

Tissue transfer Flap surgery

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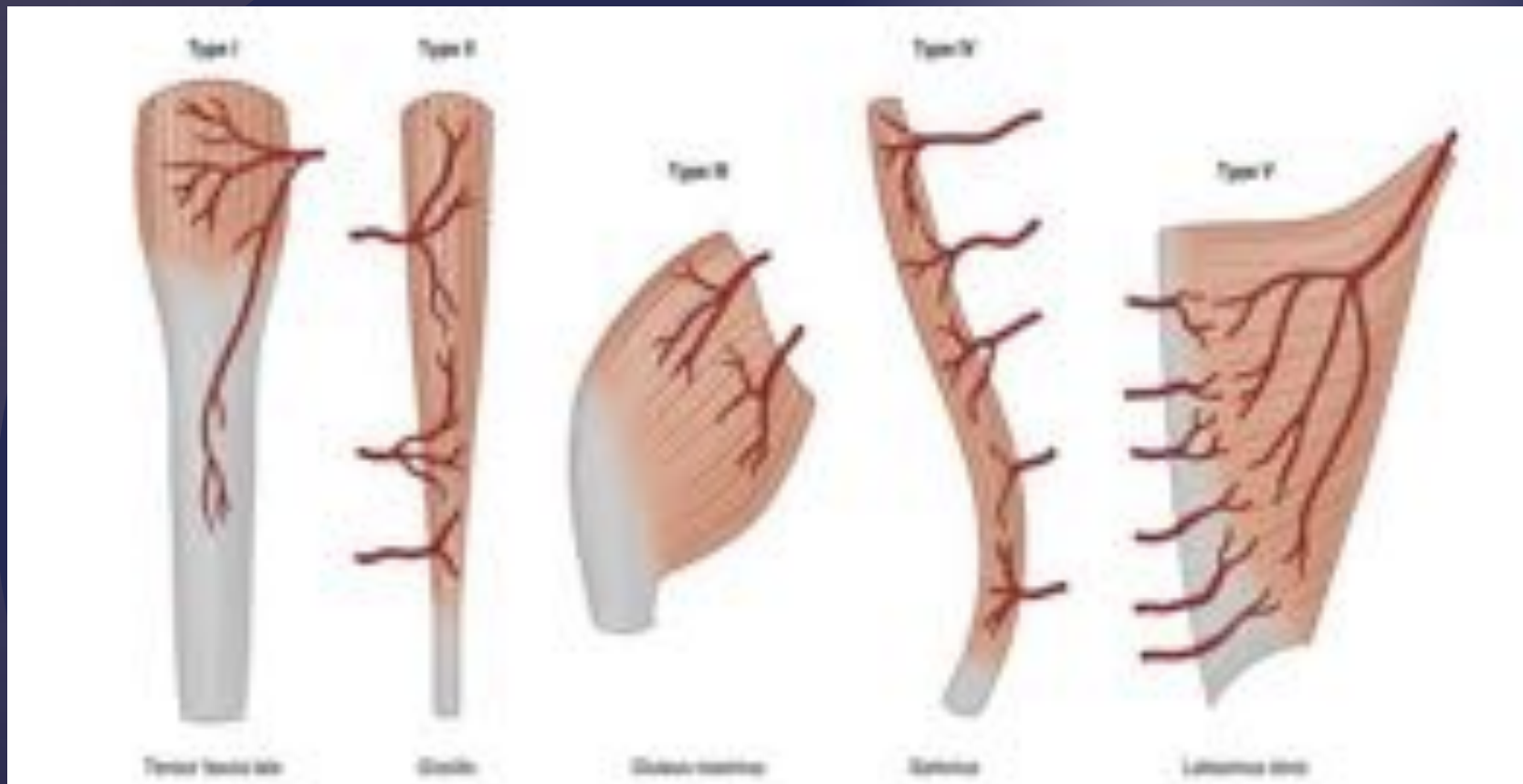
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- Flap by definition means an object that is attached at one end and can be raised from the other sides.
- Pedicled flaps: Carry their own blood supply on their neurovascular pedicle and are transferred locally, regionally or distally.
e.g Reverse sural, gastrocnemius, groin flaps
- Free flaps: Carry their donor vessels which have to anastomosed to the recipient site vessels.

Tissue transfer pedicled/ free:

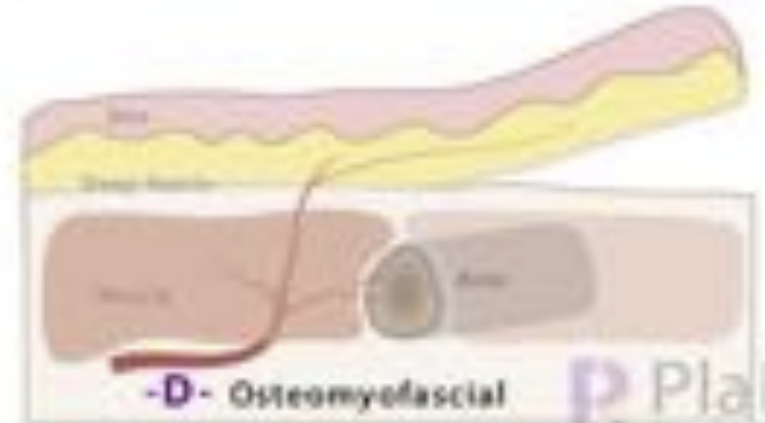
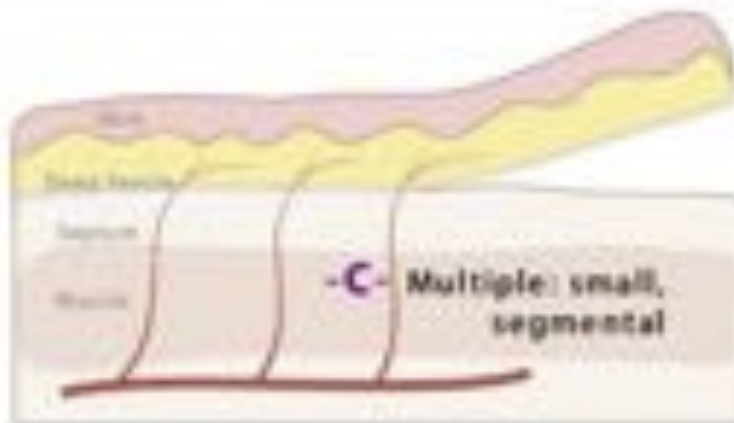
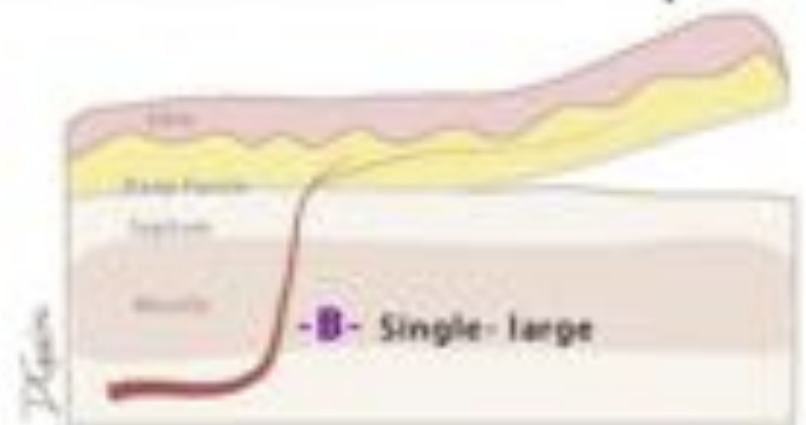
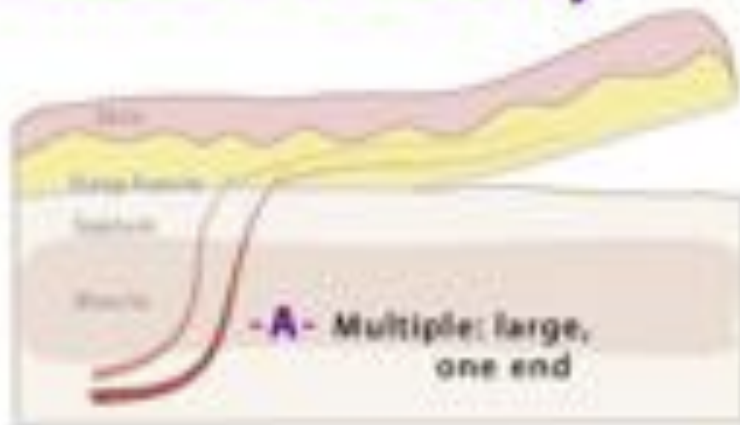
- Skin only: Groin, ALT
- Muscle transfer : coverage or functional
 - : LD, gracilis
- Nerve : sensory or motor
 - : sural graft, VUNG
- Bone : bridging or reconstruction
 - : fibula, Iliac crest, scapula

