

Principles of Flaps

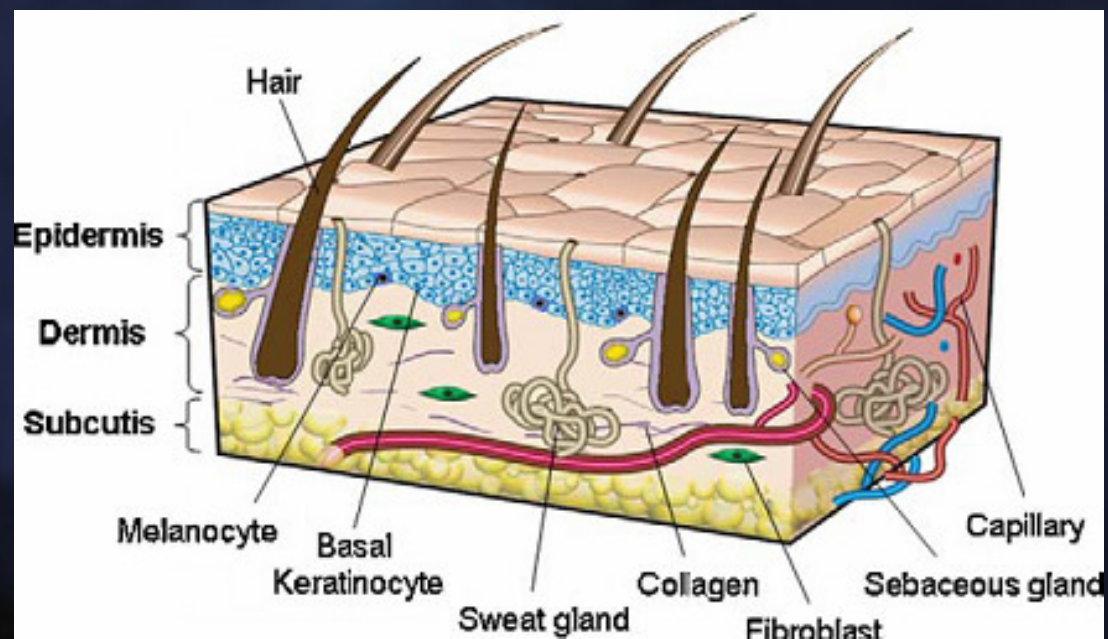
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WHAT IS A FLAP

Tissues are lifted from a donor site and moved to a recipient site with an intact blood supply

Why a Flap?

To provide skin coverage

- Exposed important structures
- Joints
- Contractures
- Pressure areas
- Areas to be irradiated
- Infected cavities
- Better aesthetic result

To re-establish the anatomical and physiological integrity of a part

To assist healing of long standing infected wounds and cavities

Uses in General surgery and other indications (Creating tubular structures, Omental flaps, Pilonidal sinus)

Classification of flaps

According to Blood Supply (Random & Axial (Perforator/Propeller))

According to Structure (Cutaneous, Faciocutaneous, Myocutaneous)

According to Donor Site Proximity (Local & Distant (Pedicled or Free))

According to Skin over pedicle (Island, Pennisular)

According to Vascular Pedicle (Pedicled , Free)

According to Number of Pedicles (Uni, Bipedicled)

According to Flap design (Transposition, Interpolation, Advancement, Rotational)

Nomenclature: Vascular Axis. Muscle, Ethnic origin, Designer, Shape

Terminology

Flap Base (Proximal part when the whole flap inset into defect)

Flap Pedicle (Proximal part when the only distal part of flap inset into defect)

Flap Bridge (Central part when the only distal part of flap inset into defect)

Penninsular Flap (flap passes in whole into defect)

Island Flap (pedicle is deepithelialized and tunneled to reach defect)

Delayed flaps Delaying of the flap by Incising outline but not elevating the flap

Expanded flaps Delaying of the flap by tissue expanders inserted under the flap

Prefabricated flaps Formation of a composite flap prior to transfer

The Crane principle Temporary flap for a short period and then is returned to its location, leaving behind a layer of tissue at the recipient site for a skin graft

