Suturing and Knot Tying
Skin Excision

POWH Surgical Skills Teaching Program
3rd June 2020
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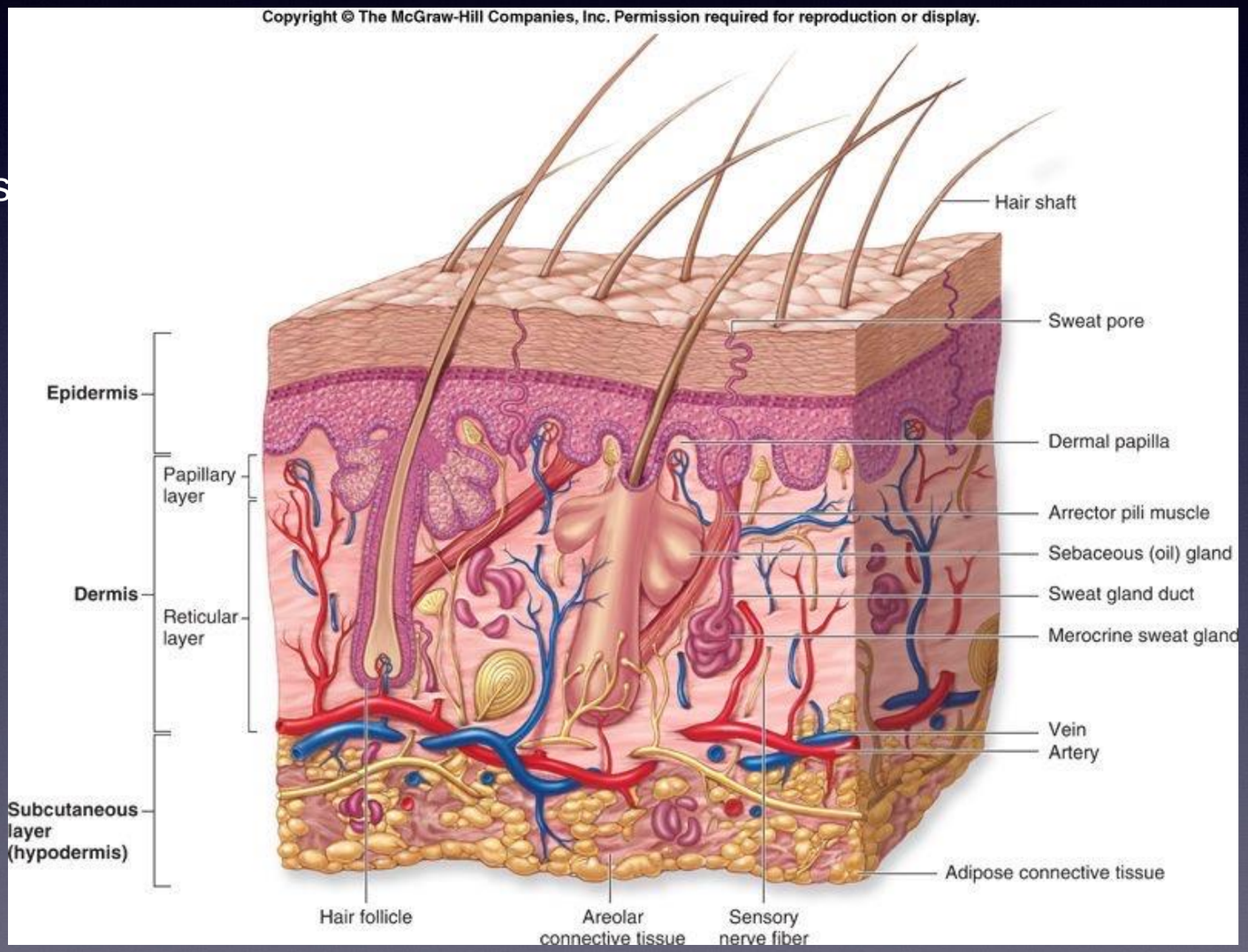
Anatomy of Skin

- Hypodermis
- Dermis
  - Reticular layer: contains sebaceous glands, sweat glands, hair follicles
  - Papillary layer
- Epidermis
  - Basale
  - Spinosum
  - Granulosum
  - Lucidum
  - Corneum



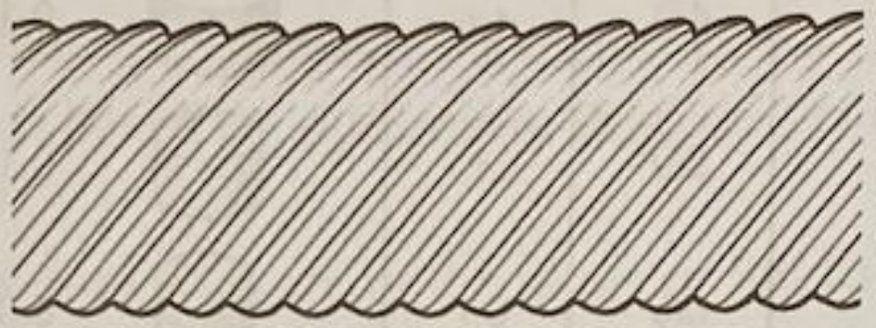
Wound Closure Decisions

- Tissue related
- Equipment related
  - Forceps
  - Sutures
    - Natural vs. synthetic
    - Absorbable vs. non-absorbable
    - Braided vs. monofilament
    - Thread size
- Needles
  - Size and shape
  - Type

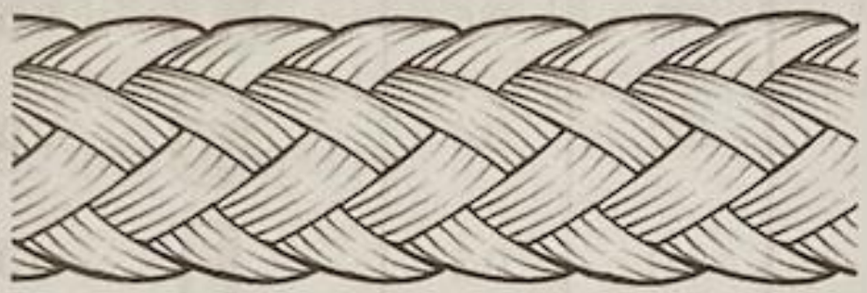
Suture Materials

- Natural vs. synthetic
- Twisted vs. braided vs. monofilament
- Absorbable vs. non-absorbable