CLASSIFICATION:



MATHES AND NAHAI

Cormack-Lamberty Classification of Fasciocutaneous Flaps



RECONSTRUCTIVE LADDER!



5	Free Flap (with microvascularity)	
4	Distant Pedicled Rotate Flap	
3	Local or Regional Flap	
2	Skin Graft	
1	Direct Closure	Primary Closure Healing by Secondary Intention

PRINCIPLES OF FREE FLAP SURGERY:

- INDICATION: ONCO, TRAUMA, BURNS
- CONTRAINDICATION
- TIMING !
- TEAM WORK!
- EQUIPMENTS
- DO NO HARM!!!

* points discussed in introduction to microvascular surgery

MONITORING OF FREE FLAPS:

- CLINICAL!
 - Temperature
 - Colour
 - Slow sustained bright red ooze on prick
- Handheld doppler
- Laser doppler
- Implantable devices
- Digital plethysmography
- Radioisotope clearance assays
- Fluorescein perfusion monitoring
- Transcutaneous oxygen tension monitoring

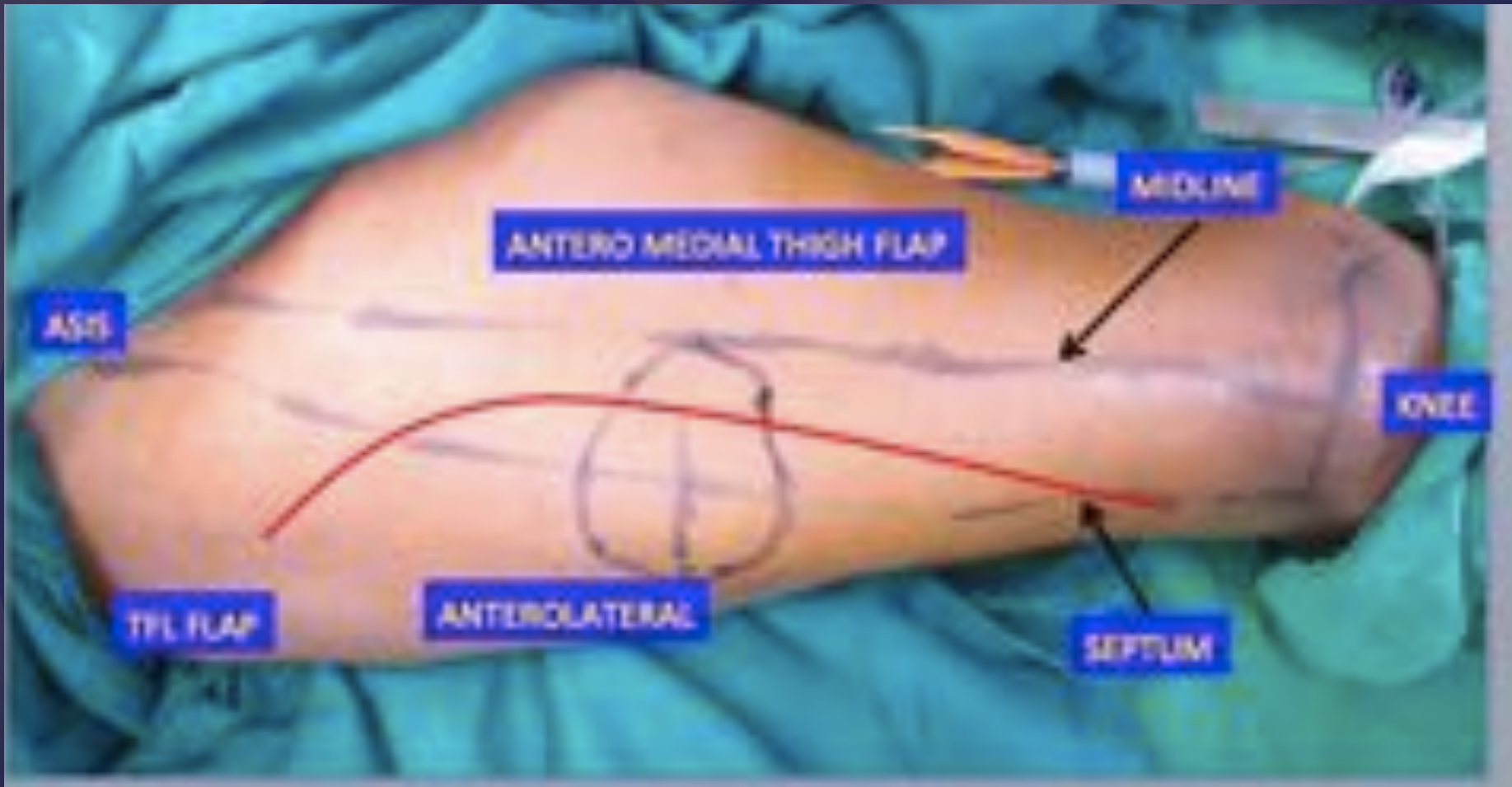
THE BIG 5!