Random Local Skin flaps

Transposition flap

Rhomboid flap

Z-plasty

W-plasty

Bilobed Flaps

Banner flap

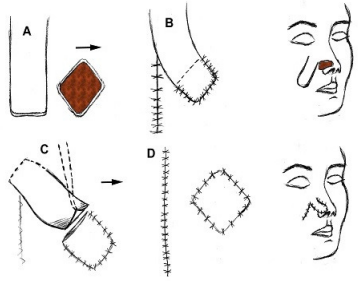
Interpolation flaps

Rotational flaps

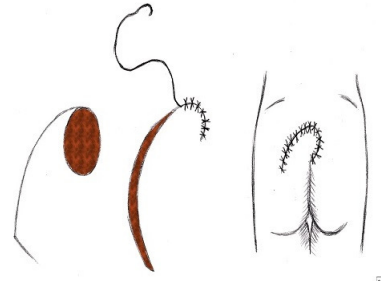
Advancement flaps

V-Y plasty

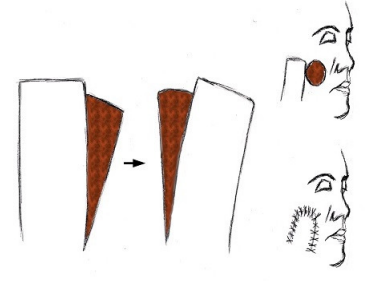
T- plasty



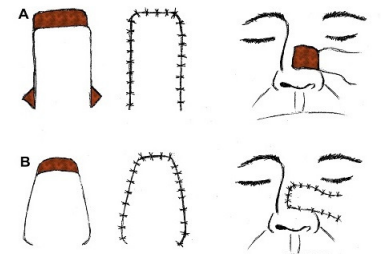
Interpolation



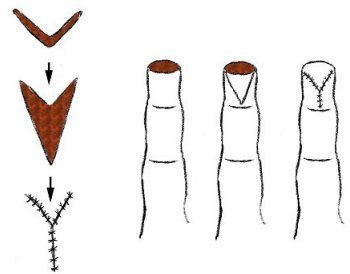
Rotation



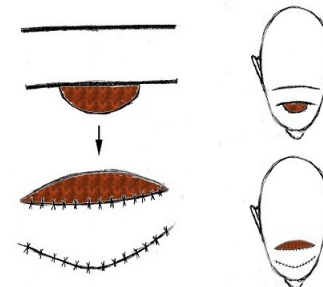
Transposition



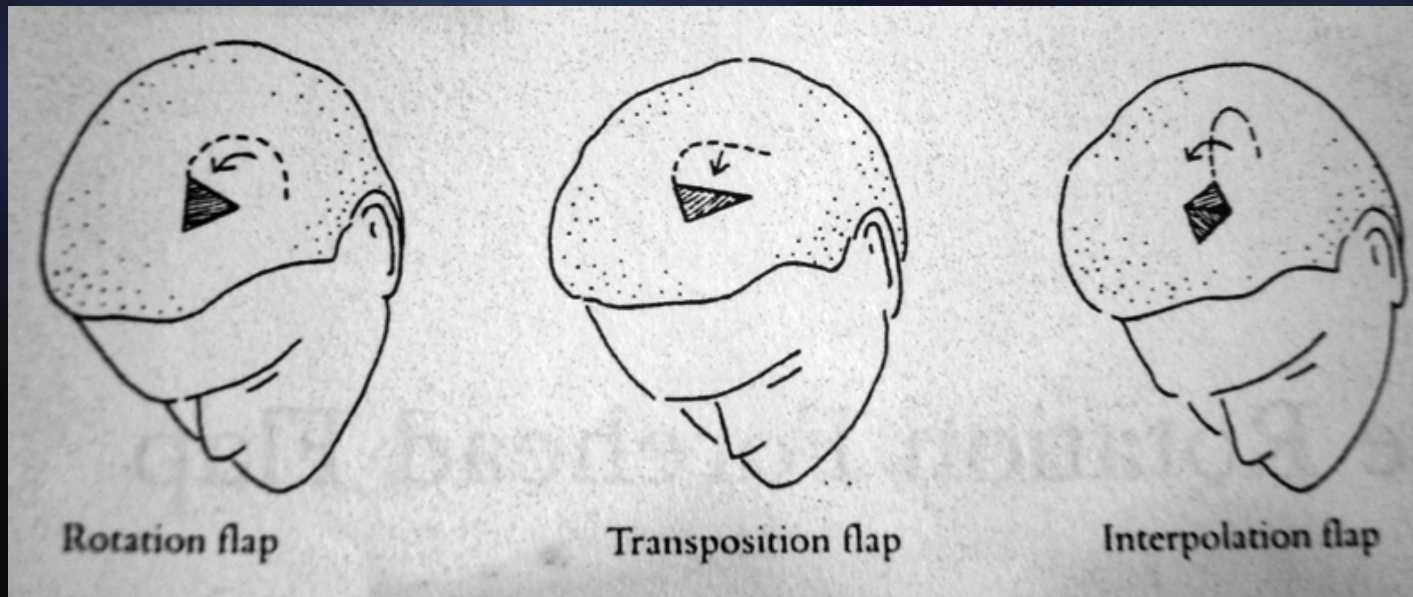
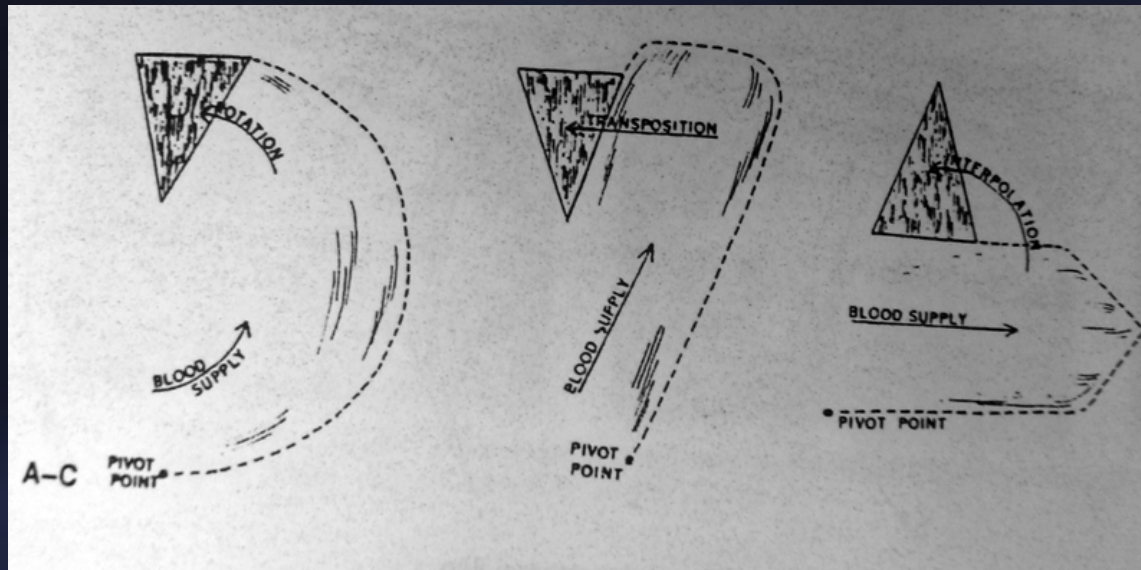
Advancement