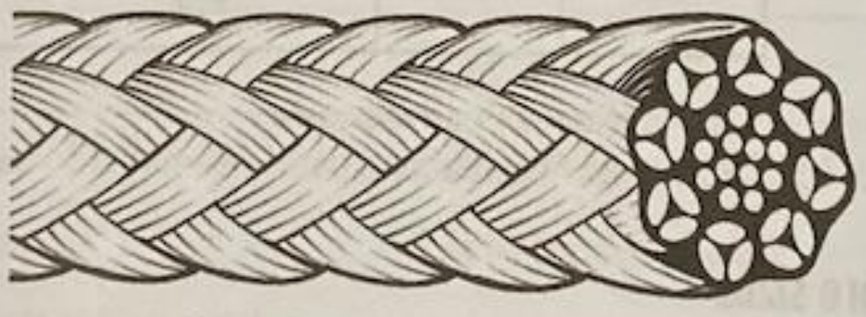
(a) twisted suture (e.g. catgut)



(b) braided suture

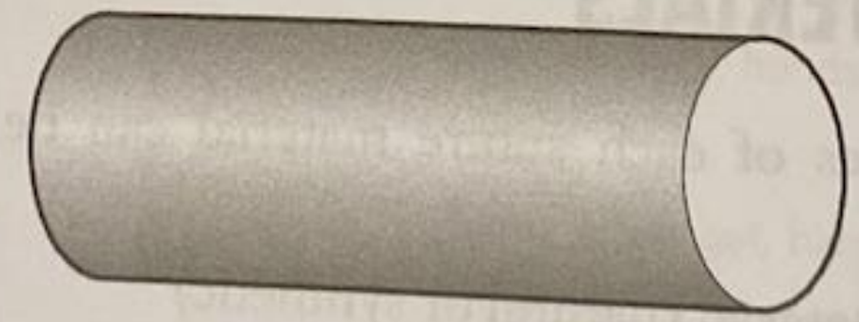


external braiding

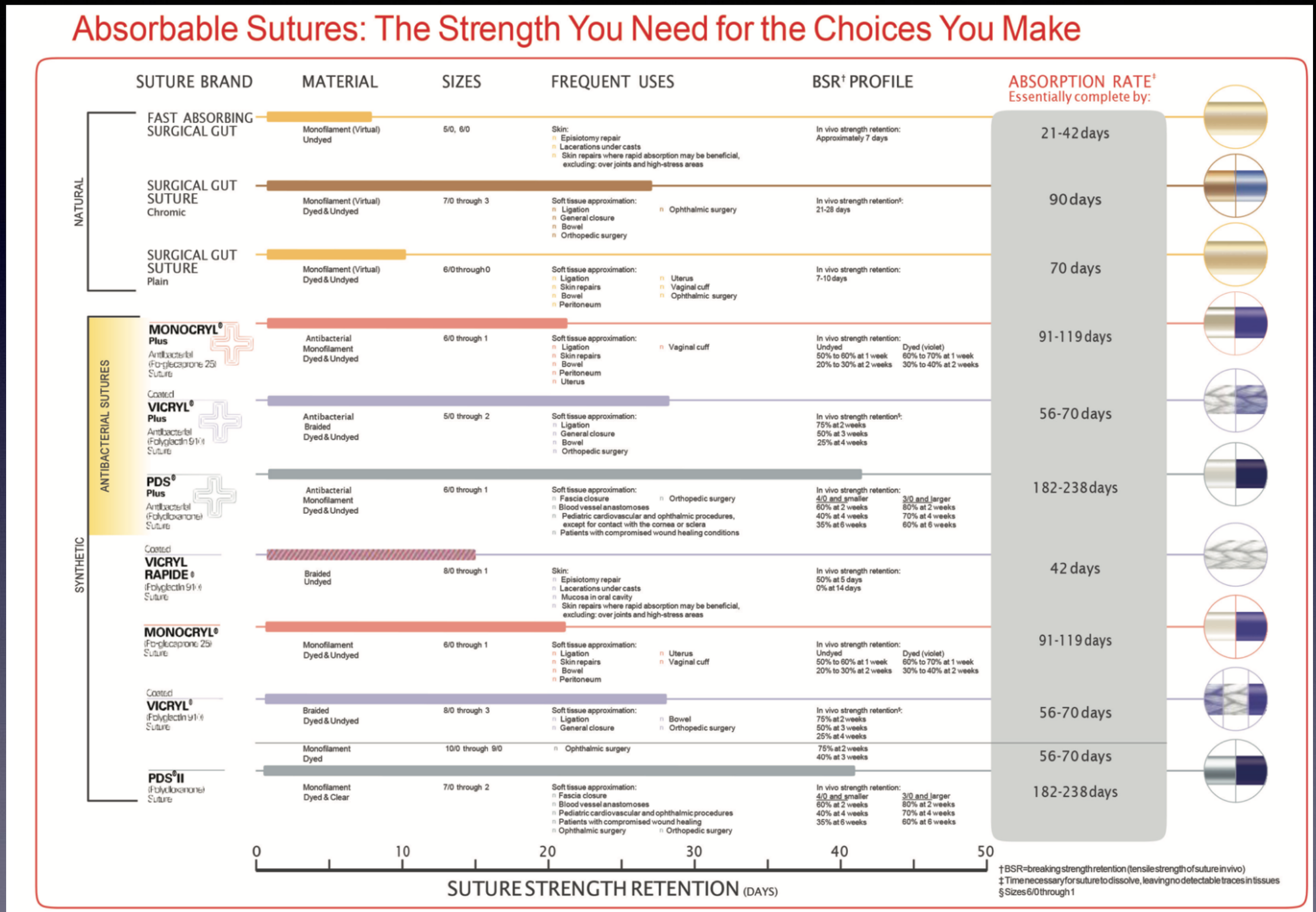


cross-section showing the braided fibres around a core of filaments

(c) monofilament suture



Absorbable Suture Materials



Sutures

Non-Absorbable Suture Materials

Nonabsorbable Sutures: The Strength You Need for the Choices You Make

	SUTURE BRAND	MATERIAL	SIZES	FREQUENT USES	BSR† PROFILE
NATURAL	PERMA-HAND® Silk Suture	Braided Black	5, 2 through 7/0	General soft tissue approximation and/or ligation: n Cardiovascular n Ophthalmic n Neurological	Gradual loss of all tensile strength over time
NATURAL	SURGICAL STAINLESS STEEL Suture	Monofilament Silver Metallic	7 through 5/0	Soft tissue approximation: n Abdominal n Sternal Closure n Orthopedic procedures including cerclage and tendon repair	Indefinite
SYNTHETIC	NUROLON® Nylon Suture	Braided Black	1 through 6/0	General soft tissue approximation and/or ligation: n Neurological n Cardiovascular n Ophthalmic	Gradual loss of tensile strength over time
SYNTHETIC	ETHILON® Nylon Suture	Monofilament Black/Green/ Undyed(Clear)	2 through 11/0	General soft tissue approximation and/or ligation: n Cardiovascular n Ophthalmic n Neurological n Skin Closure	Gradual loss of tensile strength over time
SYNTHETIC	MERSILENE® Polyester Fiber Suture	Braided Green / Undyed (white) Monofilament Green	1 through 6/0 10/0 through 11/0	General soft tissue approximation and/or ligation: n Cardiovascular n Ophthalmic n Neurological	Indefinite
SYNTHETIC	ETHIBOND EXCEL® Polyester Suture	Braided Green / Undyed (white)	5, 2 through 7/0	General soft tissue approximation and/or ligation: n Cardiovascular n Ophthalmic n Neurological	Indefinite
SYNTHETIC	PROLENE® Polypropylene Suture	Monofilament Blue / Clear	2 through 10/0	General soft tissue approximation and/or ligation: n Cardiovascular n Ophthalmic n Neurological	Indefinite
SYNTHETIC	PRONOVA® Poly (Hexafluoropropylene–VDF) Suture	Monofilament Blue	2/0 through 8/0	General soft tissue approximation and/or ligation: n Cardiovascular n Ophthalmic n Neurological	Indefinite

