

Surgical Approaches Review

- Submandibular
- Retromandibular / transparotid
- Preauricular
- Transconjunctival / lateral canthotomy / transcaruncular
- Subciliary / Subtarsal
- Coronal
- Upper bleph
- Rhino/septoplasty
- Gilles
- Lefort
- BSSO
- Modified condylotomy
- Anterior hip
- Posterior hip
- Tibia
- Rib
- Fibula
- Tracheotomy

Submandibular:

Incision: 2cm below inferior border of the mandible

Layers: Skin, subcutaneous tissue, platysma, superficial layer of deep cervical fascia, pterygomasseteric sling, periosteum, mandible

Important structures: facial artery, facial vein, marginal mandibular branch of facial nerve, submandibular gland.

- Marginal mandibular nerve passes 1.2cm below inferior border.

Complications: marginal mandibular branch facial nerve damage, hematoma

Retromandibular / Transparotid:

- Hinds approach

Incision: 0.5 cm below earlobe, continues inferiorly 3 - 3.5cm just behind posterior border of mandible.

Layers: skin, subcutaneous tissue, scant platysma, SMAS/parotid capsule, pterygomasseteric sling, periosteum, mandible

- Sigmoid notch retractor can be useful for retraction

Important structures: parotid gland, marginal mandibular branch of facial nerve, retromandibular vein

Complications: salivary fistula (treatment with pressure dressing, scopolamine patch, pro banthine).

Coronal

Incision:

Layers: skin, subcutaneous tissue, galea, subgaleal (loose areolar tissue), pericranium
Laterally the musculoaponeurotic layer becomes temporoparietal fascia

Important structures: Superficial temporal artery (just superficial to temporoparietal fascia), supraorbital neurovascular bundle, temporal branch of facial nerve (just deep to or within temporoparietal fascia).

Complications: nerve injury, hematoma, alopecia

Upper eyelid / bleph

Incision: 10mm superior to upper lid margin and 6mm superior to lateral canthus (can extend as far laterally as needed for surgical access)

Layers: skin, orbicularis oculi, periosteum (incised 2-3mm posterior to orbital rim)

Important structures: Levator palpebrae superioris, Muller's muscle (superior tarsal muscle), lacrimal gland, orbital septum

Complications: ptosis, epiphora, ocular injury

Preauricular:

Incision: skin fold along entire aspect of the ear within 8mm of EAC. incise to the depth of the superficial layer of the temporalis fascia.

Layers: Temporal region (skin, subcutaneous, temporoparietal fascia, superficial temporalis fascia, temporal fat pad, deep temporalis fascia).

Dissection to the Joint Capsule: along the anterior portion of the EAC to avoid superficial temporal vessels and auriculotemporal nerve, Above the arch bluntly dissect 1.5 to 2cm anteriorly to the level of the superficial temporalis fascia, below the arch bluntly dissect parallel to and along the EAC cartilage. Incise the superficial layer of the temporalis fascia just anterior to the tragus at the zygoma in anterior superior direction. Incise periosteum and reflect to reveal TMJ capsule.

Important structures: STA (superficial temporal artery (within the TP fascia), auriculotemporal nerve, temporal branch of facial nerve cross 8 to 35mm average 20mm from the anterior most portion of the EAC where the upper trunk cross the zygomatic arch.

Complications: facial nerve injury, perforation into EAC

The TMJ is a ginglymoarthrodial joint (rotation and translation)

Transconjunctival: (aka inferior fornix approach)

- Preseptal and retroseptal (retroseptal more direct and easier to perform)
- Lateral canthotomy can be added for improved lateral exposure
- Transcaruncular to access the medial wall

Incision:

First protect the cornea (corneal eye shield), perform lateral canthotomy if needed, using scissors cut the lateral palpebral fissure horizontal in lateral direction (7 - 10mm). Then rotate inferiorly to lateral canthal tendon (inferior cantholysis).

For transconjunctival incision place between inferior fornix and inferior edge of tarsal plate. *8-10mm from eyelid margin or 5-7mm from tarsal plate *, incise thru periorbital just posterior to orbital rim. Use a malleable retractor to protect globe and contain orbital fat. Can carry as far medially as the lacrimal punctum.

