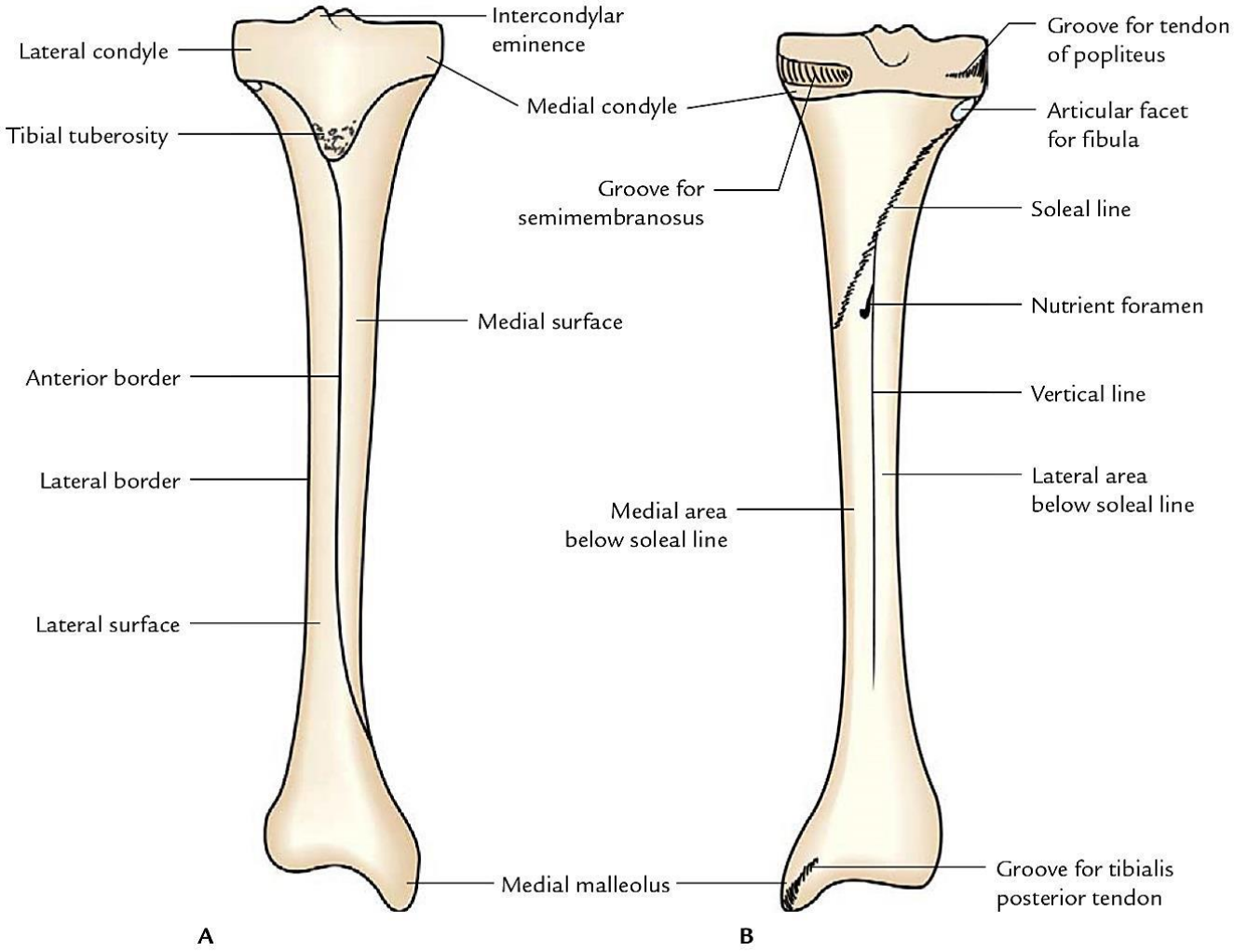
BONES OF THE LEG

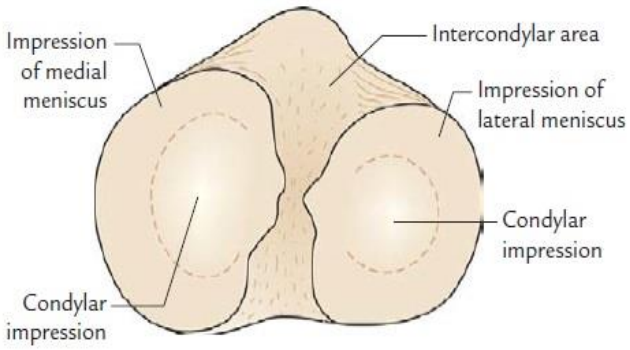
The Tibia

The tibia is the second longest bone in the body and represents the medial weight-bearing bone of the leg. It articulates proximally with the femoral condyles to form the knee joint and the head of the fibula to form the proximal tibiofibular joint. Distally it articulates with the talus to form the ankle joint and the distal end of the fibula to form the distal tibiofibular joint.