† BSR=breaking strength retention (tensile strength of suture in vivo)

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Sutures

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Suture Materials: Other Features

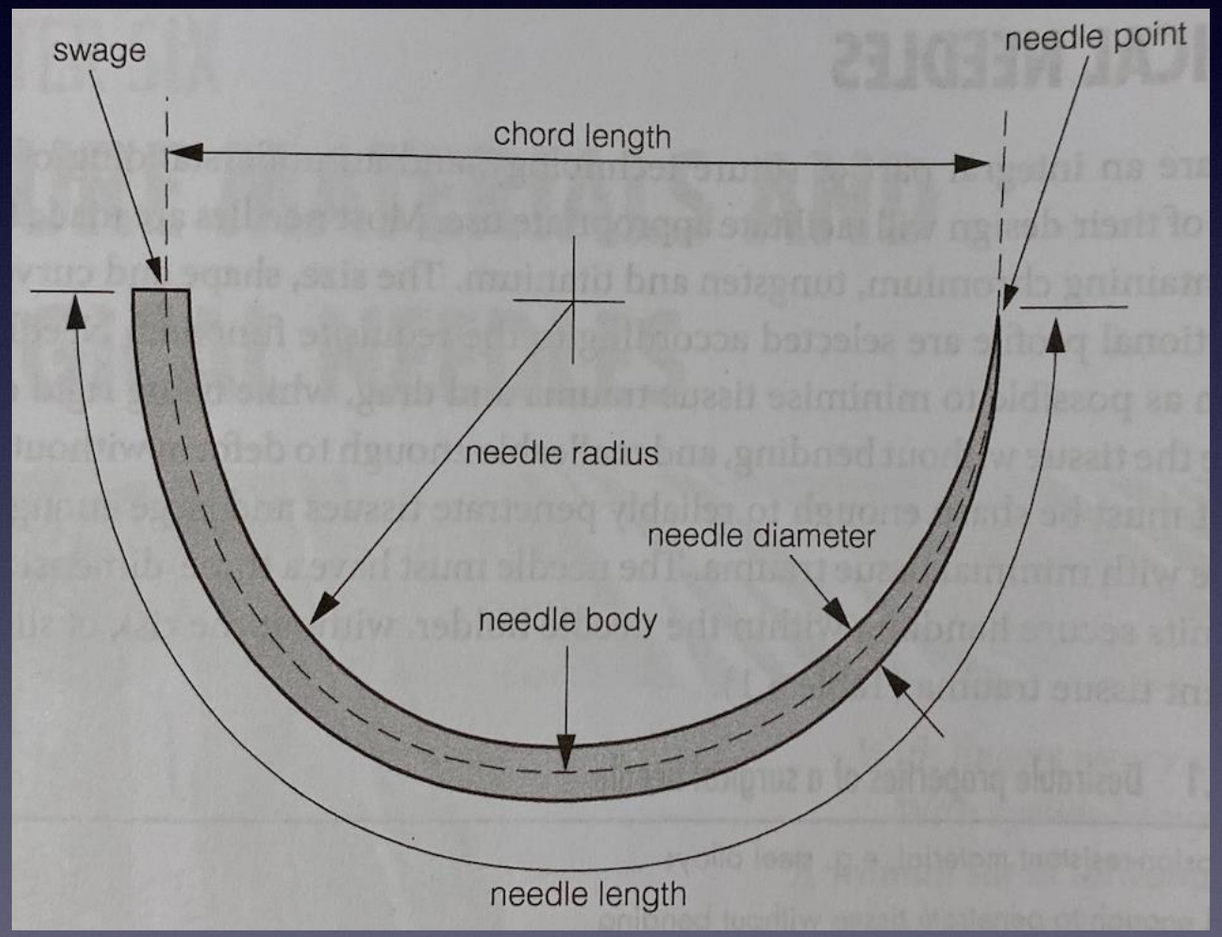
- Antibiotic impregnated
- Barbed
- “pop-off”
- Dyed vs. undyed

STRATAFIX™ Knotless Tissue Control Devices

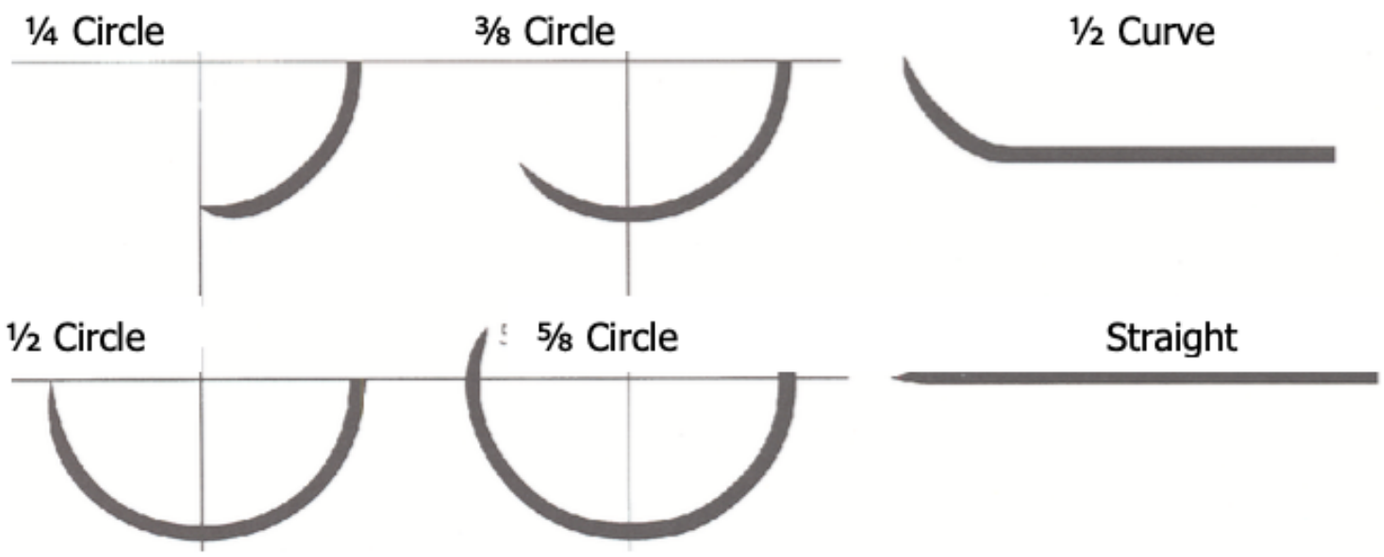
STRATAFIX™ Symmetric PDS™ Plus Knotless Tissue Control Devices are the only knotless tissue control device that provides strong, secure closure appropriate for high-tension areas such as fascia.[1-6]