ANTEROLATERAL THIGH FLAP:

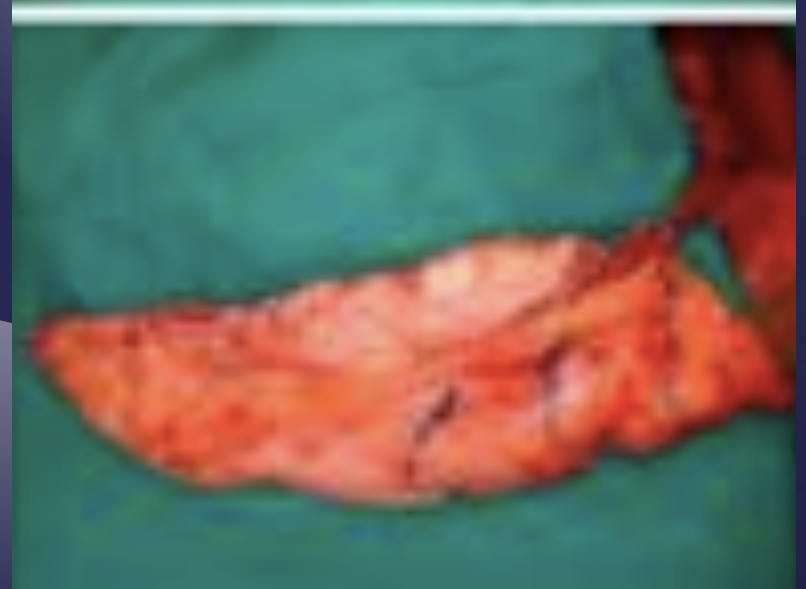
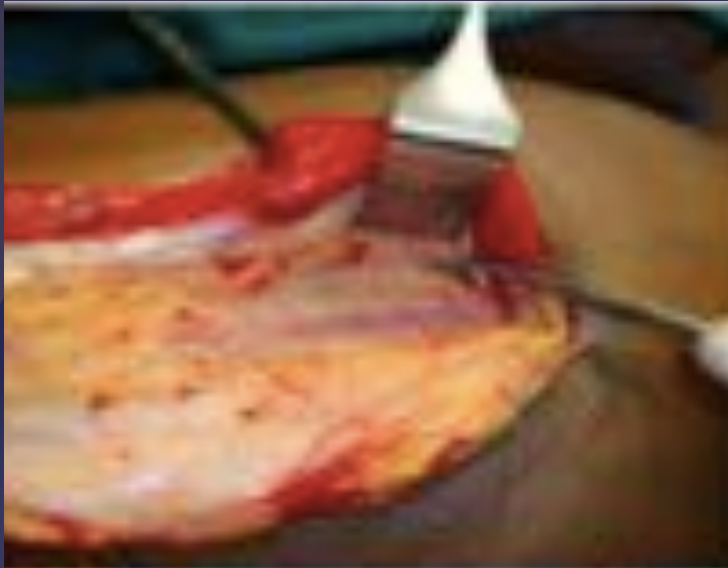
- Versatile soft tissue flap
- 25X30cm paddle
- Vastus lateralis
- Low donor site morbidity
- SUPRAFASCIAL flap harvest
- SEPTO AND MUSCULOCUTANEOUS
PERFOARTORS FROM THE DESCENDING
BRANCH OF LCFA

- A satisfactory perforator is generally found within 3 cm of the midpoint of a line connecting the ASIS with the superolateral border of the patella.
- More than half of perforators traverse the substance of the -vastus lateralis
- The descending branch of the LCFA and its venacomitants, lie between vastus lateralis and rectus femoris.









**HAND AFTER
REVASCULARISATION**



**RECONSTRUCTION
WITH FREE FLAP**



RADIAL ARTERY FOREARM FLAP:

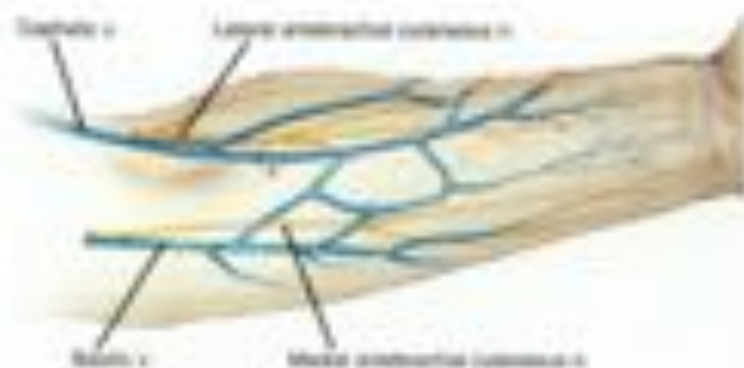
- Thin pliable tissue
- Bony component +/-
- Donor site grafted
- Non dominant hand
- ALLENS TEST
- Time for perfusion: < 6s- Allen's negative
7-11 s –equivocal
≥12 s – positive

-Mark the pedicle from the brachial artery pulsation in the cubital fossa to the radial artery pulsation at the level of radial styloid

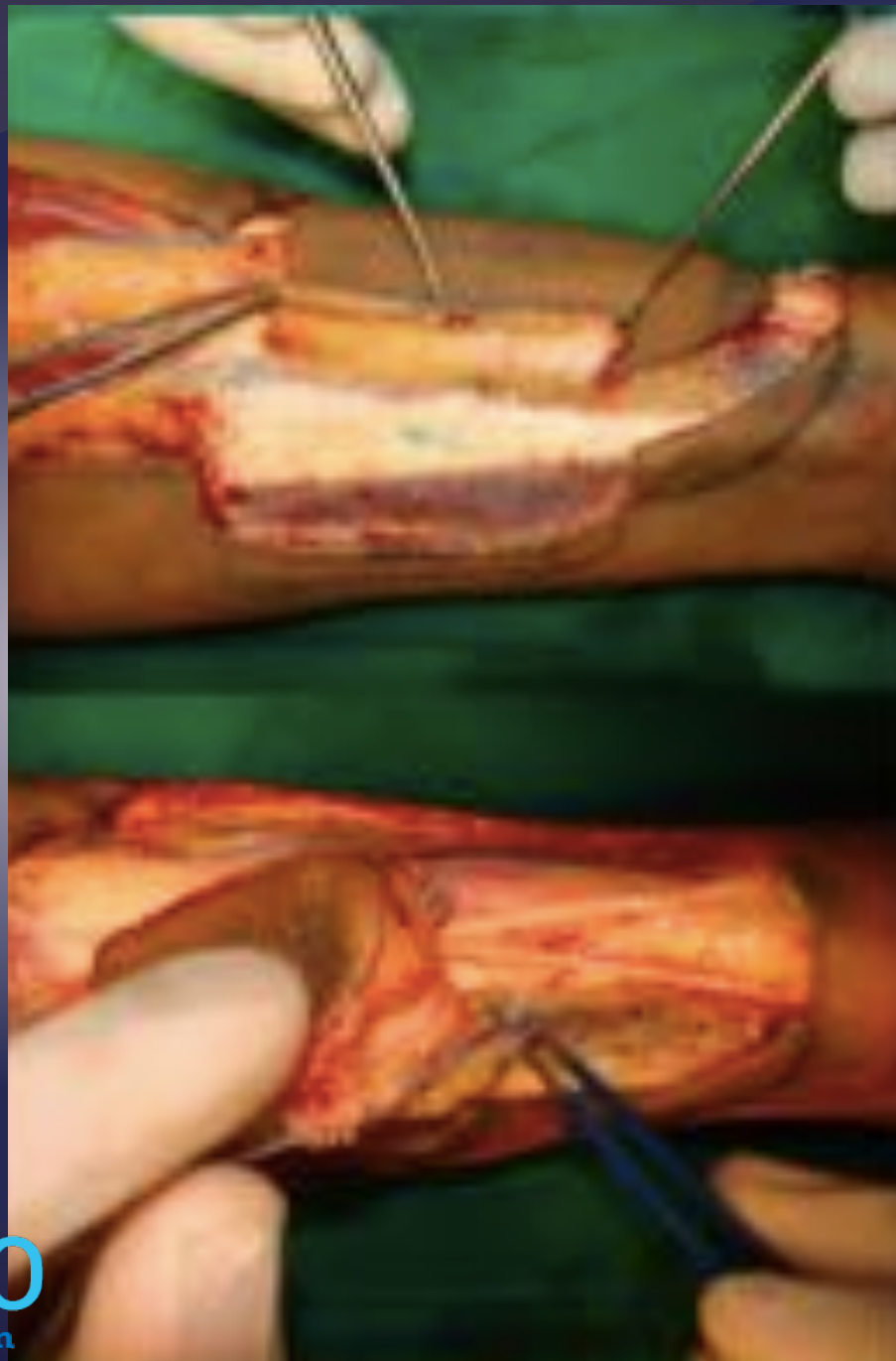
-Mark the cephalic vein.
If the vein is not seen, make it prominent by applying pressure in the proximal forearm.