The proximal end

The superior surface of the expanded proximal end of the tibia; the **tibial plateau**; has 2 oval articular surfaces called the **medial and lateral tibial condyles** separated in the midline by the **intercondylar area**. This area is divided into anterior and posterior parts by a bony elevation called the **intercondylar eminence** which is in turn divided by the cruciate ligaments of the knee into **medial and lateral intercondylar tubercles**. The larger



medial tibial condyle has a horizontal groove on its posteromedial surface for the semimembranosus tendon. The smaller lateral tibial condyle has a small articular facet on its inferior surface for articulation with the head of the fibula at the proximal tibiofibular joint.

The proximal end of the tibia is separated from the upper part of the shaft by a smooth horizontal line which continues anteriorly with the **tibial tuberosity**. The upper part of the tuberosity is smooth and marks the area of the attachment of the fibrous capsule of the knee joint. The lower part is rough and marks the area of attachment of the ligamentum patellae.

The shaft

The shaft of the tibia is triangular in cross section and has 3 borders and 3 surfaces termed in opposition.

The **anterior and medial borders** with the **medial surface** in between are **subcutaneous**. The anterior border forms the shin. The subcutaneous medial surface is smooth and palpable throughout its length except in its upper part where it is roughened by the insertion of the 3 pes anserinus muscles and the medial collateral ligament of the knee. Distally, the medial surface is continuous as the **medial malleolus**.

The **lateral** or **interosseous border** descends vertically from below the proximal tibiofibular joint to the concave surface of the medial malleolus and gives attachment to the **interosseous membrane**.

The posterior surface lies between the medial and lateral borders and has an oblique **soleal line** running from below the proximal tibiofibular joint to meet the medial border at the junction of the upper and middle thirds of the shaft. It gives attachment to the tibial part of soleus muscle and to the popliteus fascia.

The distal end

The distal end is slightly expanded as the **head of the tibia** and the lower surface of which is saddle-shaped and articulates with the talus to form the ankle joint. On the lateral surface is an articular facet for the distal end of the fibula. The lower end is prolonged downwards and medially as the **medial (tibial) malleolus**. The lateral surface of the malleolus is concave and articulates with the talus.

The fibula

The fibula is the slender small lateral bone of the leg which has no role in weight-bearing but acts mainly to give muscular attachments. It does not participate in the knee joint formation. It articulates with the tibia proximally and distally to form the proximal and distal tibiofibular joints and with the talus distally to form the ankle joint.

The proximal end

This has a slightly expanded and elongated **head** with a constricted **neck** distal to it. The superomedial surface of the head articulates with the lateral tibial condyle. Proximal to this articular facet lies the elongated apex of the head called the **styloid process**. The articular facet faces medially while the styloid process is directed laterally.

The shaft

The fibular shaft is slender and is buried in the mass of leg muscles. Being molded by these muscles, its shape largely depends on the degree of muscularity. It has 3 borders and 3 surfaces termed in opposition.

