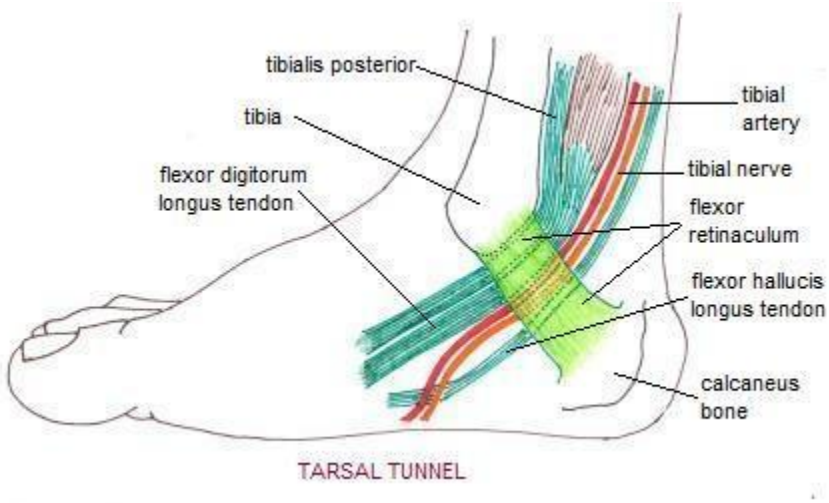
BACK OF LEG

FLEXOR RETINACULUM OF FOOT – ATTACHMENTS, STRUCTURES PASSING UNDERNEATH (SE).

The flexor retinaculum is a thick **broad band of the deep fascia** (2.5cm) on the medial side of the ankle behind and below the medial malleolus.

It holds the long tendons, vessels and nerves in position as they pass from the back of leg to the sole of the foot.



Attachments:

Anteriorly:

To the posterior border and the tip of the **medial malleolus**

Posteriorly:

To the medial process of **calcaneal tubercle**

Septa pass from the retinaculum to the underlying bone divide the space deep to the retinaculum into four compartments.

Structures passing deep to the retinaculum:

From medial to lateral side,

Tendon of tibialis posterior
Tendon of flexor digitorum longus
Posterior tibial artery and its terminal branches
Posterior tibial nerve and its terminal branches
Tendon of flexor hallucis longus

Tarsal tunnel syndrome:

If the tibial nerve is compressed deep to the flexor retinaculum, it leads to a clinical condition called tarsal tunnel syndrome that presents as burning, tingling and pain in the sole of the foot.

TENDOCALCANEUS: (SE)

Tendocalcaneus (tendoachillis) is a **conjoint tendon** of of gastrocnemius and soleus near its insertion.

It gets inserted into middle one third of the posterior surface of the calcaneum.

It is the thickest and strongest tendon in the body.

It acts as a prime mover of **plantar flexion of the foot** at ankle joint

Ruptured tendocalcaneus:

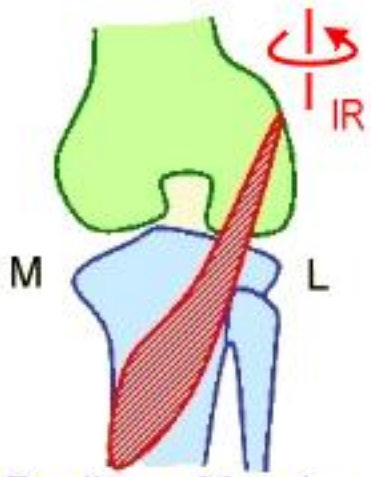
When tendocalacneus ruptures the bellies of gastrocnemius and soleus retract upwards causing a swelling in the upper part of the calf leaving a gap between the divided ends of the tendon.

Tendocalcaneus reflex (ankle jerk)

It is elicited by holding the relaxed foot with one hand and striking the Achilles tendon with the hammer and noting plantar flexion. Compare to the other foot.The ankle jerk reflex is mediated by the **S1** nerve root.

POPLITEUS – ATTACHMENTS, NERVE SUPPLY AND ACTIONS (SE)

It is thin, flat, triangular deep muscle of the back of the leg which forms the inferior part of the floor of the popliteal fossa.



