

SPECIFICITY OF SKIN PROBLEMS FOR APPROACHES TO THE KNEE



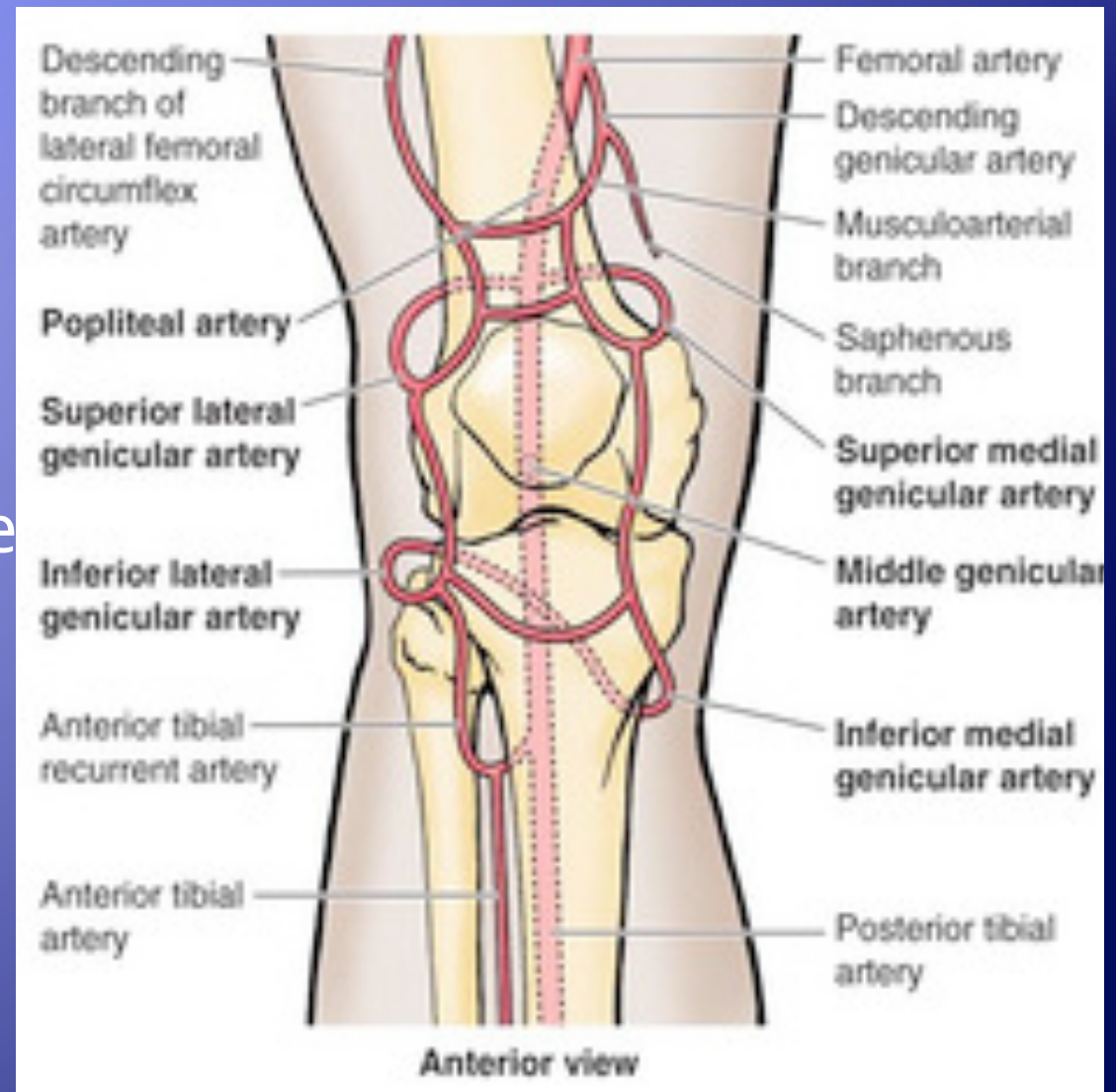
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Blood supply to the anterior knee

The anterior skin of the knee is supplied by an anastomotic ring of arterial vessels derived from the:

- Descending branch of the lateral circumflex
- Genicular branches of the popliteal artery
- Anterior tibial recurrent artery.



Blood supply to anterior knee

- ◆ Perforators from these vessels come up through the fascia to form the anastomotic network, which supplies the skin (subdermal plexus)
- ◆ Thus, wide dissection superficial to the fascia will compromise blood supply to the skin, while deep dissection will maintain blood supply.

Optimal Knee Skin Incision

- ◆ The vastus medialis muscle extends more distally compared to the vastus lateralis; therefore, blood supply is more at risk on the lateral aspect.
- ◆ Regions where there is no muscle coverage, such as over the patella, patellar tendon, and tibia tubercle, are dependent on the subdermal plexus and delicate care of the skin is needed in this region to avoid complications.
- ◆ Thus the midline longitudinal skin incision is the least disruptive to the blood supply, and the more medial the incision is made, the more risk to the lateral skin since the flap is larger with reduced oxygen tension.

Knee Incisions

- ◆ A pre-existing transverse incision should be crossed as close to perpendicular as possible.
- ◆ When multiple parallel longitudinal incisions exist the best approach is to use the most lateral incision possible as the medial blood supply to the skin covering the anterior knee predominates over the lateral.
- ◆ It is best to provide at least a 7-cm skin bridge between incisions.



Distal aspect of the Incision

- ◆ Most common region for complications.
- ◆ Place the distal aspect of the incision slightly medial to the tubercle, the tendon itself will be protected and soft tissue coverage will be optimized.
- ◆ Use full-thickness skin flaps, avoiding undermining the skin which will significantly reduce the risk of skin necrosis.
- ◆ In the presence of peripheral vascular disease, use the lowest possible tourniquet pressure, as these individuals are at higher risk of wound complications.

Contracted or Adherent Skin

- ◆ Pose a significant challenge when planning a TKA
- ◆ Plan a medial gastrocnemius flap at the time of the TKA or the use of soft tissue expanders preoperatively
These are gradually expanded over 6 to 8 weeks and removed at the time of joint replacement
- ◆ Additional operative techniques that assist in blood supply preservation include preserving the lateral genicular artery supply if a lateral release is required and keeping the patella fat pad.
- ◆ To minimize the occurrence of a large postoperative hematoma, a watertight closure of the arthrotomy and the use of a drain may prevent the collection of subcutaneous blood.

Medial Gastrocnemius Flap Tissue Expander