V-Y

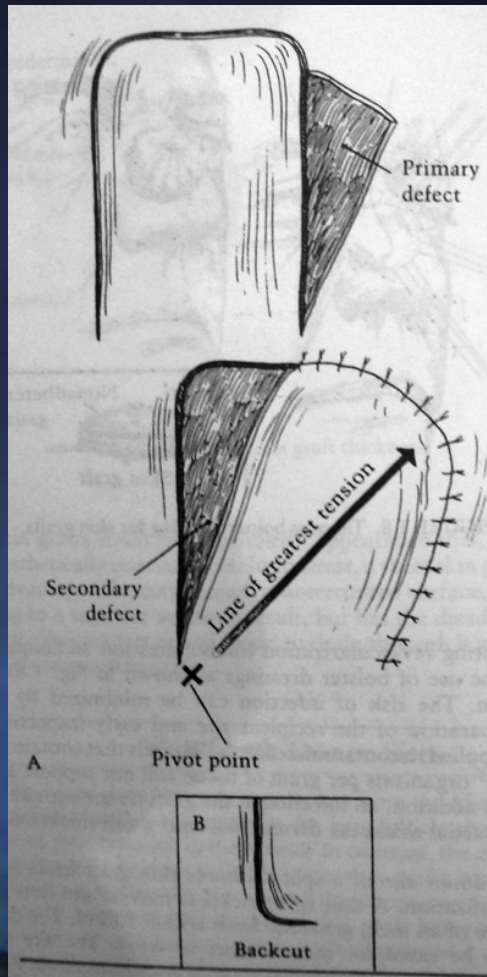


Bipedicled

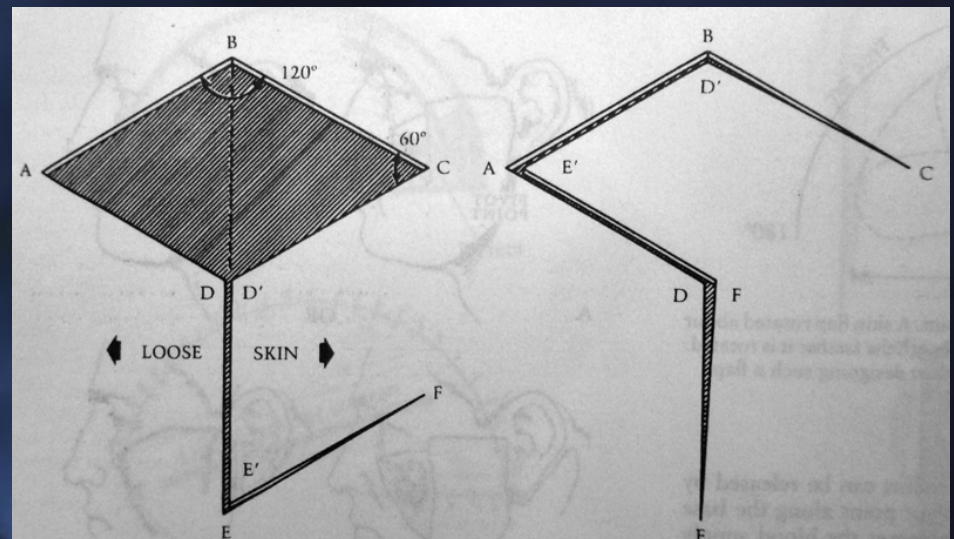
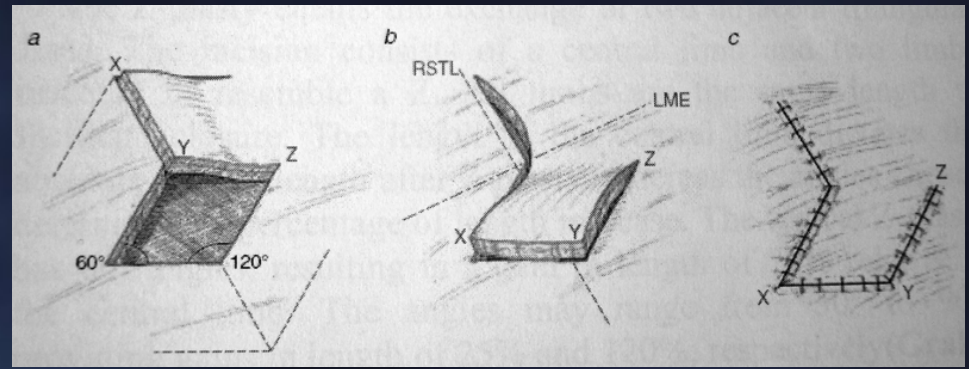
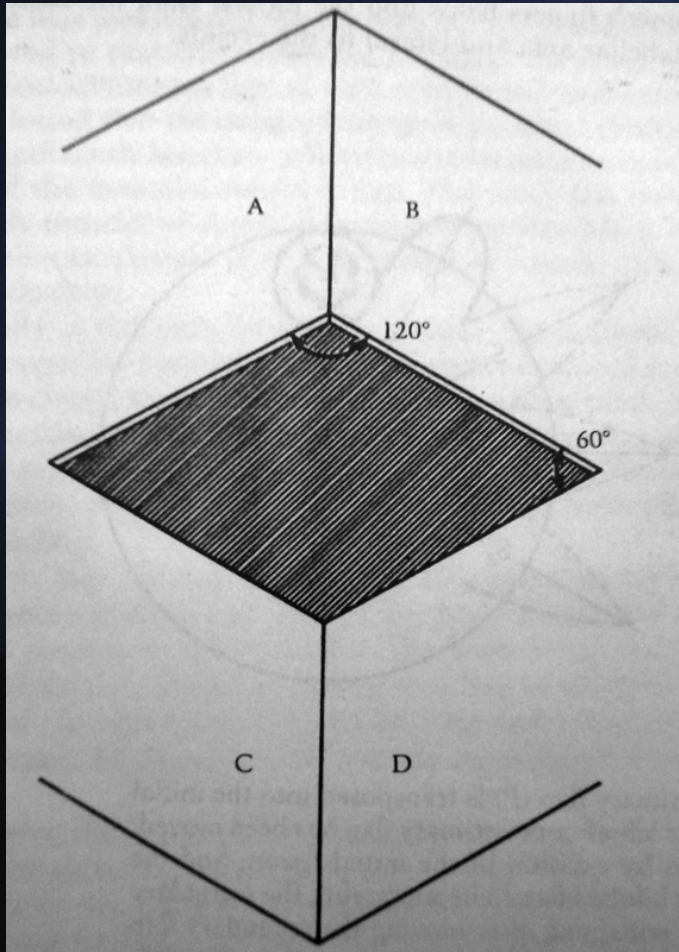


Transposition Flaps

Length: Width 3:1 – Flap must be larger than defect



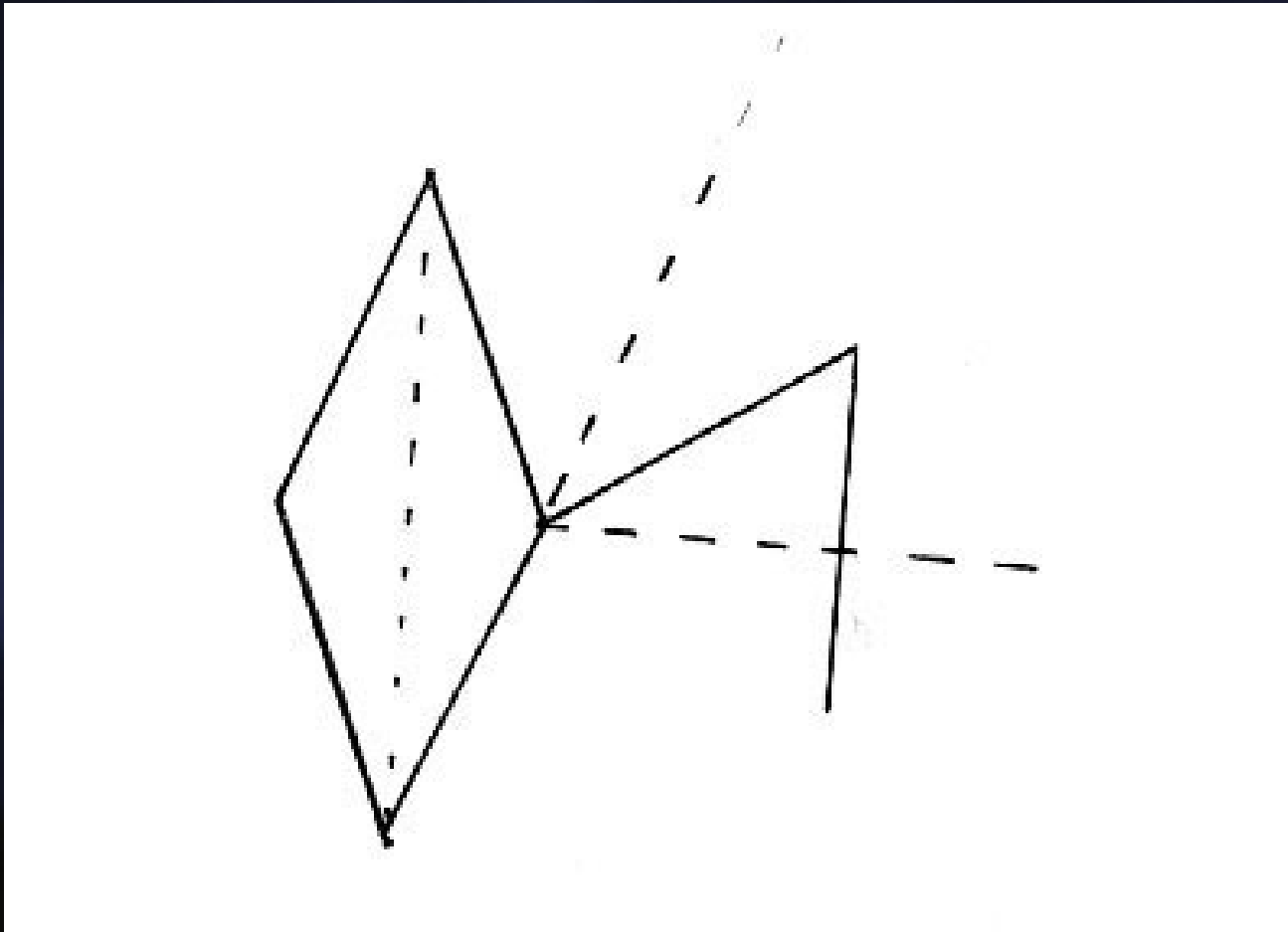
Rhomboid Transposition Flap (Limberg Flap)