Extending medially: incise lateral to the caruncle and medial to the semilunar fold. Can use a forceps to lift/grasp the semilunar fold. Dissect posterior to lacrimal crest and the Horner muscle. Incise periorbital just posterior to Horner muscle. Next cut/ cauterize ant/post ethmoid arteries.

Layers:

- lateral canthotomy: skin, orbicularis oculi, lateral canthal tendon, orbital septum, conjunctiva.
- Transconjunctival: conjunctiva, periorbital fat, periorbital, orbital rim
- Transcaruncular :

Important structures: lacrimal sac, anterior ethmoid arteries, posterior ethmoid arteries

Complications: Entropion, ectropion

Rhinoplasty / septoplasty:

Incision:

Layers:

Important structures:

Complications:

Gilles:

Incision:

Layers:

Important structures:

Complications: alopecia, temporalis pain

Lefort:

Incision:

Layers:

Important structures:

Complications:

BSSO:

Incision:

Layers:

Important structures:

Complications:

Modified Condylotomy:

Incision:

Layers:

Important structures:

Complications:

Anterior hip:

Anatomy:

- The anterior iliac crest is located between to AIS and tubercle of the ilium, which is 6 cm posterior to the AIS.
- A maximum of 50cc of uncompressed cancellous bone can be harvested.
- 10cc of uncompressed bone per 1 cm of defect.
- Tensor fascia lata originates from the AIS laterally and is the most important structure related to gait disturbances. It inserts on lateral tibia.
- External abdominal oblique attaches to AIS medially.
- Inferior to anterior iliac crest is gluteus medius and minimus attach to lateral cortex.
- Iliacus attaches to medial surface of iliac crest and is reflected during surgery.
- Sartorius attaches to AIS and inserts into medial aspect of tibia.
- Inguinal ligament attaches to AIS and inserts onto pubic tubercle.
- Iliotibial band
- Both the inguinal ligament and sartorius should not be encountered during the dissection.
- Most commonly affected nerve is lateral cutaneous branch of the iliohypogastric (L1,L2) which runs over the tubercle of the ilium
- Lateral cutaneous branch of the subcostal nerve (T12, L1) runs over the tip of the AIS and is slightly inferior to the iliohypogastric
- Blood supply: perforating branches of the deep circumflex iliac artery and vein located on the medial ilium

Incision/ layers: Retract the skin medially which facilitates the postoperative scar to the lateral to the iliac crest and avoid irritation from clothing. 4 - 6 cm incision is placed starting 2 cm posterior to the ASIS to avoid the lateral femoral cutaneous nerve and extending posteriorly toward the tubercle. The dissection is carried down through skin, (camper's fascia) subcutaneous tissue, Scarpa's fascia and through the aponeurosis between the external oblique and tensor fascia lata. The periosteum is sharply elevated off the crest of the ridge and the iliacus muscle is retracted medially in a subperiosteal plane.

Important structures:

Complications:

- meralgia paresthetica is an injury to the lateral femoral cutaneous nerve resulting in dysesthesia and anesthesia to lateral thigh.
- Bleeding: most common source of bleeding during harvest is the gluteal artery.
- Avitene - microfibrillar collagen

Posterior hip:

Incision:

Layers:

Important structures:

Complications:

- Defects larger than 5 cm should be reconstructed with microvascular reconstruction

Tibia:

- 25cc of cancellous bone
- Can be performed in the office

Anatomy:

- Lateral approach to the tibia metaphysis.
- Primary bony landmark in the proximal tibia is Gerdy's tubercle.
- Gerdy's tubercle is a bony protuberance between the patellar ligament (midline) and the head of the fibula, which is palpable 90 degrees laterally.
- No vital anatomic structures located over Gerdy's tubercle.
- Cutaneous branches of the lateral sural nerve in the area
- Fibular nerve is well protected beneath the head of the fibula and does not enter surgical field.
- No major nerve structures are located over Gerdy's tubercle
- Branches of the inferior genicular artery and recurrent tibial artery. Easily cauterized.
- Iliotibial tract attaches from above

Incision: 3-4 cm incision directly over Gerdy's tubercle, carried thru skin, subcutaneous tissues (including iliotibial tract) and periosteum. The periosteum is elevated in preparation for making a cortical window through the cortical bony plate at Gerdy's tubercle.