Attachments:

Origin:

The origin is **intracapsular but extrasynovial**. Arises by a tendon from

(a) Popliteal groove on the lateral surface of the lateral condyle of the femur.
(b) Arcuate popliteal ligament
(c) Outer margin of the lateral meniscus

Insertion:

Posterior surface of the shaft of tibia above soleal line

Nerve supply:

Tibial nerve

Actions:

Unlocks the knee joint by lateral rotation of femur on tibia during initial stages of flexion of the knee.

PERONEAL ARTERY(SE)

Origin:

Largest branch of the posterior tibial artery
It begins 2.5cm below the lower border of popliteus

Course and relations:

After its origin, runs obliquely towards the fibula

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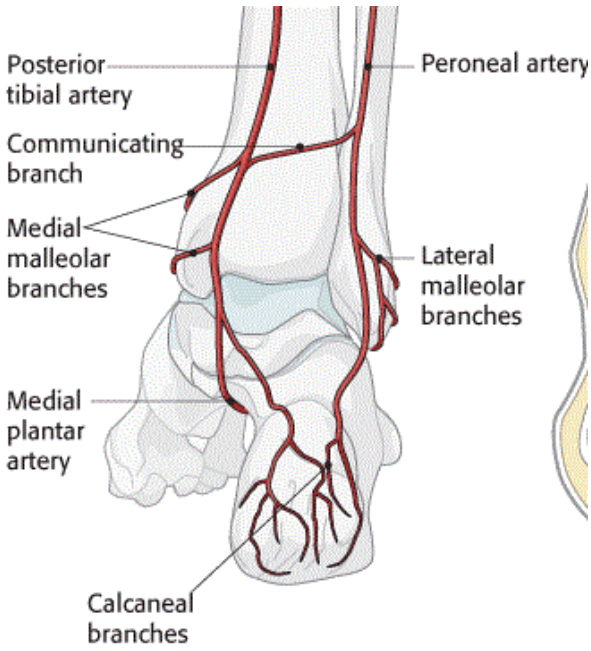
descends along the medial crest of fibula in a fibrous canal

(between tibialis posterior and flexor hallucis longus)

behind the inferior tibiofibular and ankle joints medial to peroneal tendons



Termination:

It terminates on the lateralsurface of calcaneus by giving *lateral calcaneal branches.*

Branches:

Muscular branches:

To posterior and lateral compartment of the leg

Nutrient artery:

To fibula

Anastomotic branches:

Communicating branch:

It anastomose with a similar branch from posterior tibial artery about 5cm above the lower end of tibia.

Perforating branch:

It is large and pierces the interosseus membrane 5cm above the ankle and anastomose with lateral malleolar branches of anterior tibial and dorsalis pedis arteries

Lateral calacaneal artery:

It is the terminal branch that takes part in lateral malleolar plexus

TIBIAL NERVE(SE)

The tibial nerve is the largest terminal branch of the sciatic nerve

Origin:
It arises on the *back of the thigh* at the junction of upper two third and lower one third and *enters the popliteal fossa.*

Course and relations:
posterior compartment of the leg
(deep to the tendinous arch of origin of soleus along with posterior tibial vessels.)
reaches the posteromedial side of the ankle

(midway between the medial malleolus and medial tubercle of calcaneum.).

Termination:

It terminates deep to flexor retinaculum by dividing into medial and lateral plantar nerves.

Branches:

Muscular branches:

Popliteus, tibialis posterior, flexor digitorum longus, flexor hallucis longus and soleus from its deep surface.

Cutaneous branches:

Medial calacaneal branches - supply skin of back and lower surface of heel

Articular branches:

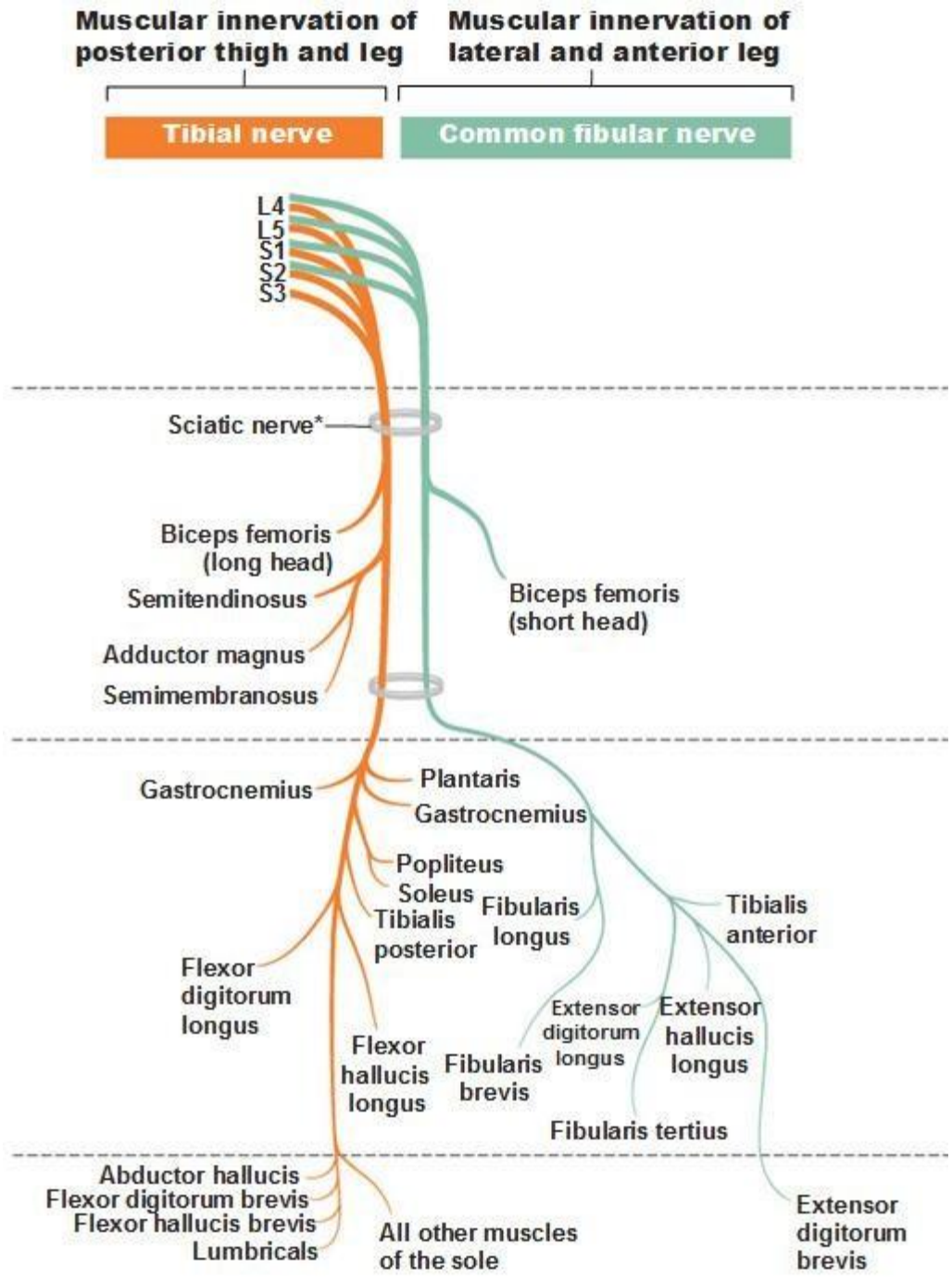
To the ankle joint

Terminal branches:

Medial and lateral plantar nerves.

Tarsal tunnel syndrome:

If the tibial nerve is compressed deep to the flexor retinaculum, it leads to a clinical condition called tarsal tunnel syndrome that presents as burning, tingling and pain in the sole of the foot.


Muscular innervation of posterior thigh and leg
Muscular innervation of lateral and anterior leg
Tibial nerve
Common fibular nerve
L4
L5
S1
S2
S3
Sciatic nerve*
Biceps femoris (long head)
Semitendinosus
Adductor magnus
Semimembranosus
Biceps femoris (short head)
Gastrocnemius
Plantaris
Gastrocnemius
Popliteus
Soleus
Tibialis posterior
Fibularis longus
Tibialis anterior
Flexor digitorum longus
Extensor digitorum longus
Extensor hallucis longus
Flexor hallucis longus
Fibularis brevis
Fibularis tertius
Abductor hallucis
Flexor digitorum brevis
Flexor hallucis brevis
Lumbricals
All other muscles of the sole
Extensor digitorum brevis
*Sciatic nerve formed by tibial and common fibular nerves wrapped by common sheath.