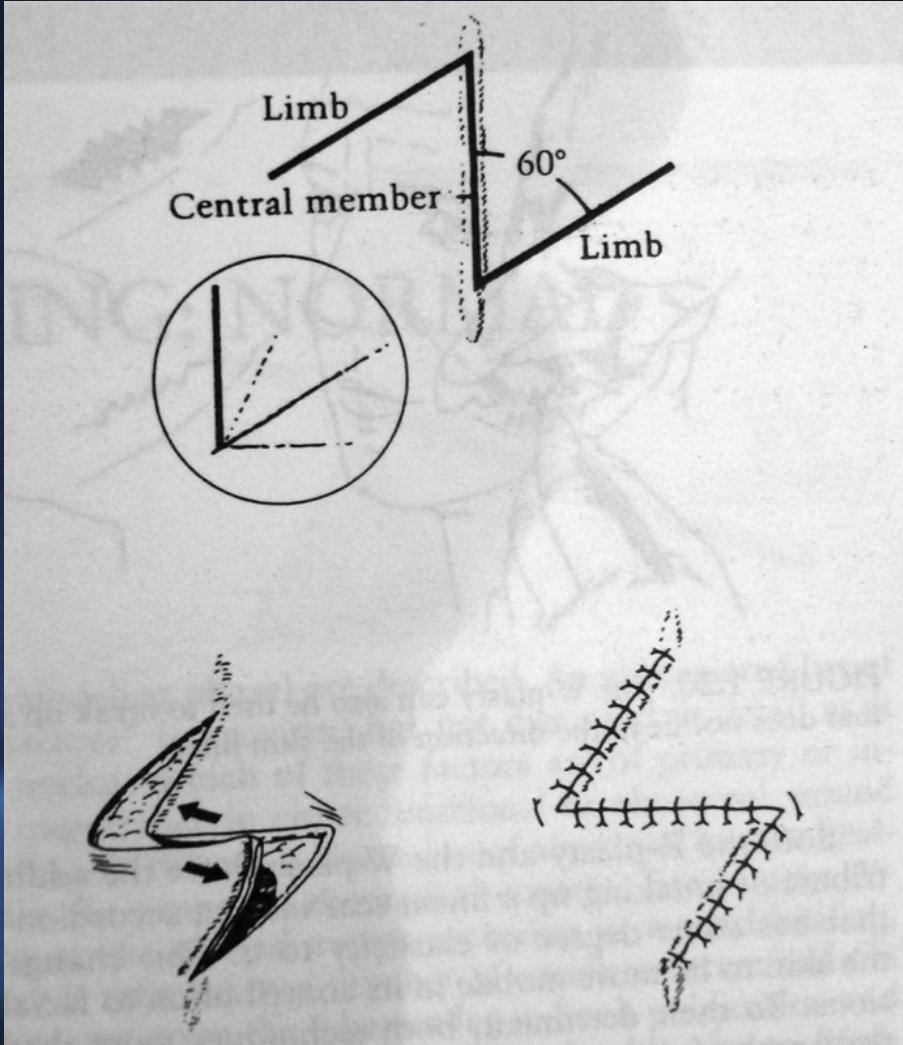
Rhomboid Flap for Pilonidal Sinus



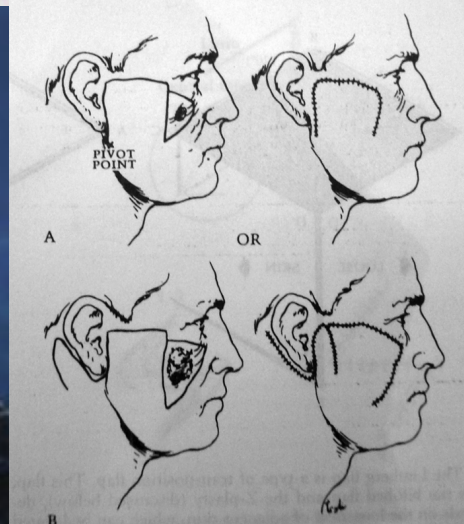
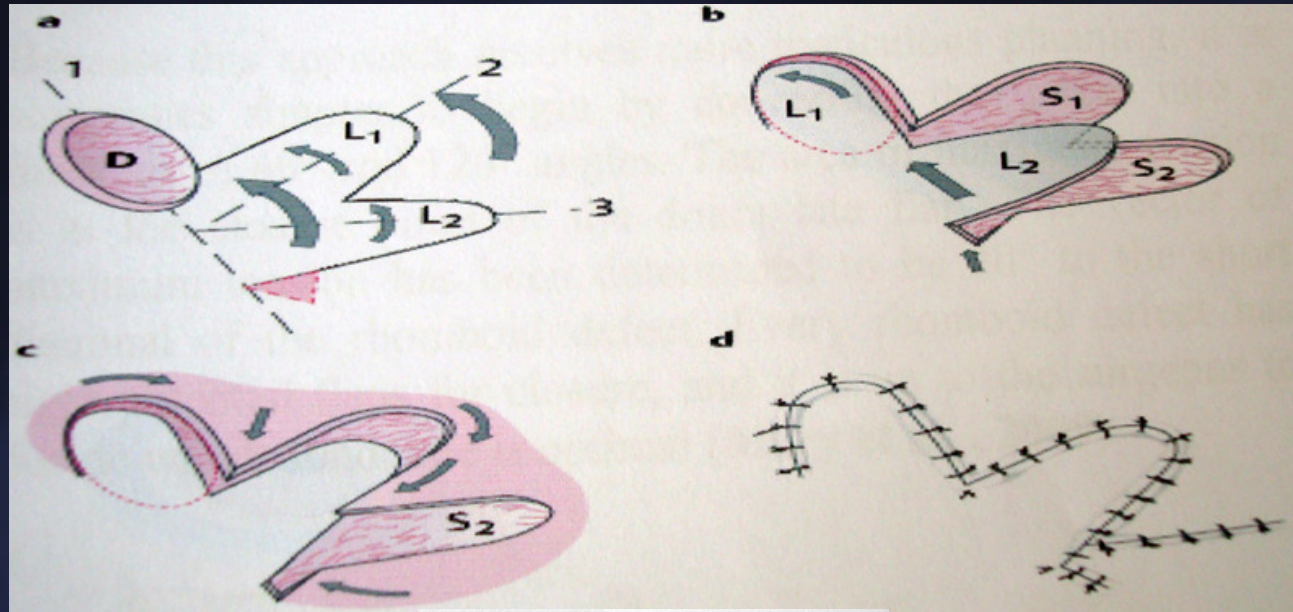
Rhomboid Flap (Dufourmentel flap)