STRATAFIX™ Spiral Knotless Tissue Control Devices provide smooth tissue passage and a secure hold that helps control tension and achieve excellent tissue approximation.[1,7-11]

Needle Anatomy

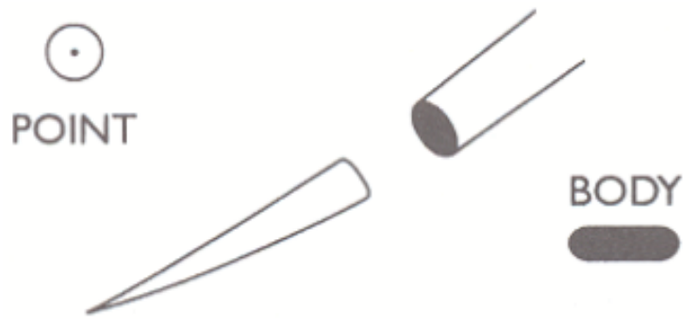


Needle Shapes

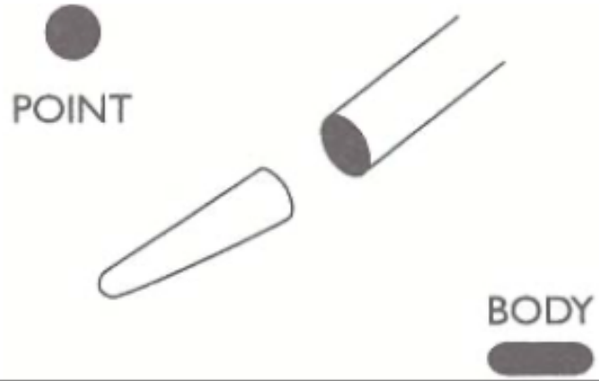


Needle Types

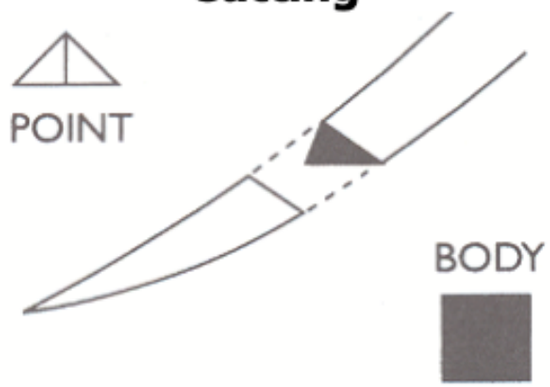
Taper Point Needle



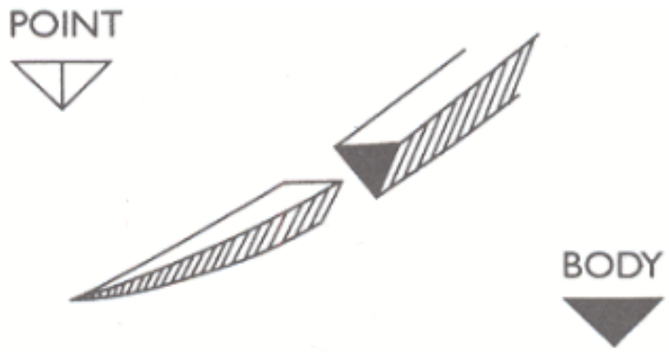
ETHIGUARD* Blunt Point Needle



Conventional Cutting