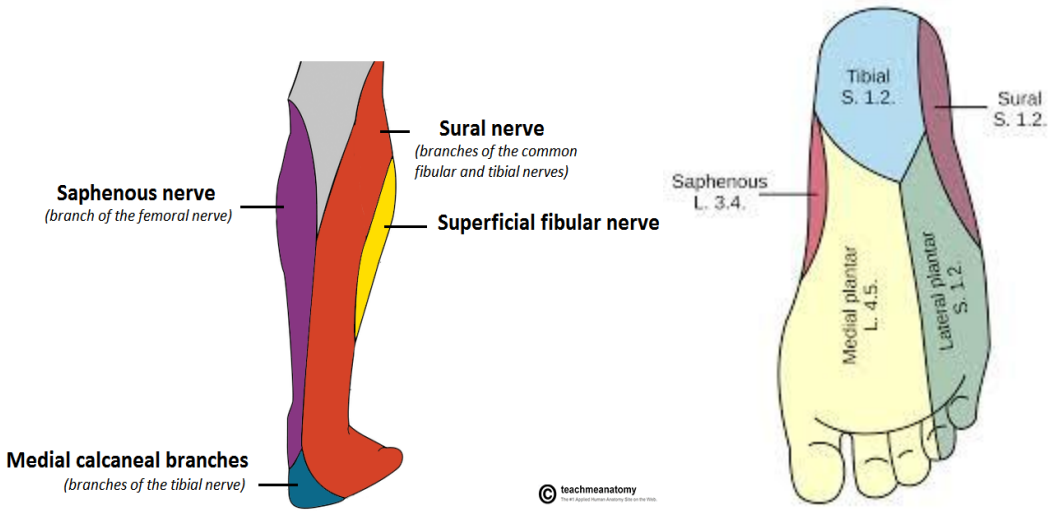
AREA SUPPLIED BY SURAL NERVE.(SA)

It is a branch of tibial nerve in the popliteal fossa

It supplies the skin of the lower lateral part of the back of the leg

Lateral border and adjoining part of the dorsum of the foot

Lateral side of the little toe



STRUCTURES PASSING DEEP TO FLEXOR RETINACULUM OF THE FOOT.(SA)

From medial to lateral side,

Tendon of tibialis posterior
Tendon of flexor digitorum longus
Posterior tibial artery and its terminal branches
Posterior tibial nerve and its terminal branches
Tendon of flexor hallucis longus

SOLEUS – ATTACHMENTS AND ACTIONS(SA).

Attachments:
Origin:
The fibula:
Back of head and upper one fourth of the posterior surface of the shaft.
The tibia:

- *Soleal line* and middle one third of the medial border of the shaft
- The *tendinous soleal arch* that stretches between tibia and fibula

Insertion:

Middle one third of the posterior surface of the calcaneum via *tendocalcaneus*.

Actions:

Plantar flexion of the ankle

Steadies the leg on the foot during standing.

TENDOCALCANEUS(SA)

Tendocalcaneus (tendoachillis) is **a conjoint tendon** of insertion of gastrocnemius and soleus.

It gets inserted into middle one third of the posterior surface of the calcaneum.

It is the thickest and strongest tendon in the body and is about 15cm long.

It acts as a prime mover of **plantar flexion of the foot** at ankle joint

POPLITEUS MUSCLE – ATTACHMENTS, ACTIONS AND NERVE SUPPLY(SA)

Attachments

Origin

Popliteal groove on the lateral surface of the lateral condyle of the femur.

Arcuate popliteal ligament

Outer margin of the lateral meniscus

Insertion:

Posterior surface of the shaft of tibia above soleal line

Nerve supply:

Tibial nerve

Actions:

Unlocks the knee joint

TIBIAL NERVE – SITE AND SOURCE OF ORIGIN(SA)

Source of origin:

It is the larger terminal branch of the sciatic nerve. It is formed by the ventral division of anterior primary rami of **L4, L5, S1, S2, S3**

Site:

Back of thigh

(At the junction of upper two third and lower one third)

Popliteal fossa

Posterior compartment of the leg
(pass deep to tendinous arch of origin of soleus)

Deep to flexor retinaculum
(divides into medial and lateral plantar nerves)

BRANCHES OF TIBIAL NERVE(SA)

Muscular branches:
Popliteus, tibialis posterior, flexor digitorum longus, flexor hallucis longus and soleus from its deep surface.
Cutaneous branches:
Medial calacaneal branches - supply skin of back and lower surface of heel
Articular branches:
To the ankle joint
Terminal branches:
Medial and lateral plantar nerves.