Z-Plasty Transposition Flap

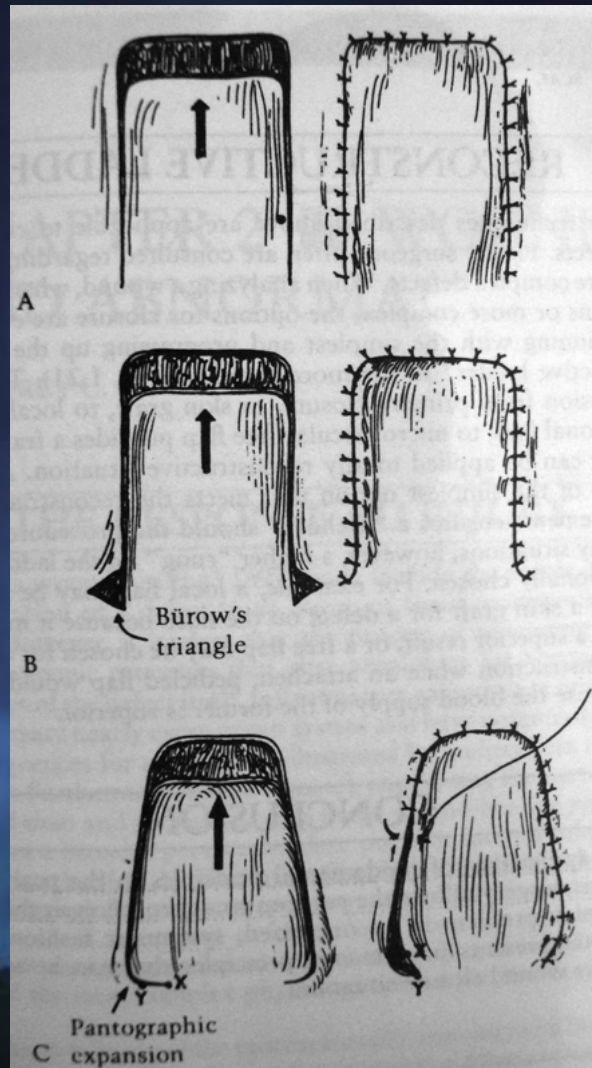


Bilobed Transposition Flap

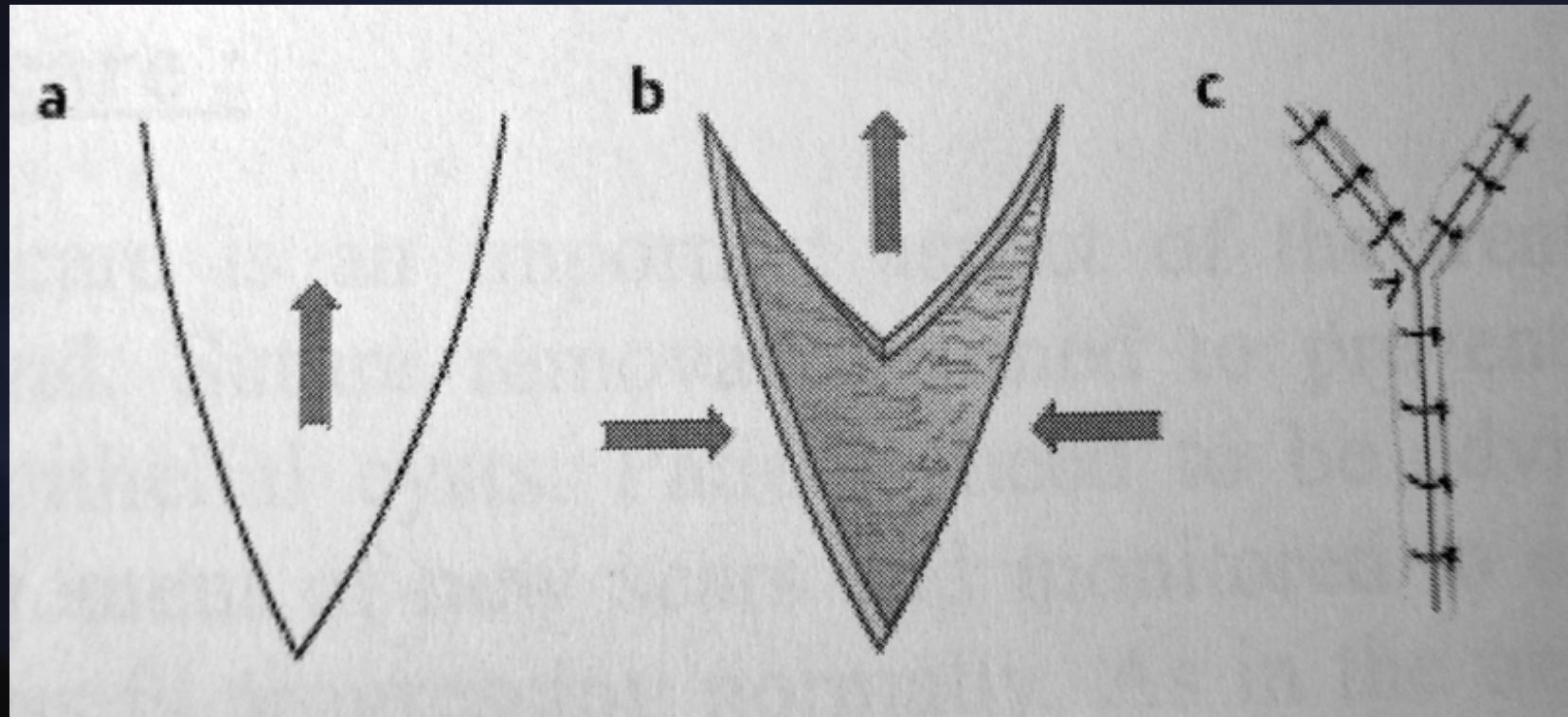


Advancement Flaps

Length of flap is 3 times that of defect

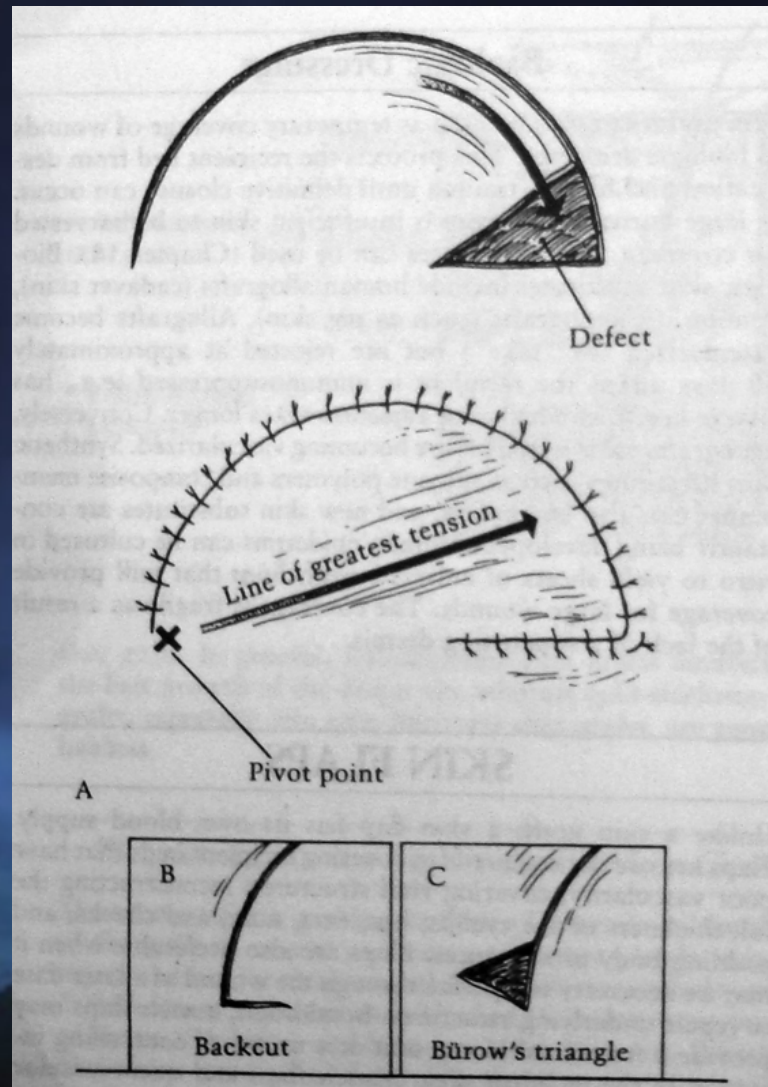


V-Y Advancement Flap

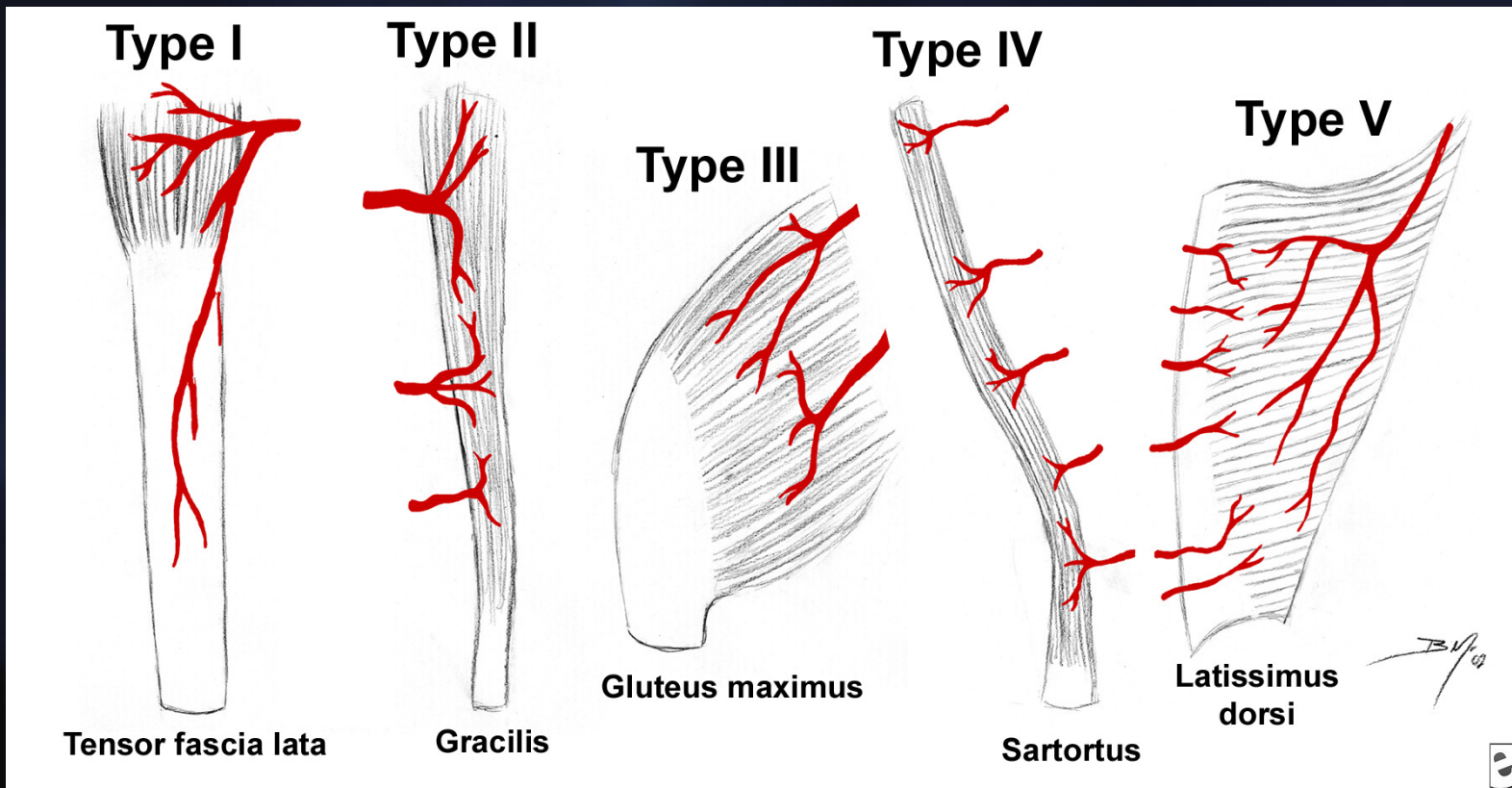


Rotational Flaps

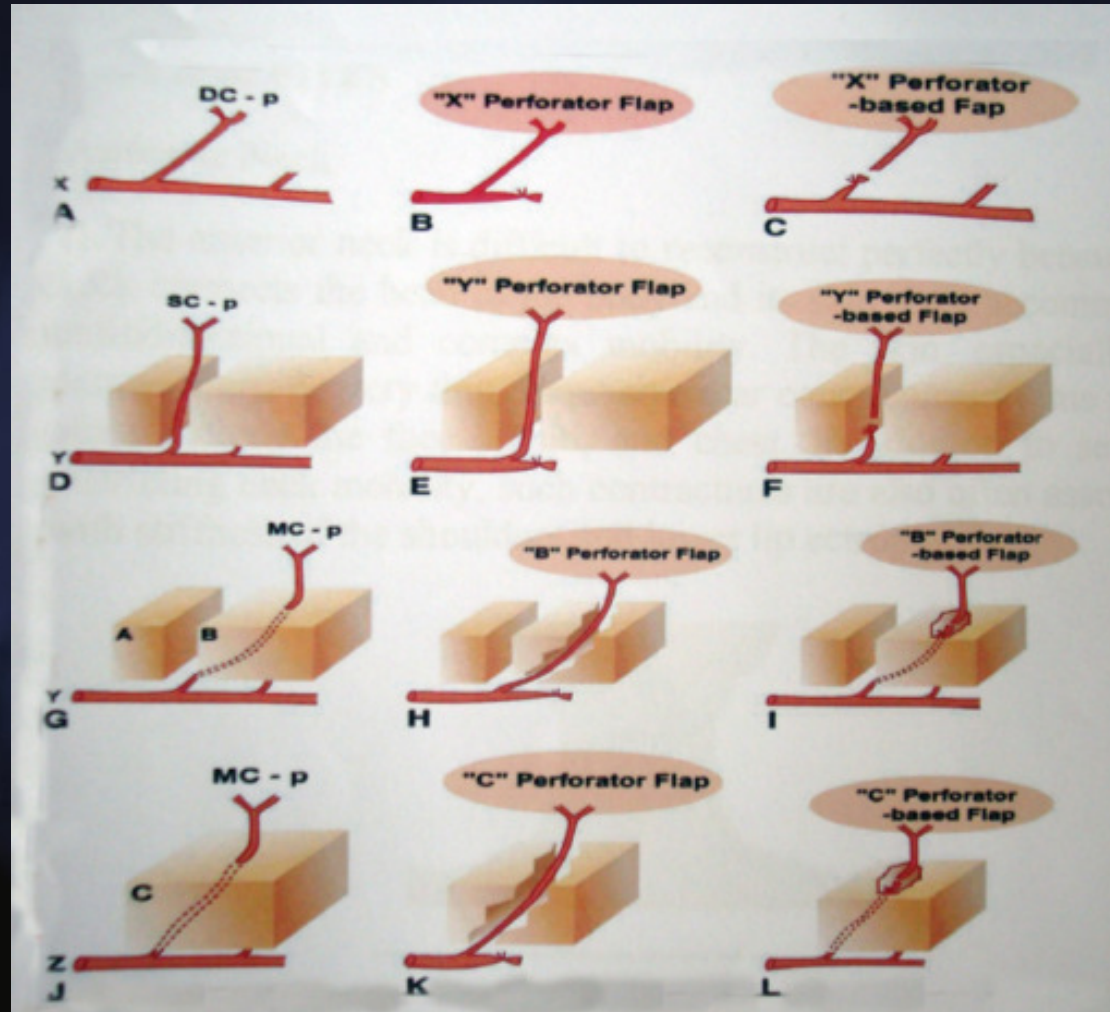
Length of flap is 4-5 times the arc of the base of triangular defect