Bone harvest:

- A cortical window can be made with a surgical drill or osteotome and mallet.
- An oval hole offers less stress in the cortical bone as opposed to square or rectangle.
- Harvest the cancellous bone with a curette by going across the tibial plateau and down the shaft of the tibia.
- Care must be taken going superiorly to avoid the joint space of the knee.
- Close in layers with iliotibial tract being reapproximated.

Important structures:

- Iliotibial tract is the only anatomic structure one encounters during the dissection.
A dense fascial band that runs from the anterior iliac crest to lateral surface of the tibia.

Complications:

- OK for weight bearing immediately after procedure.
- Avoid contact sports or vigorous physical activity for 6 weeks.
- Fracture of tibia plateau

Rib:

Incision: over the 5th or 7th rib

Layers:

Important structures:

Complications:

Fibula:

Incision:

Layers:

Important structures:

Complications:

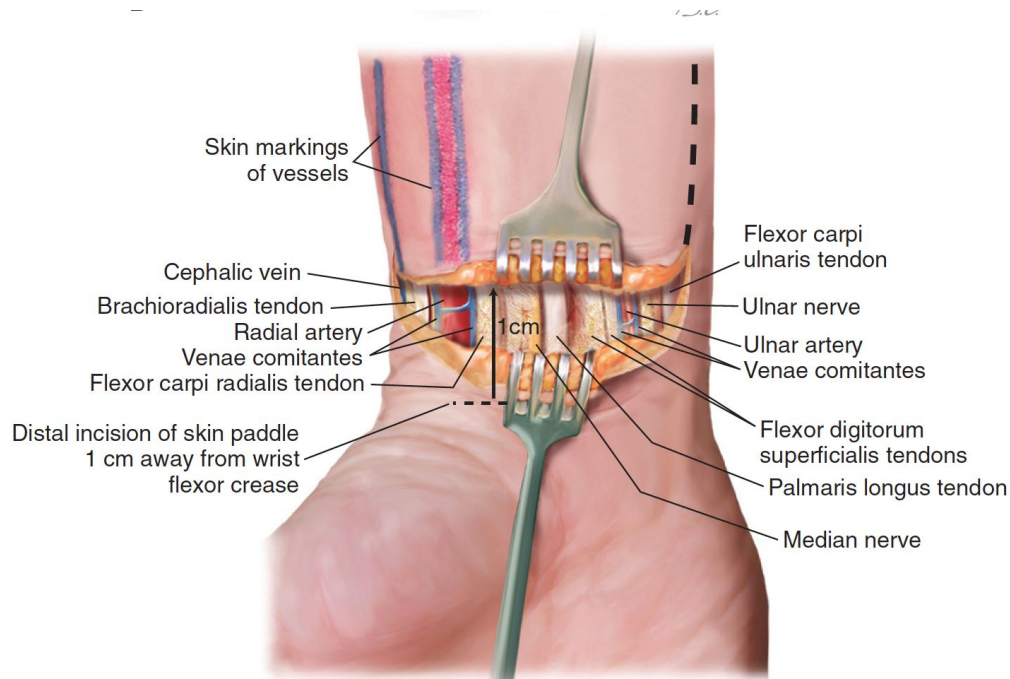
Radial Forearm:

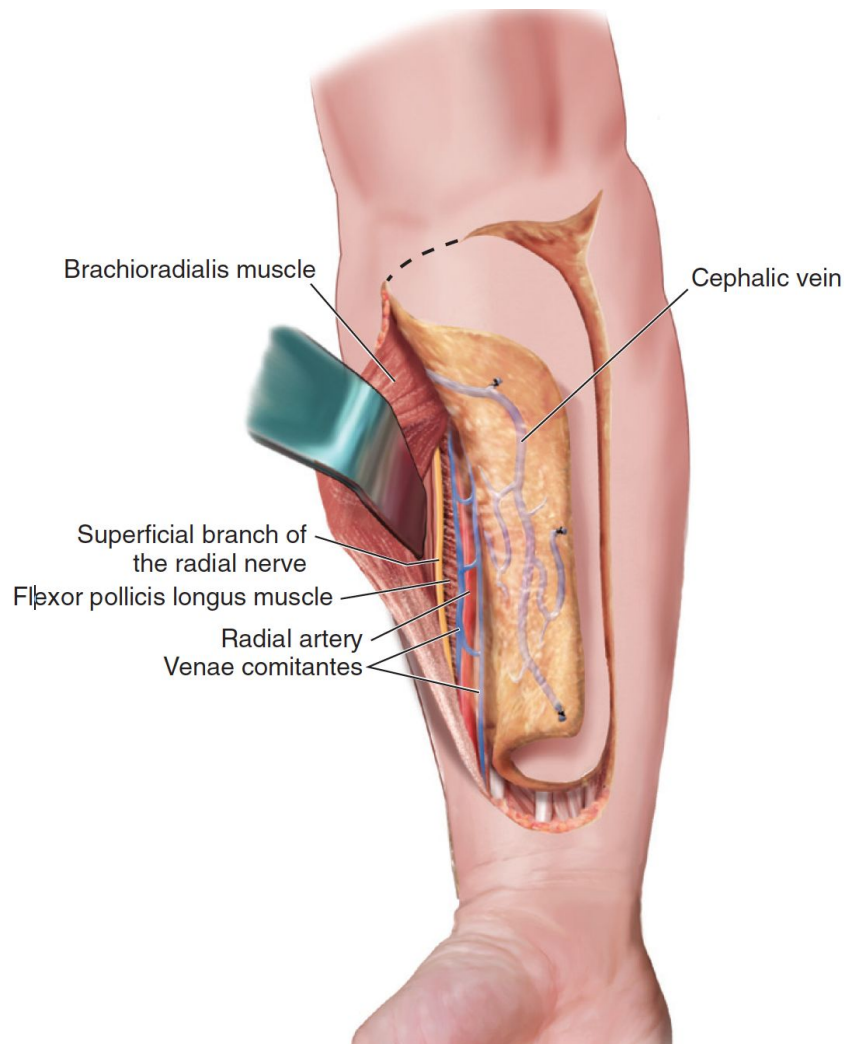
- Based on the radial artery
- 10-12 cm with good diameter (2.5 cm)

- Can harvest nerves with the flap (Sensory innervation is derived from the lateral antebrachial cutaneous nerves traveling with the cephalic vein)
- Should perform Allen's Test before the procedure
- The distal end of the skin paddle should be at least 1 cm from the flexor crease of the wrist
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Incision:

- Incision is made through skin in the outline of the planned flap.
- lateral cutaneous nerve can be identified in close proximity to the cephalic vein and can be preserved for possible use with a sensate flap
- Dissect along the cephalic vein distally, along its lateral aspect, toward distal aspect part of skin paddle
- Dissect over the brachioradialis muscle and tendon
- Superficial branches of the radial nerve should be identified at the distal aspect to maintain sensation to the dorsum of the hand
- The communicating
- Veins medial to the main trunk of the cephalic vein must be preserved the full length of the flap because these will provide the drainage route from the flap to the cephalic vein proximally
- Dissection is carried down to the flexor carpi radialis muscle and palmaris longus tendon.
- A subfascial dissection is performed, preserve the paratenon of the flexor carpi radialis tendon.





Layers:

Important structures:

- Radial Artery
- Cephalic vein
- Venae comitantes
- Brachioradialis muscle
- Cutaneous nerve (lateral antebrachial cutaneous nerve)
- Radial Nerve
- Flexor pollicis longus muscle (lies just deep to the radial nerve and artery)
- Flexor carpi radialis muscle and palmaris longus tendon

Complications:

- First 48 hours most important
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Tracheotomy:

Incision: Trace out Thyroid cartilage, cricoid cartilage and sternal notch. Horizontal line is drawn halfway in between the sternal notch and cricoid cartilage.

Horizontal incision, Skin subcutaneous, platysma, avascular raphe between the strap muscles (sternohyoid and sternothyroid) May encounter anterior jugular veins laterally if your off midline, Pretracheal fascia, then trachea. Inverted U incision is known as Bjork. In between rings 2 and 3. Can place stay suture if desired.

Al-Kayat & Bromley: 1979

Dingman and Grabb: