**USMLE I**

# Inguinal Canal [(1)]

## Contents

Female: Round ligament and ilioinguinal nerve.

Male: Spermatic cord and ilioinguinal nerve. Spermatic cord includes:

- Spermatic fascias
- Testicular artery
- Pampiniform venous plexus
- Vas deferens (ductus deferens)

## Boundaries of the inguinal canal

### Roof

Internal abdominal oblique and the transversus abdominus muscles.

### Anterior Wall

Aponeurosis of the external abdominal oblique and the internal abdominal oblique muscle.

### Floor

Inguinal ligament (part of the aponeurosis of the external oblique).

### Posterior Wall

Transversalis fascia (weak area) and conjoined tendon.

The conjoined tendon reinforces the medial part of the posterior wall.

The conjoined tendon is formed by the aponeuroses of the internal oblique and transversus abdominus muscles.

## BLOOD SUPPLY OF THE BRAIN [(2)]

The cortex is supplied by the two internal carotid arteries and the two vertebral arteries. On the base (or inferior surface) of the brain, branches of the internal carotid arteries and the basilar artery anastomose to form the circle of Willis. The anterior part of the circle lies in front of the optic chiasm, whereas the posterior part is situated just below the mammillary bodies. The circle of Willis is formed by the terminal part of the internal carotid arteries; the proximal parts of the anterior and posterior cerebral arteries and the anterior and posterior communicating arteries. The middle, anterior, and posterior cerebral arteries, which arise from the circle of Willis, supply all of the cerebral cortex, basal ganglia, and diencephalon.

The internal carotid artery arises from the bifurcation of the common carotid and enters the skull through the carotid canal. It enters the subarachnoid space and terminates by dividing into the anterior and middle cerebral arteries.

Just before splitting into the middle and anterior cerebral arteries, the internal carotid artery gives rise to the ophthalmic artery. The ophthalmic artery enters the orbit through the optic canal and supplies the eye, including the retina and optic nerve.

The middle cerebral artery is the larger terminal branch of the internal carotid artery. It supplies the bulk of the lateral surface of the hemisphere. Exceptions are the superior inch of the frontal and parietal lobes, which are supplied by the anterior cerebral artery, and the inferior part of the temporal lobe and the occipital pole, which are supplied by the posterior cerebral artery. The middle cerebral artery also supplies the genu and posterior limb of the internal capsule and the basal ganglia.

The anterior cerebral artery is the smaller terminal branch of the internal carotid artery. It is connected to the opposite anterior cerebral artery by the anterior communicating artery, completing the anterior part of the circle of Willis. The anterior cerebral artery supplied the medial surface of the frontal and parietal lobes, which include motor and sensory cortical areas for the pelvis

and lower limbs. The anterior cerebral artery also supplies the anterior four fifths of the corpus callosum and approximately 2 cm of the frontal and parietal cortex on the superior aspect of the lateral aspect of the hemisphere.

Occlusion of the anterior cerebral artery results in spastic paresis of the contralateral lower limb and anesthesia of the contralateral lower limb. Urinary incontinence may be present, but this usually occurs only with bilateral damage. The anterior cerebral artery also supplies the anterior limb of the internal capsule.