Axial Flaps

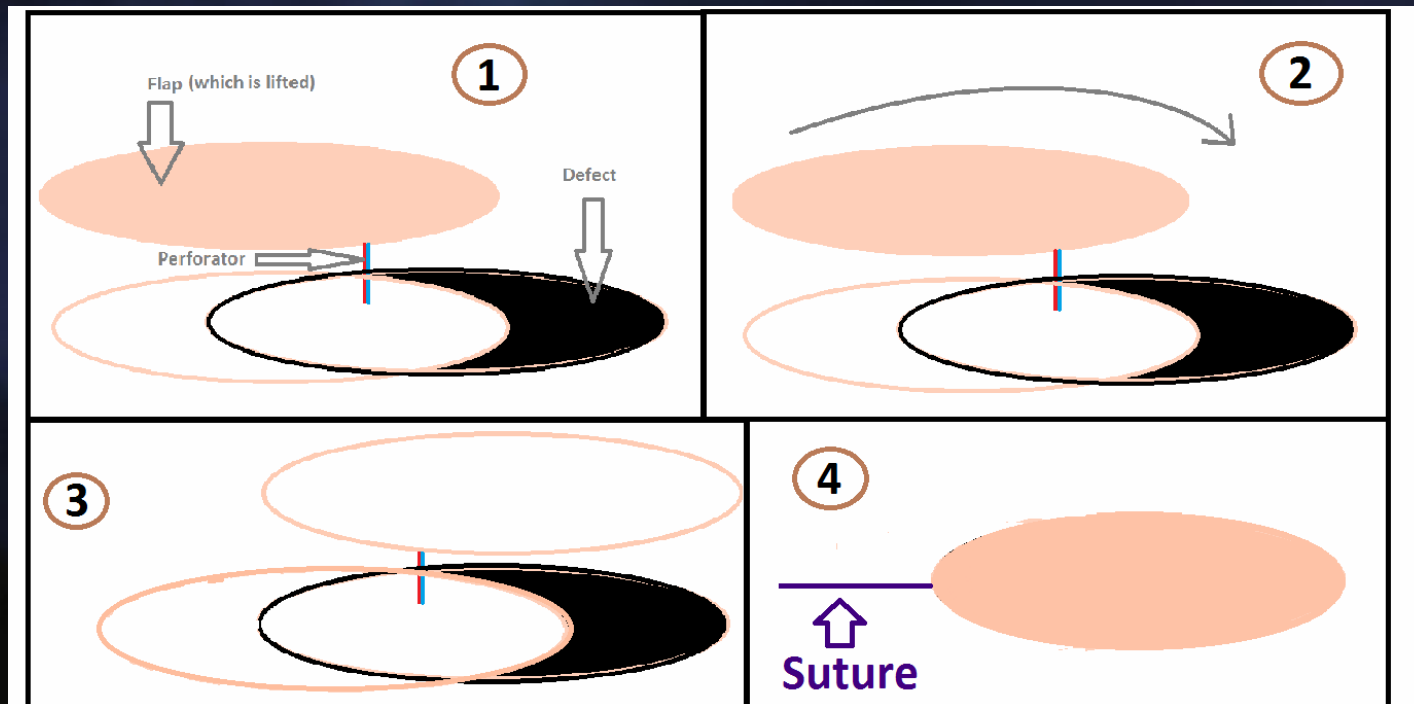


Perforator Flaps



Propeller Flaps

- *An island flap that reaches the recipient site through an axial rotation.” Island flaps that reach the recipient site through an advancement movement and flaps that move through a rotation but are not completely islanded are excluded from this definition*



Postoperative Flap Care

- Avoid hypotension
- Avoid low hematocrite value
- Avoid hypo-oxygenation
- Postoperative Assessment

Postoperative Assessment

Clinical *(Hourly for first 24 hours)*

- **Color** (*Bluish or extremely pale*) A flap can withstand arterial ischemia longer than venous insufficiency
- **Swelling**
- **Temperature +/-**
- **Capillary refill** (2-3 seconds) Slow means ischemia, Rapid means congestion
- **Pinprick test** (25 gauge - away from pedicle)(20-30 seconds)