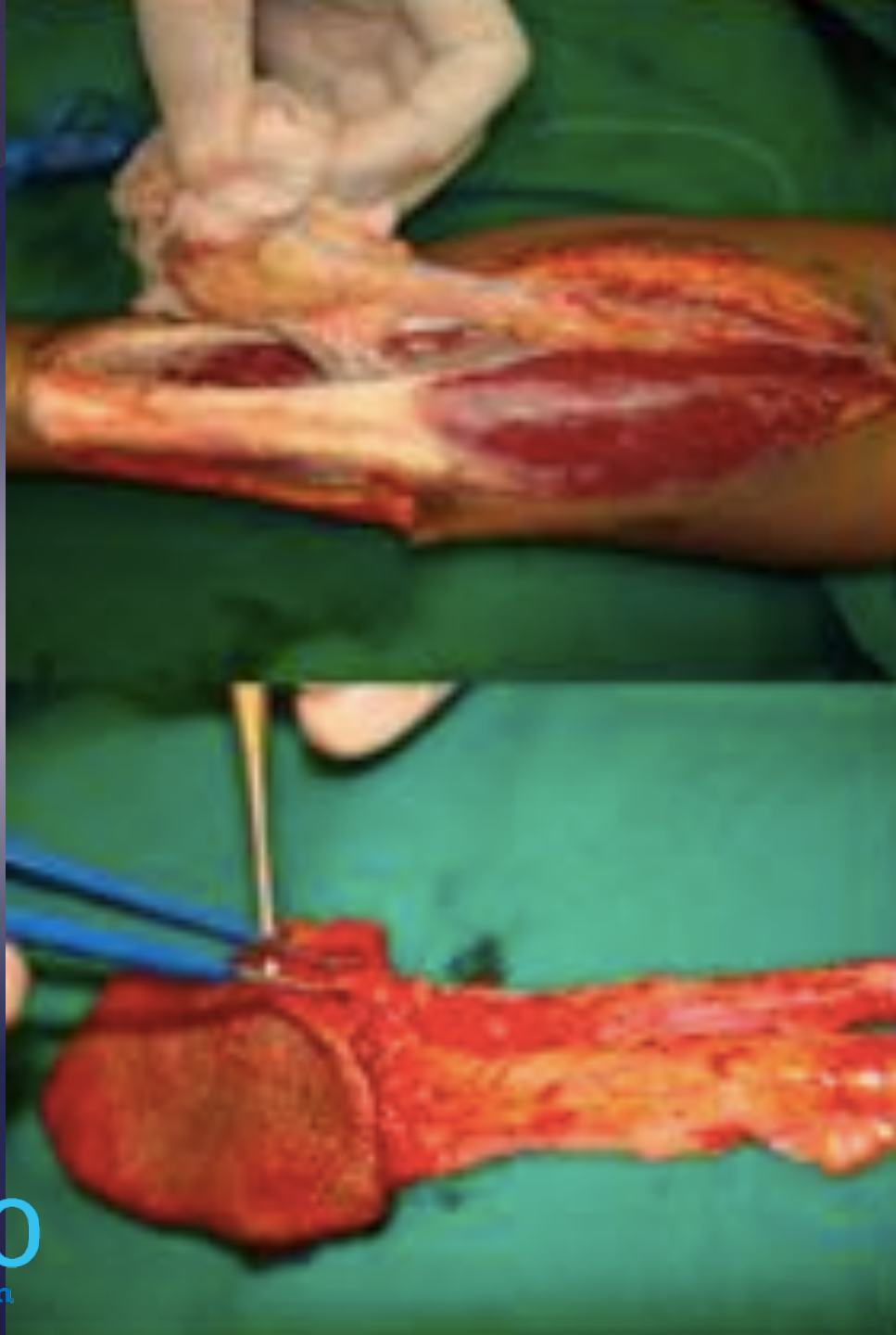
-Mark flap as per defect requirement along radial artery axis upto 2cms above radial styloid process.

Take care to include **cephalic vein in the flap design.



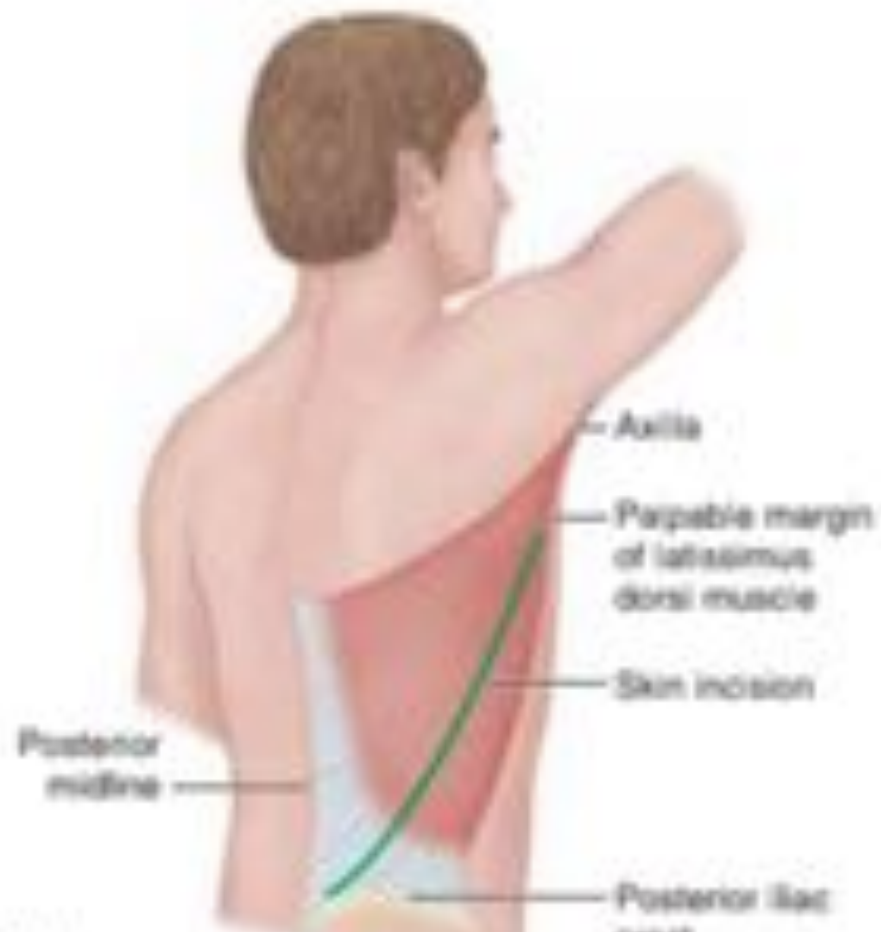






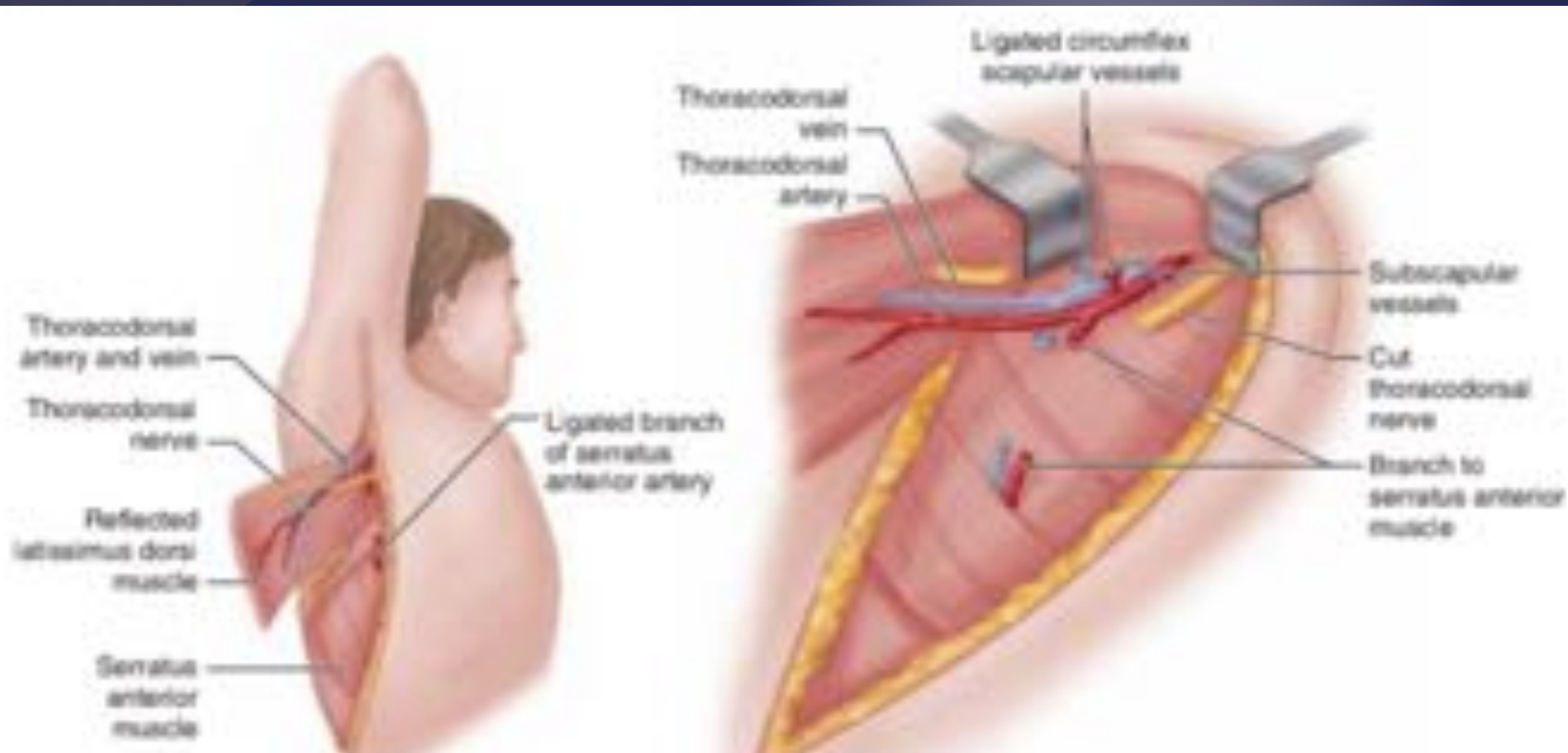
LATTISIMUS DORSI:

- Musculocutaneous flap for coverage
- Functional muscle transfer
- The dominant pedicle:
Thoracodorsal artery which is a branch of the subscapular artery, a branch of the third part of the axillary artery.
- Secondary segmental supply is by perforators arising from the posterior intercostal arteries and lumbar vessels.
(type 5)
- Motor nerve supply to the muscle is by the thoracodorsal nerve (C6-8) which runs adjacent to the dominant vascular pedicle.



Flap marking:

- Mark posterior axillary line which corresponds to lateral free border of latissimus dorsi muscle.
- Angle of scapula marks the superior origin of the muscle. Mark the posterior midline and iliac creast.
- “Snap” sign or grasp test can be used to identify the free lateral border of the muscle in patients under anesthesia.
- The free border of the muscle is usually located 2-3cms anterior to the point of identification of the muscle.
- Design the skin paddle: Longitudinal or TDAP



Uses of LD flap:

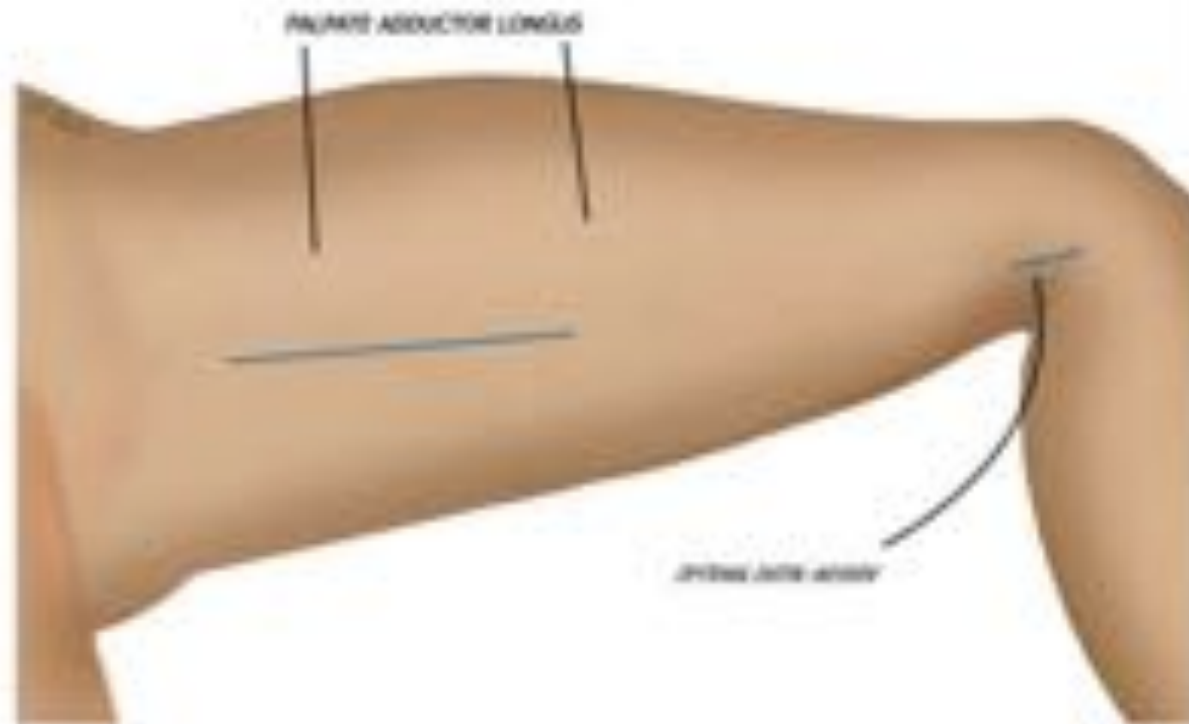
- Free musculocutaneous flap for coverage of soft tissue defect especially in lower limbs
- Pedicled muscle transfer for elbow flexion in TBPI
- Pedicled flap for coverage of back defects
- TDAP flap for breast reconstruction



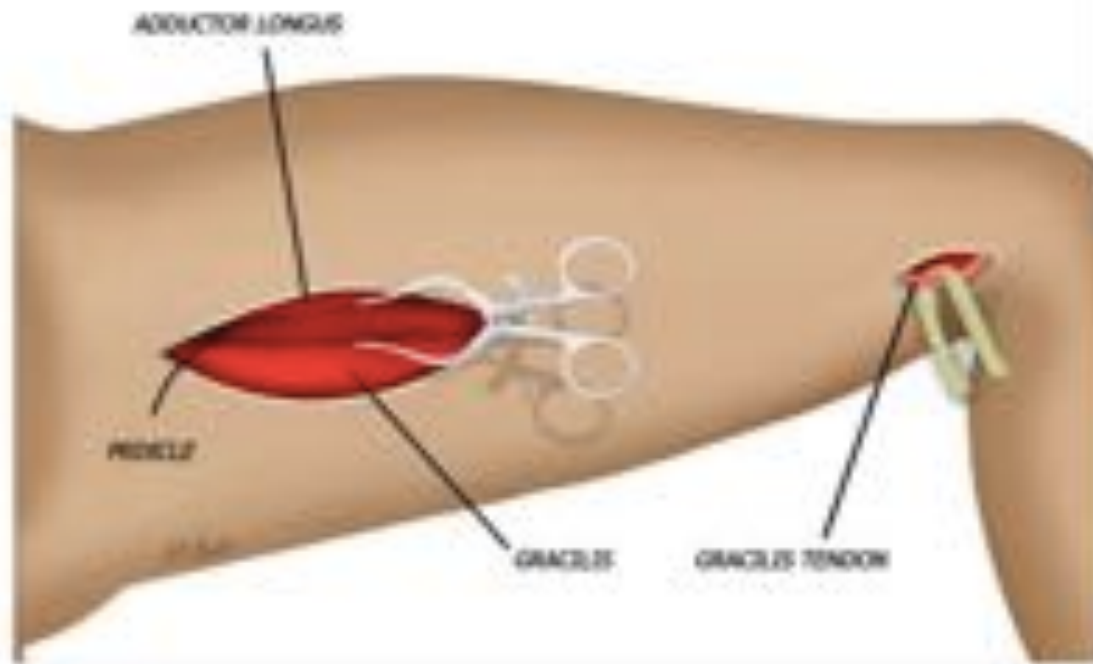
GRACILIS:

Type 2

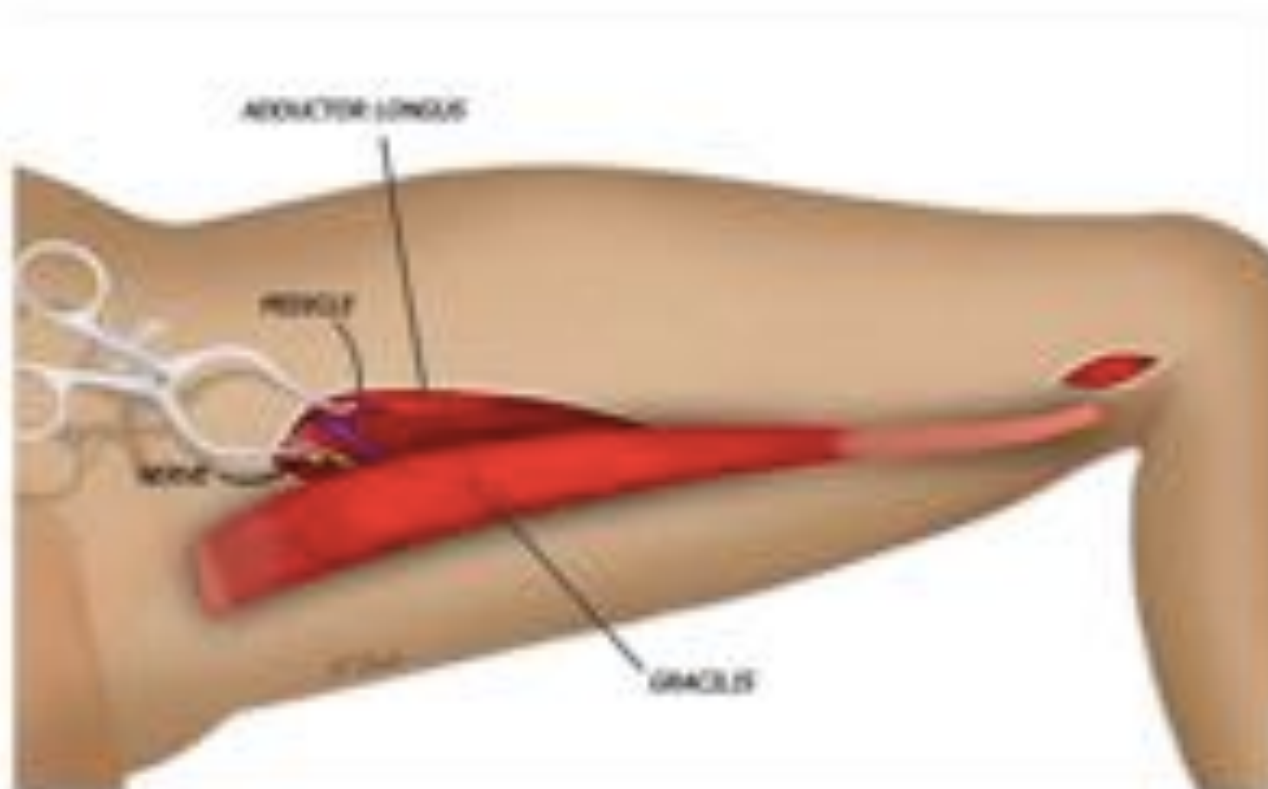
- Medial circumflex femoral artery
- Obturator nerve
- Muscle for cover
- Free functional muscle transfer : TBPI, Volkmans ischemic contracture



The incision is marked over the axis of the muscle, two to three finger breadths below the easily palpable adductor longus muscle.



The pedicle is identified by incising the muscular fascia over the gracilis muscle and retracting the space between the gracilis and adductor longus. The pedicle is traced back to its origin by exposing it between the planes of adductor longus and gracilis.



After exposing the pedicle, the proximal and distal insertions need only be detached and the minor pedicles divided.

FREE FIBULA:

- A long segment of bone up to approximately 22 to 26 cm is available for harvest.
- The skin paddle has proven to be dependable with fasciocutaneous perforators, almost 12 by 20cm of skin can be harvested.

Contraindication:

- History of peripheral vascular disease
- PERONEA MAGNA 0.2%
- (routine CT angiography of leg???)
- Venous insufficiency may complicate donor site healing.

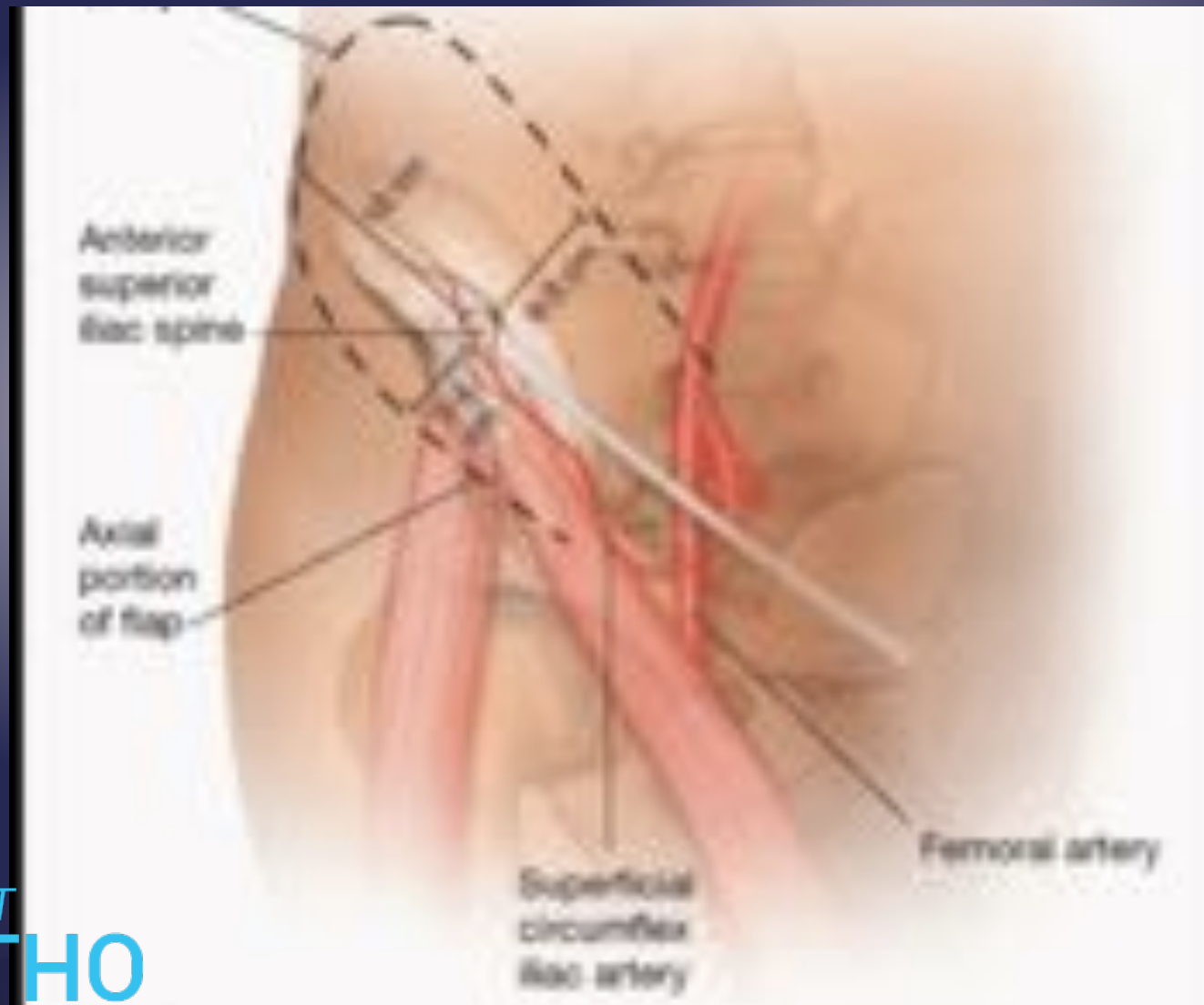
- Fibula is supplied by nutrient endosteal and periosteal muscular and septal branches from the **peroneal artery**.
- The nutrient artery enters the fibula at its mid point. Peroneal artery arises from posterior tibial artery distal to the popliteal fossa. It lies between **tibialis posterior** and **FHL**
- **Fibular head** receives its blood supply from **anterior tibial artery**.
- Almost all of the skin on the lateral side of the leg can be harvested along with bone, from just lateral to shin upto midline posteriorly.





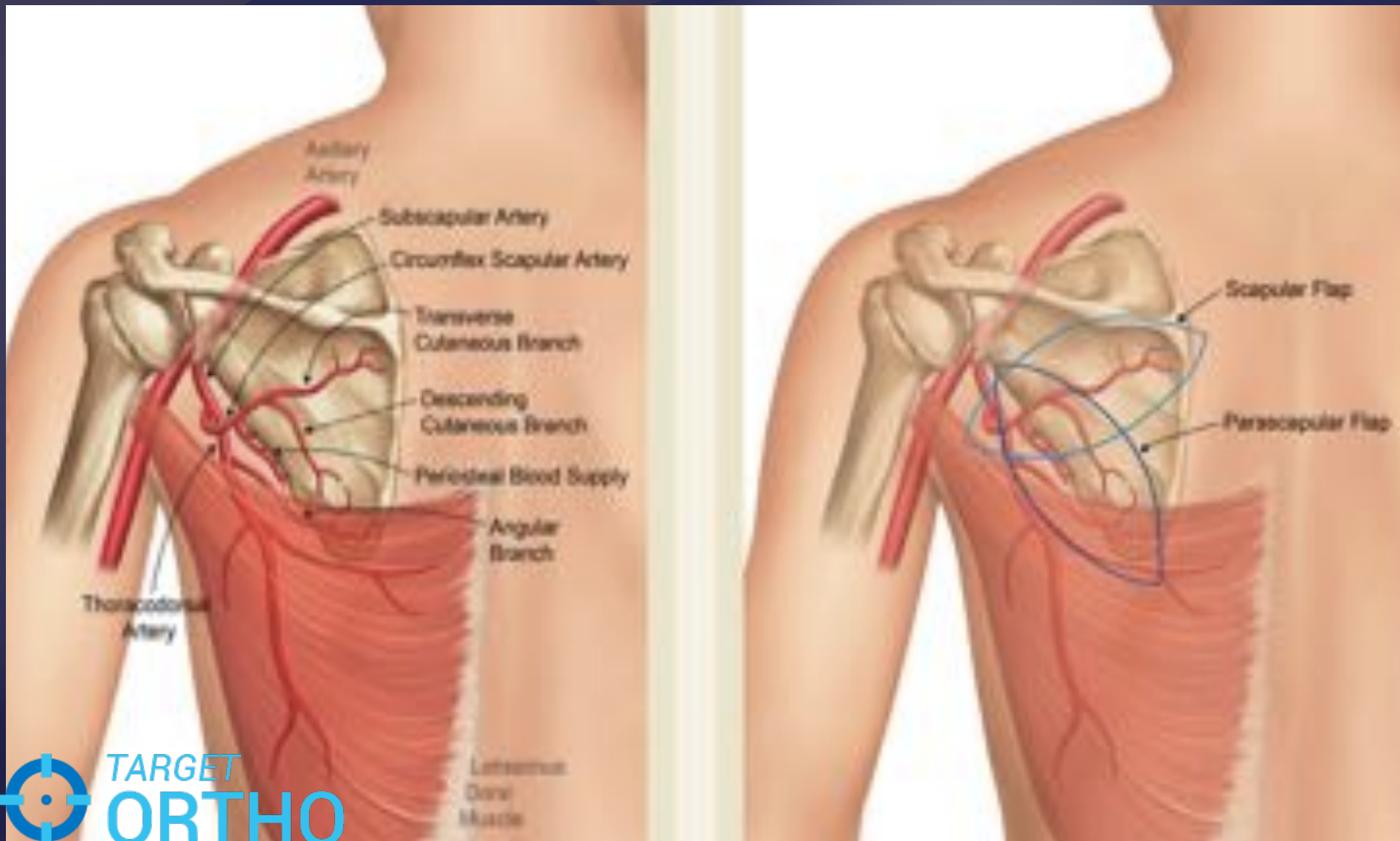
OTHERS:

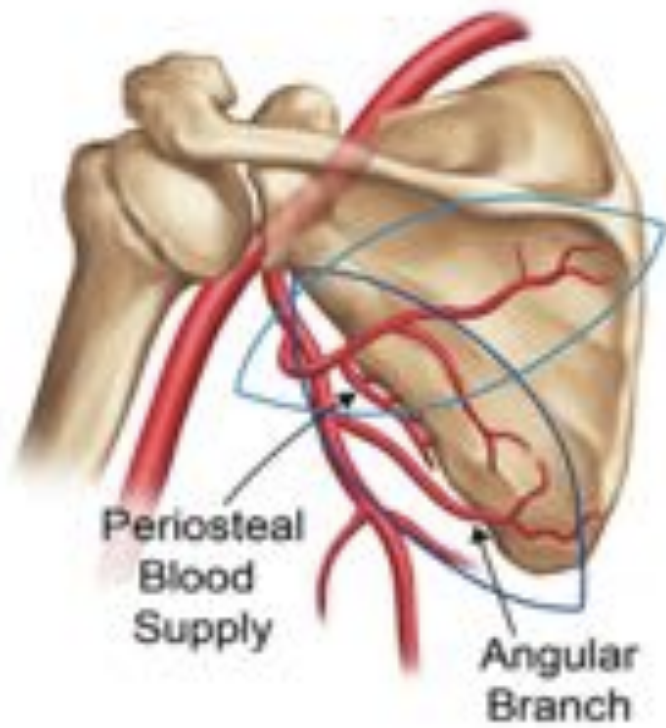
GROIN FLAP



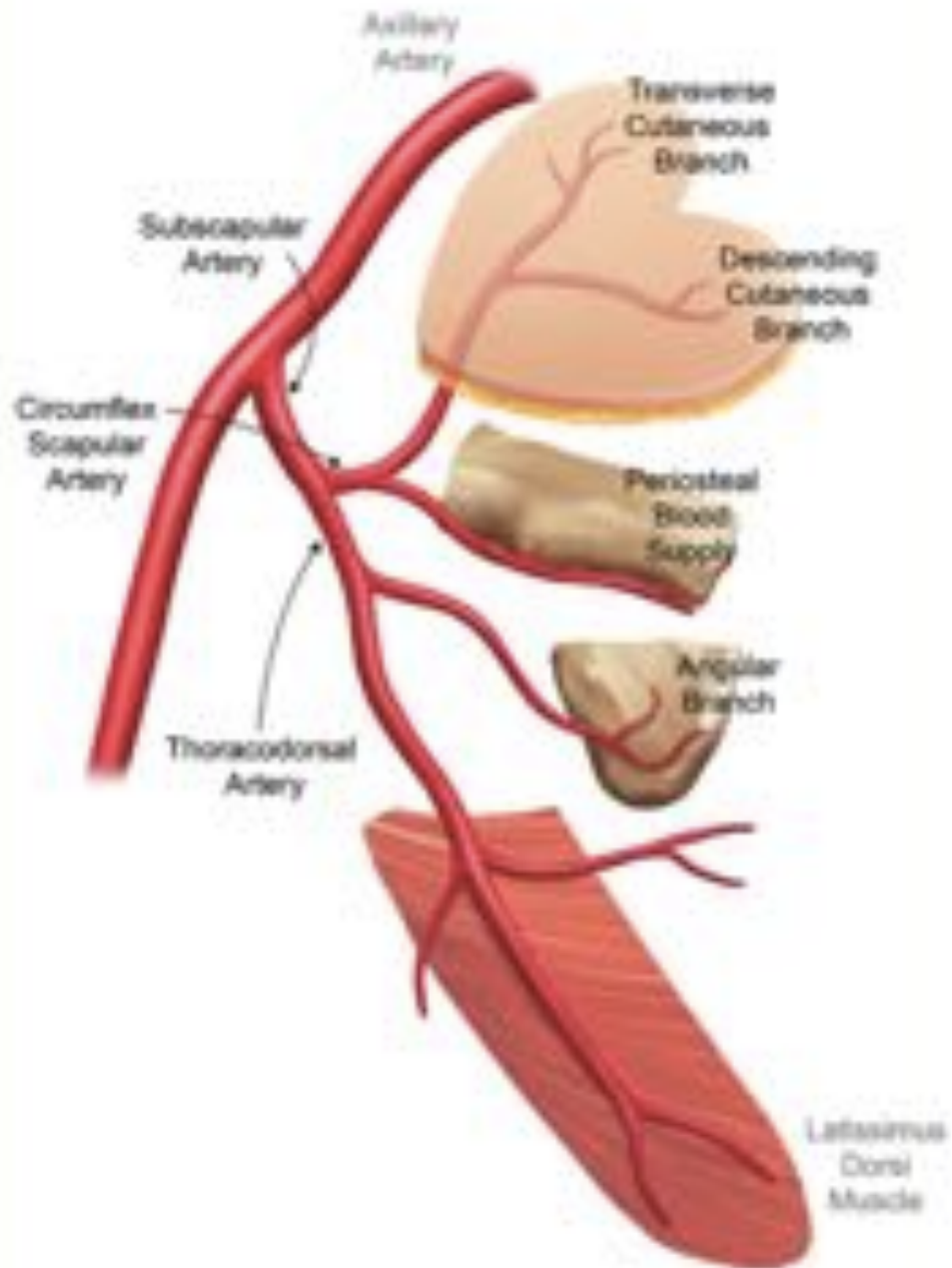


SCAPULAR AND PARASCAPULAR:





CHIMERIC



DCIA (deep circumflex iliac artery)

Lateral Arm Flap

Serratus anterior

Temporalis flap

Jejunal flap

Rectus abdominis

Pectoralis major

THANK YOU!

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Instagram – drps_plastics

Youtube – DrPS