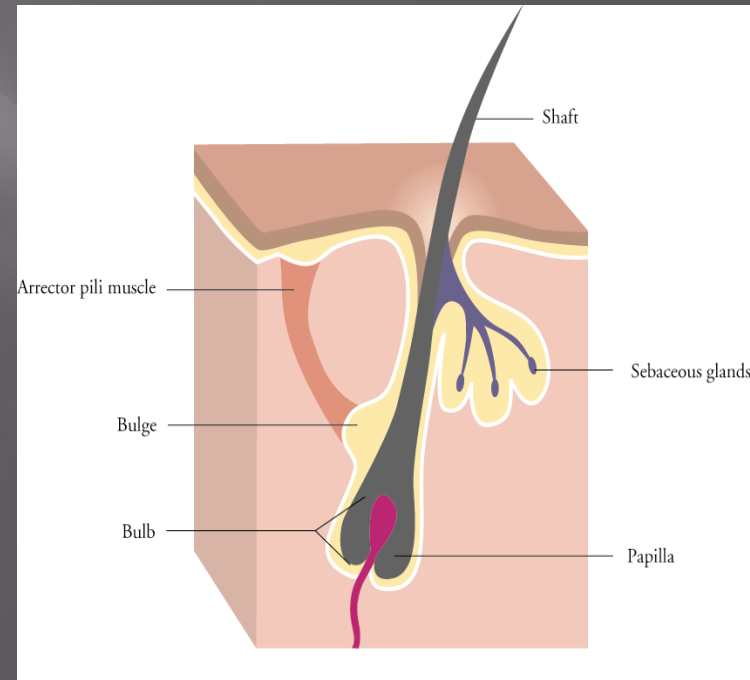




Electroepilation

Thermolysis: heat ➡ hair destruction.

High frequency AC current.



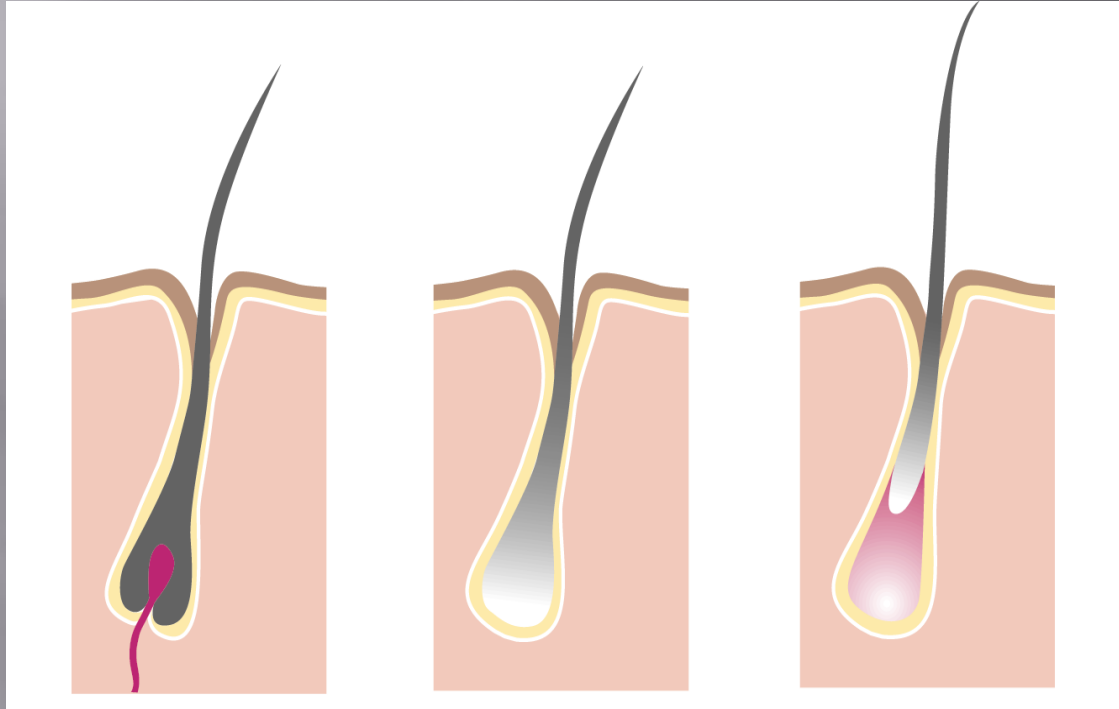
Hair Removal: Terminology

Papilla - located at the bottom of a hair follicle, the papilla contains capillaries through which hair receives nourishment.

Shaft - a keratinized portion of a hair that extends from a hair follicle beyond the surface of the epidermis.

Melanin - the pigment that gives color to hair, skin or the choroid of the eye. Exposure to sunlight may stimulate melanin production.