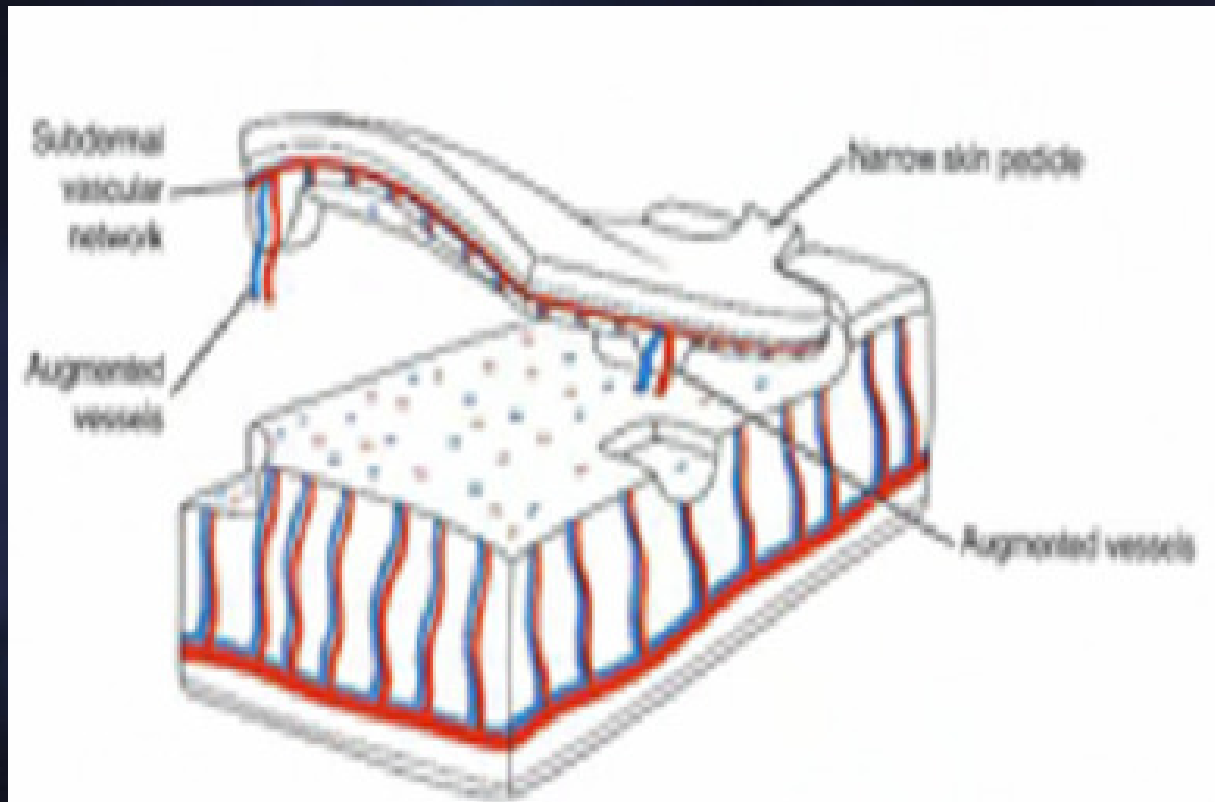
Instrumental

- Hand Held Doppler
- ViOptix monitor (near-infrared spectroscopy to detect tissue oxygen saturation)

What to do if a flap becomes Swollen and Bluish Shortly after surgery

- Make sure nothing is compressing or kinking the pedicle
- Properly position the patient
- Loosen dressings and tape
- Remove a few stitches
- Drain any collection under the flap
- Adequate pain control
- Avoid/rapidly correct hypotension and low hematocrite
- Supplemental Nasal Oxygen
- Heparin soaked gauze / **MLT**

SUPER-THIN FLAPS



Better Survival (Prevents blood stealing by adipose tissues)

More Contour Sensitive

Super thin flaps

Skin-pedicle dependent (RANDOM PATTERN)

Perforator dependent

Direct cutaneous perforator **DC-p**

Septocutaneous perforator **SC-p**

Musculocutaneous perforator **MC-p**

Random flap



random pattern flap

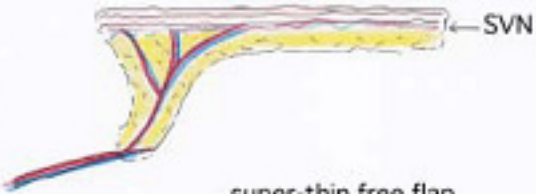


super-thin random pattern flap

Free flap

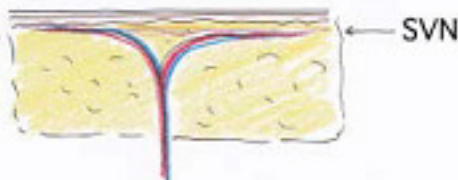


free flap



super-thin free flap

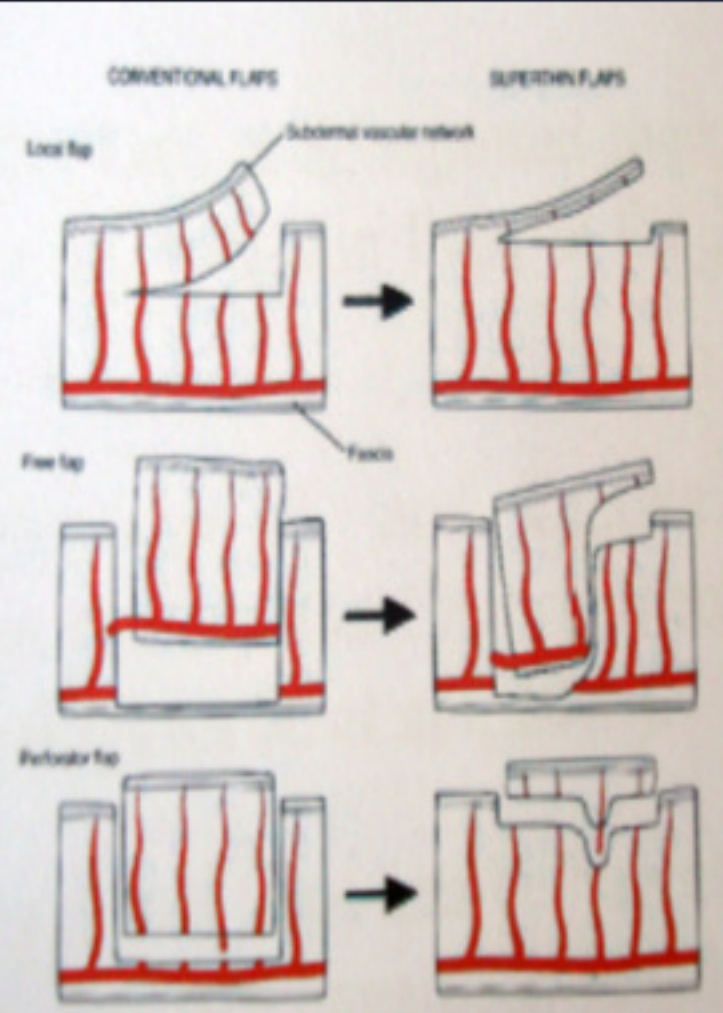
Perforator flap



perforator flap



super-thin perforator flap



Thank you