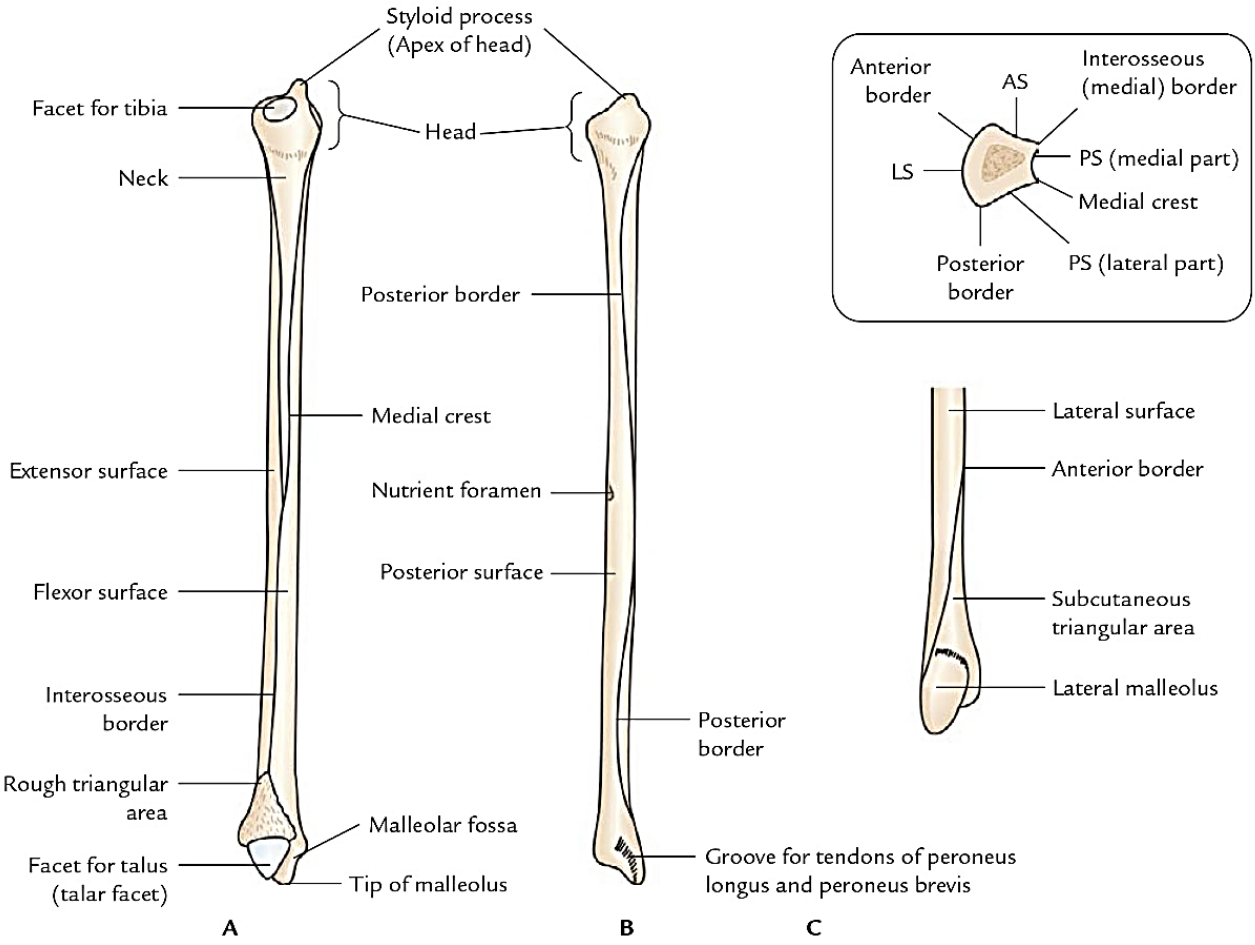


Fig. 21.16 General features of the right fibula: **A,** medial aspect; **B,** posterior aspect; **C,** lateral aspect of lower part. Figure in the inset is the transverse section of the lower part of shaft showing borders and surfaces (AS = anterior surface; PS = posterior surface; LS = lateral surface).

The **anterior border** begins from the apex of a rough triangular area on the lateral surface of the lateral malleolus and ascends upwards marking the attachment of the anterior intermuscular septum which separates the extensor from the peroneal compartments.

The **interosseous border** lies medially and begins from the apex of a rough triangular area on the medial surface of the lateral malleolus and ascends upwards close to the anterior border leaving a narrow **anterior surface** in between from which the anterior compartment muscles take origin.

The **posterior border** limits the **peroneal** or **lateral surface** posteriorly and passes superolaterally. The area between the posterior and anterior borders is the lateral surface giving origin to the peroneal muscles.

The **medial crest** is an oblique line that appears to split upwards and backwards from the interosseous border at the junction of the middle and lower thirds of the shaft. It lies between the posterior and medial borders. This crest gives attachment to the intermuscular septum just behind tibialis posterior muscle. The **fusiform area** between the interosseous border and medial crest gives origin to tibialis posterior. The area between the posterior border and the medial crest is the **posterior surface** and gives origin to the deep flexors.

The distal end

This is expanded as the triangular **lateral (fibular) malleolus** which is larger and about 2cm more distal than the medial malleolus. The distal end of the shaft just above the malleolus has a rough triangular area; with the

apex directed upwards; for the attachment of the interosseous ligament medially. Inferior to this is a smooth triangular articular area; with the apex directed downwards; for articulation with the talus. The direction of this smooth area appears as an arrow indicating whether the fibula is right or left. The posterior margin of the malleolus is grooved by the tendons of the peronei and acts as a pulley for these muscles. The **malleolar fossa** is a depression that lies between the tip of the malleolus and the articular triangular facet.