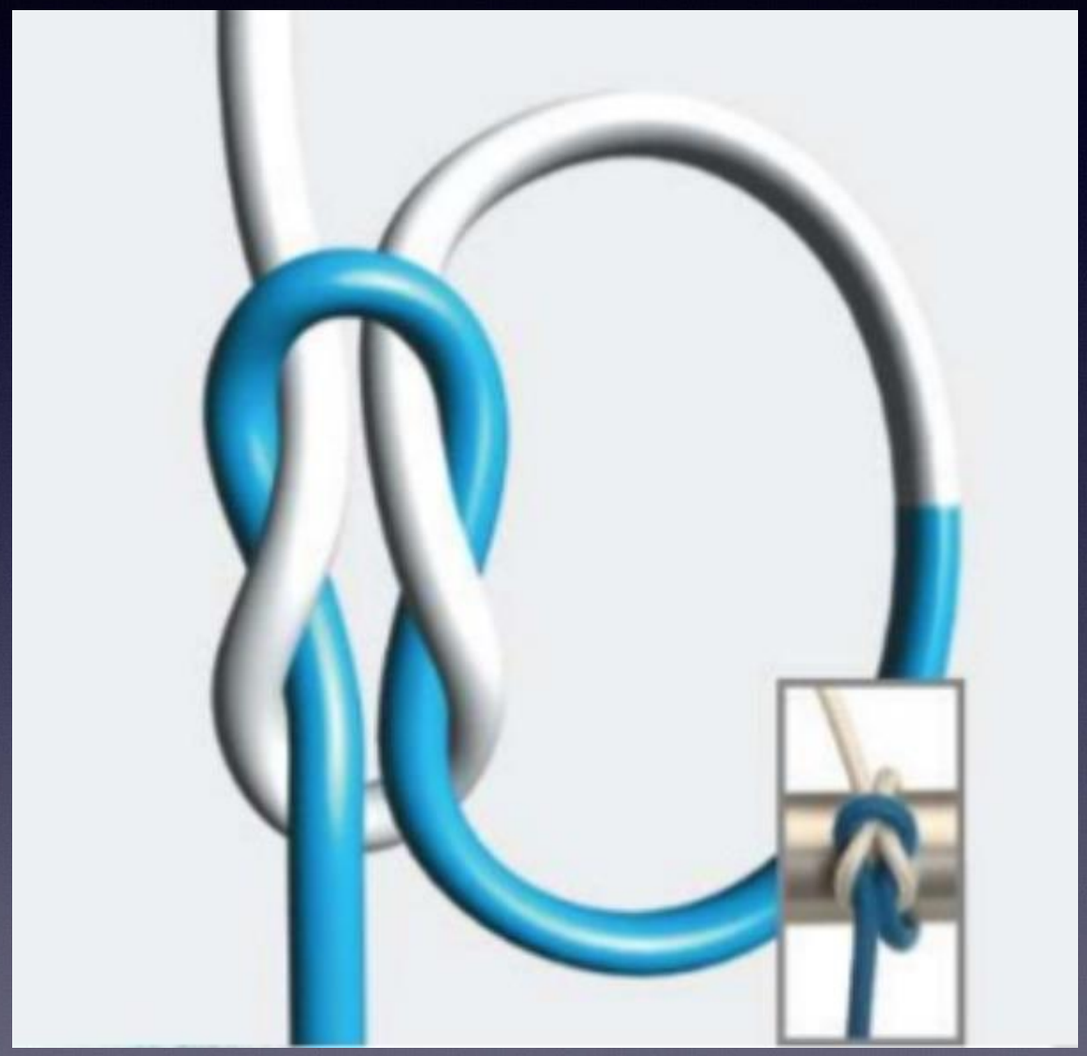


Reverse Cutting

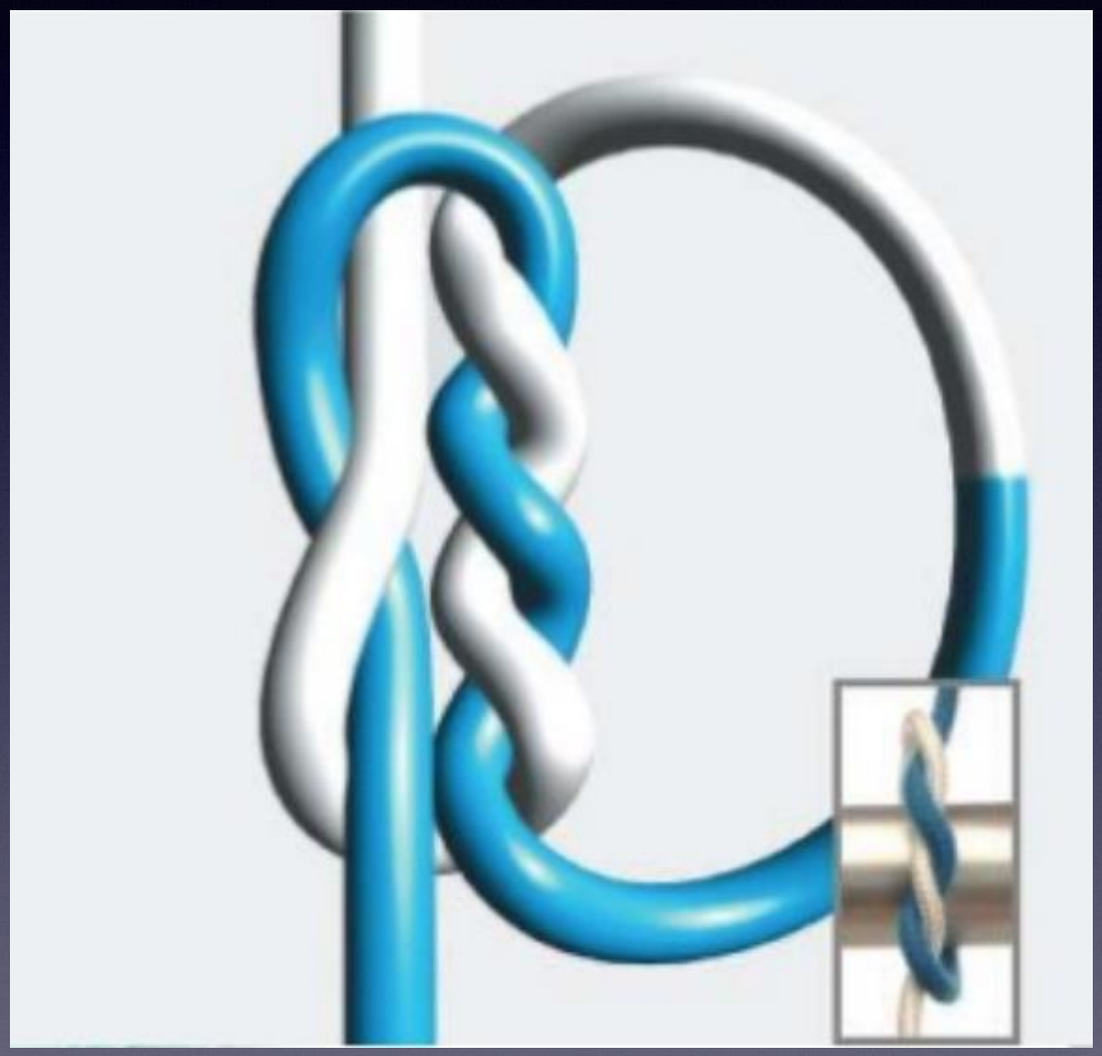


Knot Tying

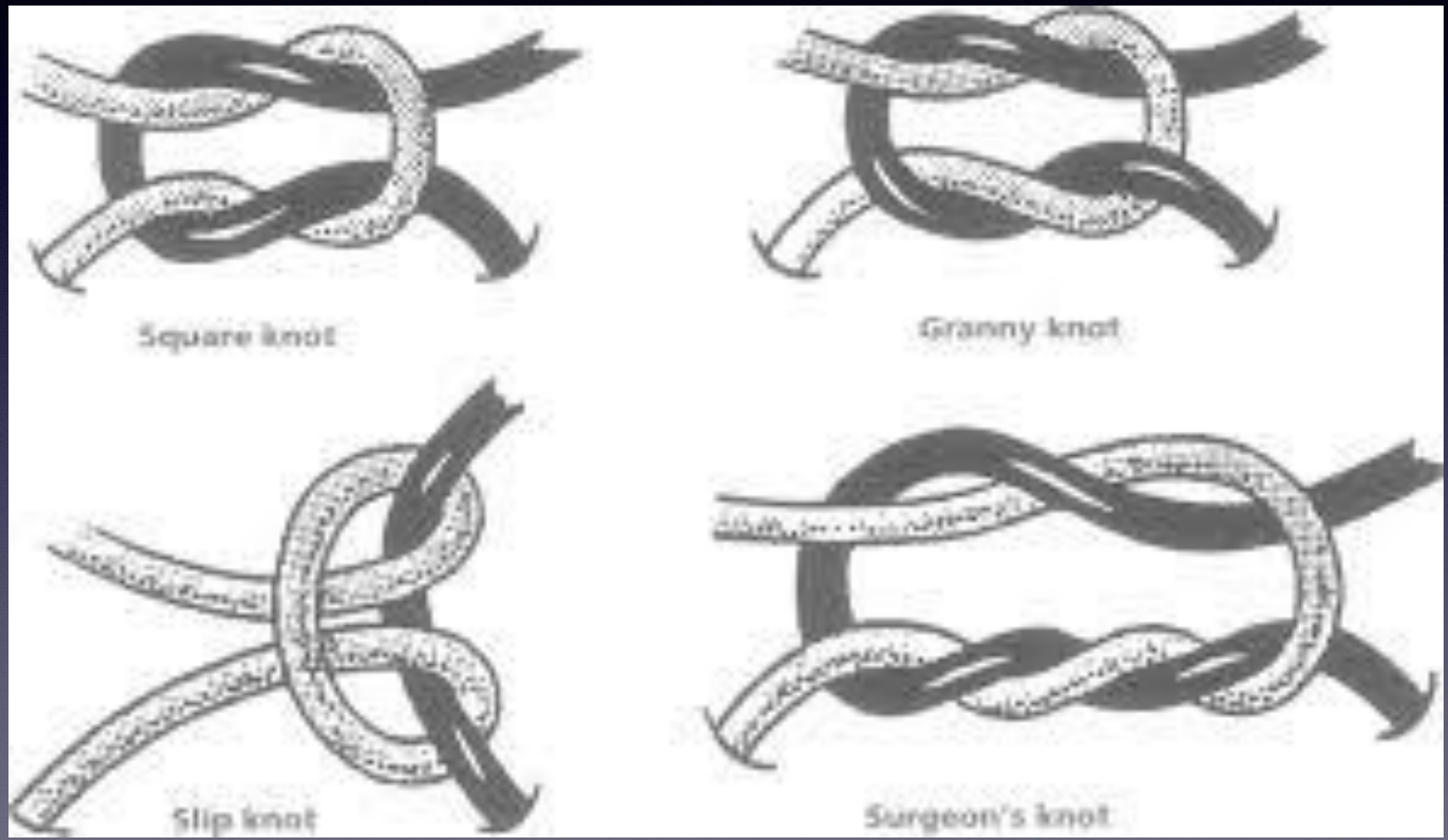
Reef Knot



Surgeons Knot

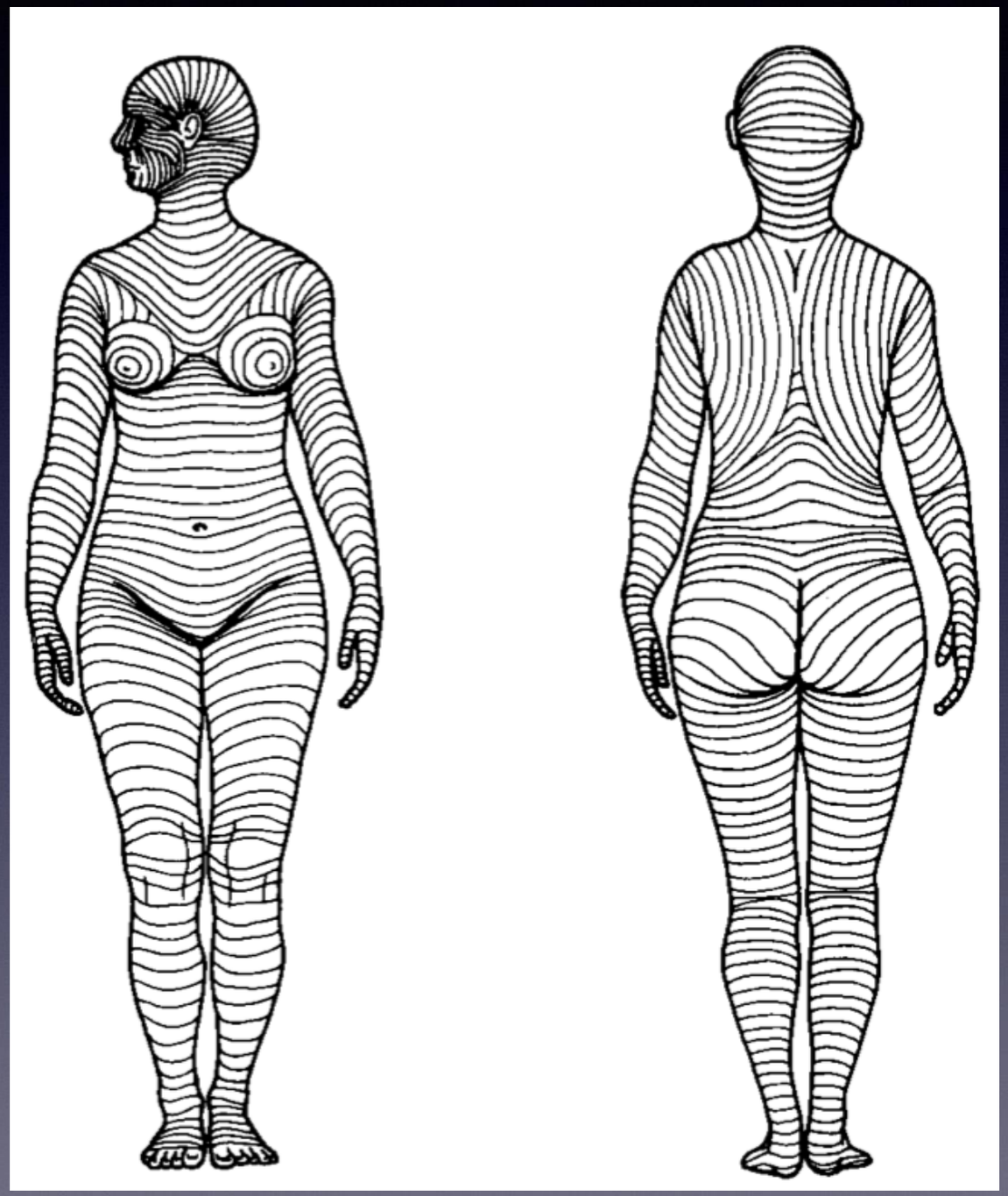


GRANNY KNOT!!!