Cycles of Hair Growth



Anagen 80-85% Catagen 2% Telogen 10-15%

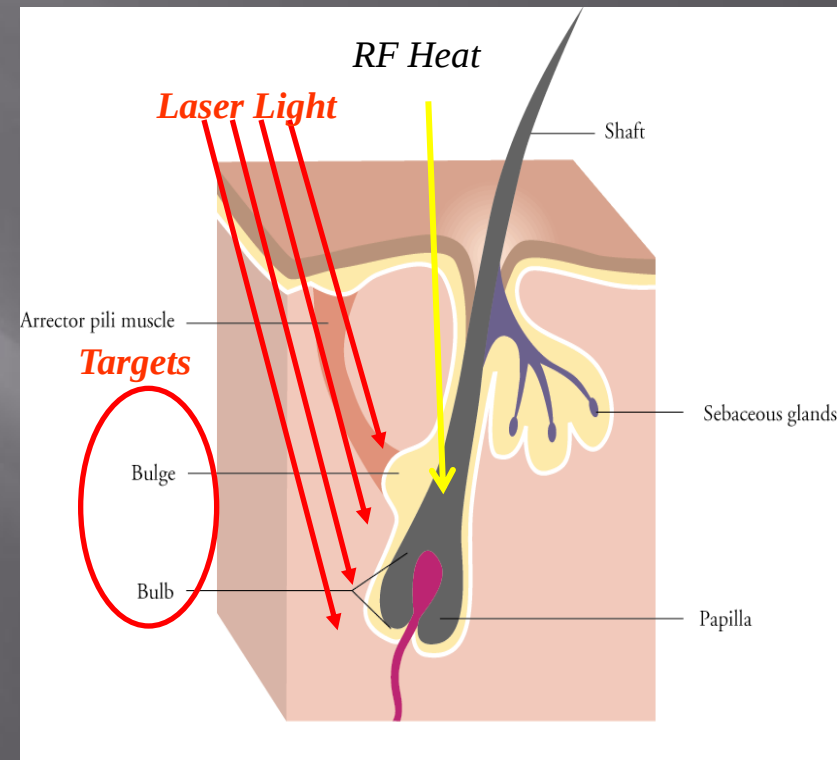
Anagen = growth phase.

Catagen = regression .

Telogen = final resting phase.

RF Hair Removal:

- ♦ RF Heat directly absorbed by hair
- ♦ Lasers → melanin
- Hair gets hot
- Heat damages bulge and bulb



Anatomy of a Human Hair

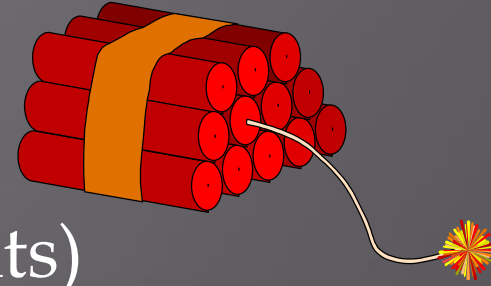
Electrode Sterilisation

- High temperatures, self cleaning
 - Remove char
 - Or disposable electrodes
 - Clean and autoclave
- Holding solutions, gas or steam OK

Complications 1.

- ▣ Technique sensitive... excessive pressure, accidental trigger of electrode current, poor choice of current type and strength.

Complications



- Immediate:
 - fire, shock (avoid solvents)
 - incomplete or too deep removal
 - bleeding, bruising
 - over haemostased
- Early: appearances red, depressed, scabbing
- Intermediate: infection , irregular contour
- Late:
 - recurrence, or undiagnosed malignancy
 - hypo or hyperpigmented scars
 - keloid or hypertrophic scars

Hypopigmented scarring at 12 mths

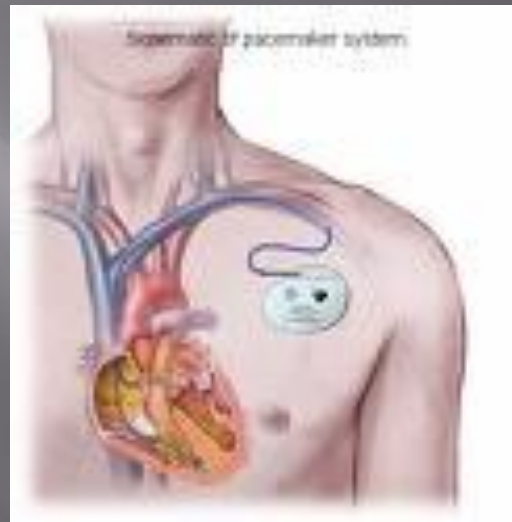


FIRE Prevention



- Avoid alcohol on skin, equipment
 - Be prepared for it
- Turn machine off during dressings

Remember Pacemakers

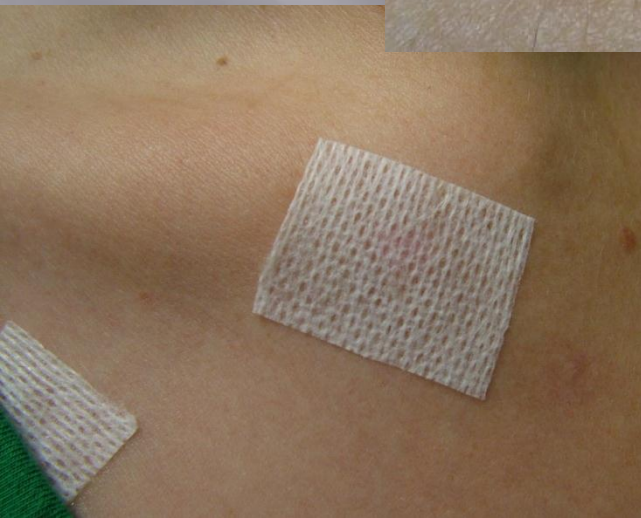


Patient Selection

- *Diagnose epidermal lesion*
- *Realistic expectations*
- *Biopsy prn*
- *Hx of abnormal scarring/ PIHP*
- *Advise: possible recurrence, limited histology*
- *Informed consent*
- *Specimens to lab. even benign*

How would you treat these?





*Surgitron Radiofrequency
techniques can be readily
learnt by any doctor with a
gentle steady hand.*

Service Agents

- Medtel in NZ
- Ellmann, New York



SUMMARY

- Inexpensive
- Versatile
- Requires steady hand
- Electrical risks
- Remain superficial
- Benign & cosmetic disease