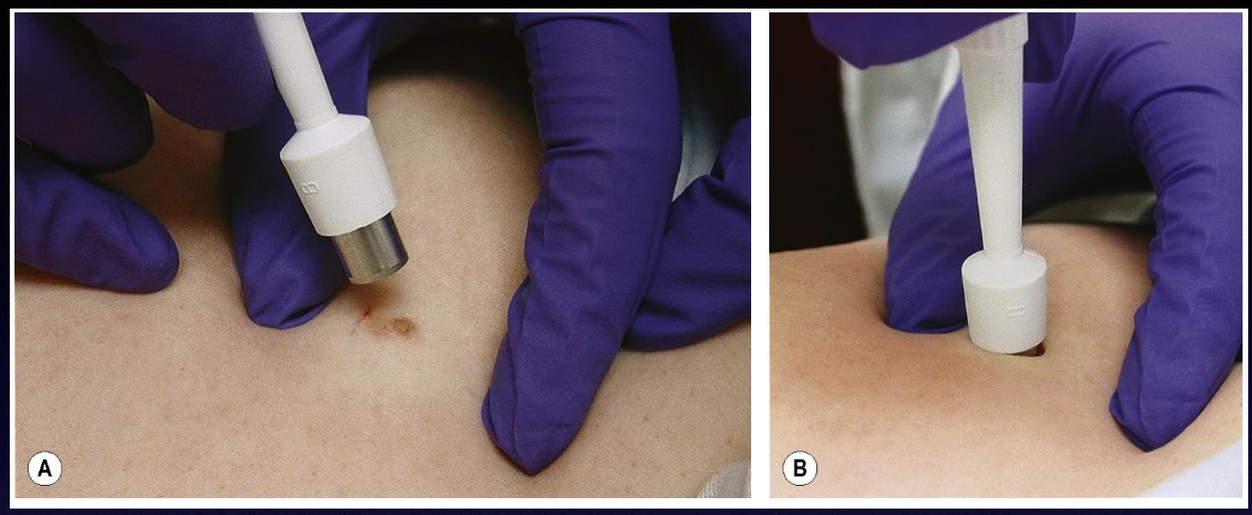


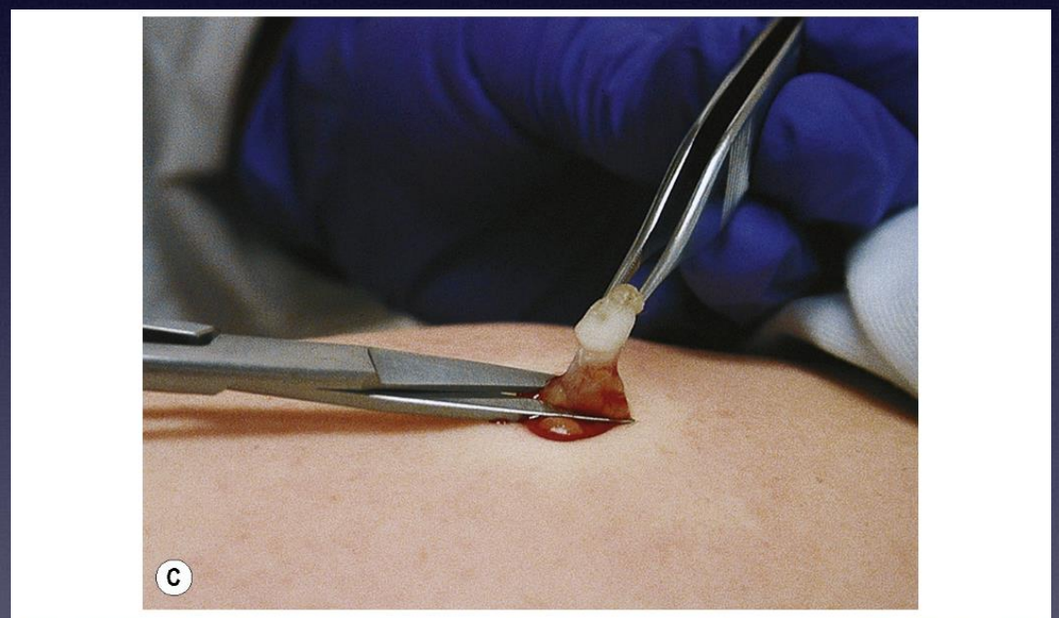
Skin Incisions

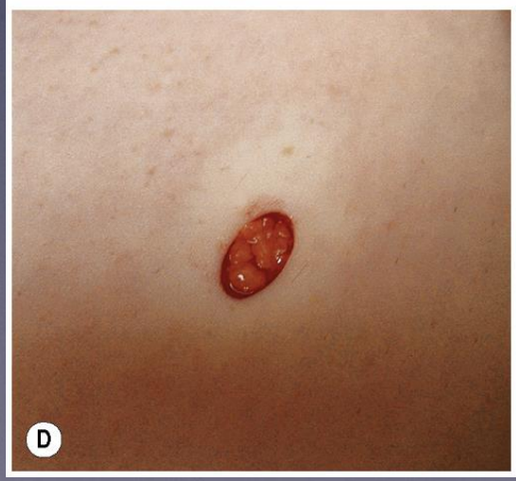
- Access/ exposure
- Facilitate excision
- Facilitate biopsy
  - shave biopsy
  - punch biopsy
  - incisional biopsy
  - excisional biopsy

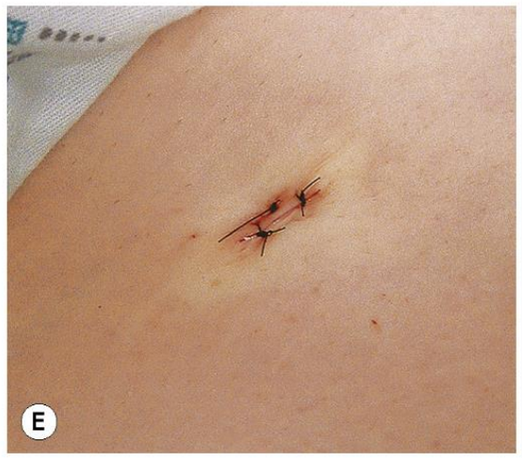


Punch Biopsy

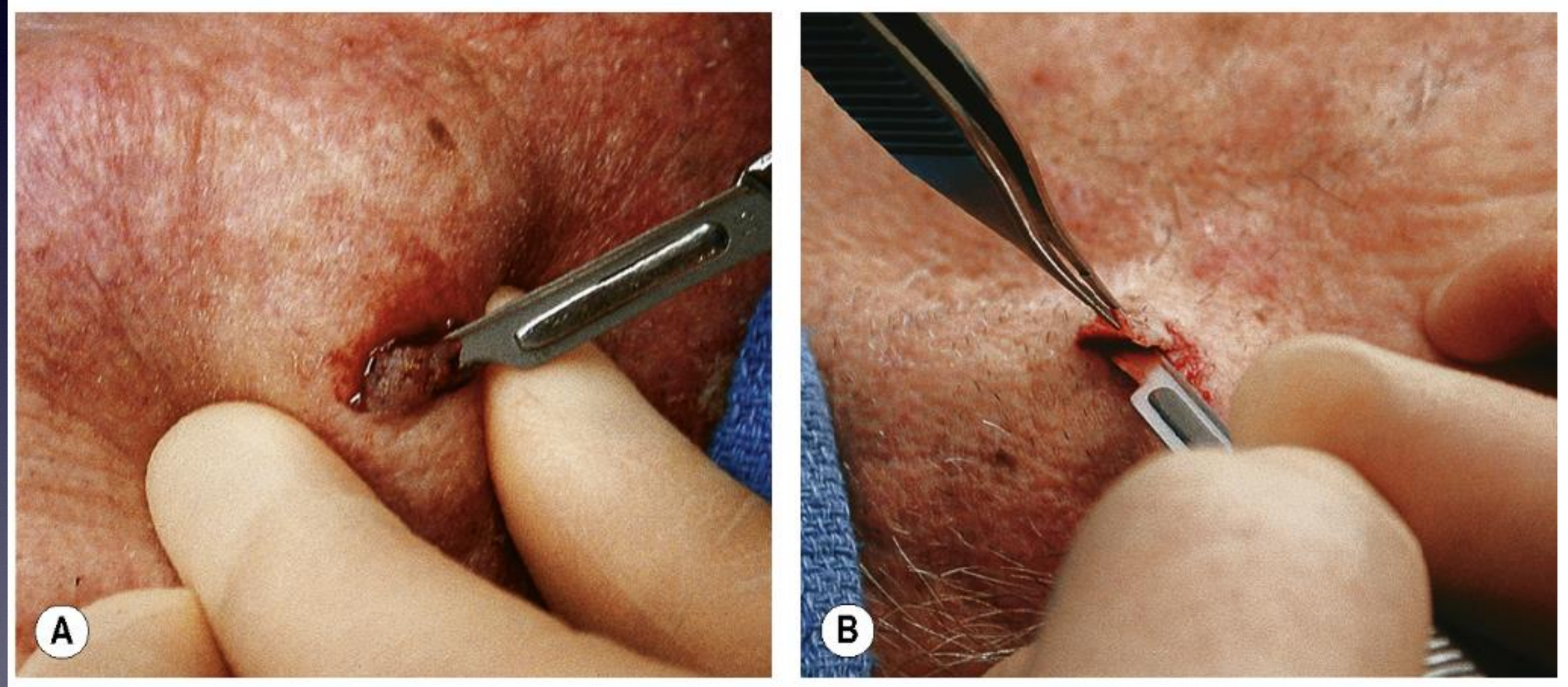








Shave Biopsy



Incisional Biopsy

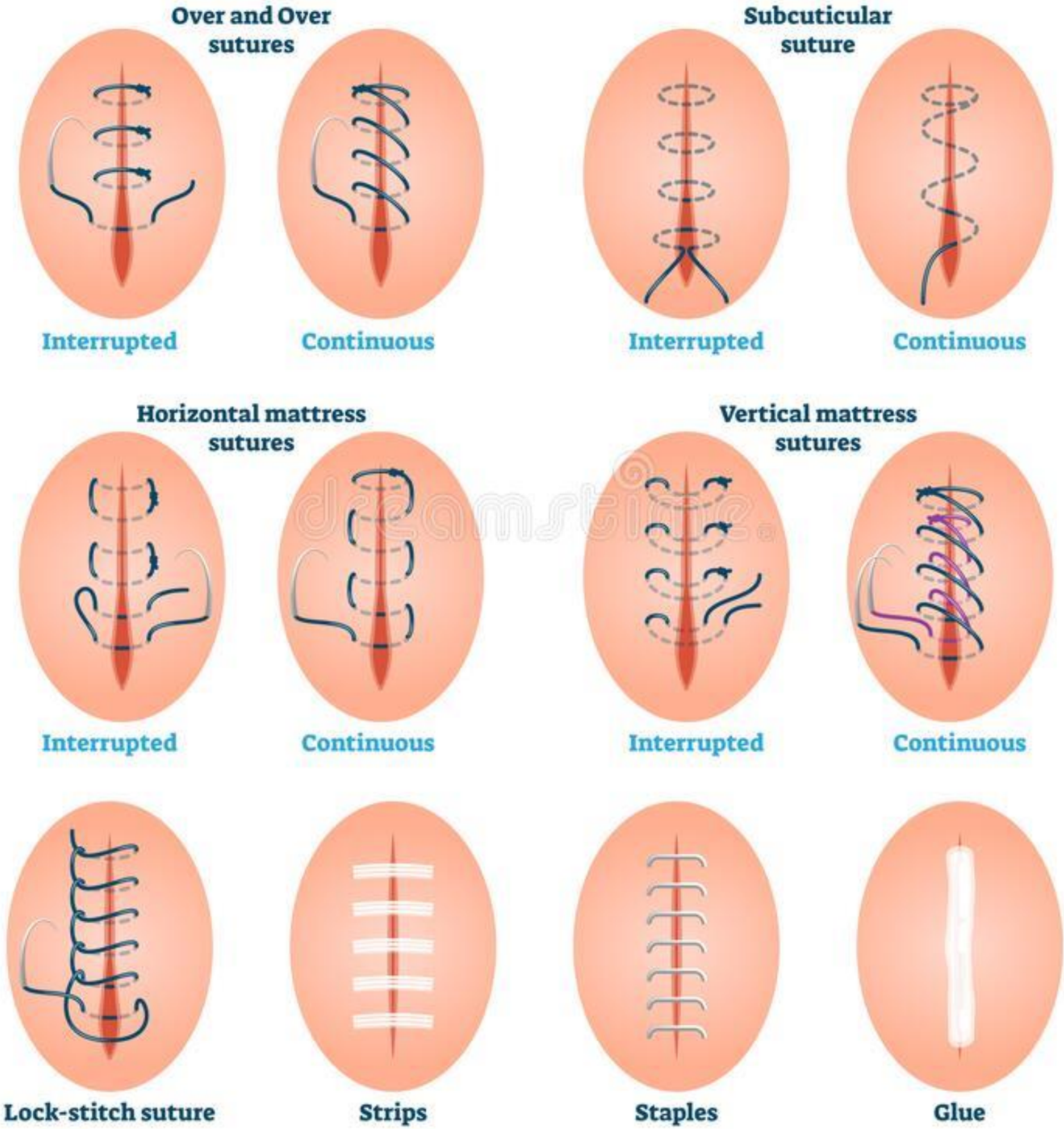
Skin and Soft Tissue Excisions

- Elipse
  - 3 to 1 ratio
- Margins
  - Benign: capsular excision
  - Malignant: varies
    - BCC:
      - macroscopic 2-3mm
      - microscopically clear
    - SCC:
      - macroscopic 4-10mm
      - microscopic >1mm
    - Melanoma: macroscopic 5-20mm

Wound Closure

- Primary
- Delayed
- Secondary Intention
- Simple vs. flap vs. graft
- Sutured vs. stapled vs. glue vs. dressing

SURGICAL STITCHES



Demonstration

Setting Up

Tissue Handling

Simple Interrupted

Instrument Tie

Vertical Mattress

Continuous

Continuous Subcuticular

Hand Ties:

One Handed

Two Handed

Excision

Excisional Biopsy