

Female right pelvis

Price inquiry: +48 605999769, kontakt@openmedis.pl

Product code: AM01110



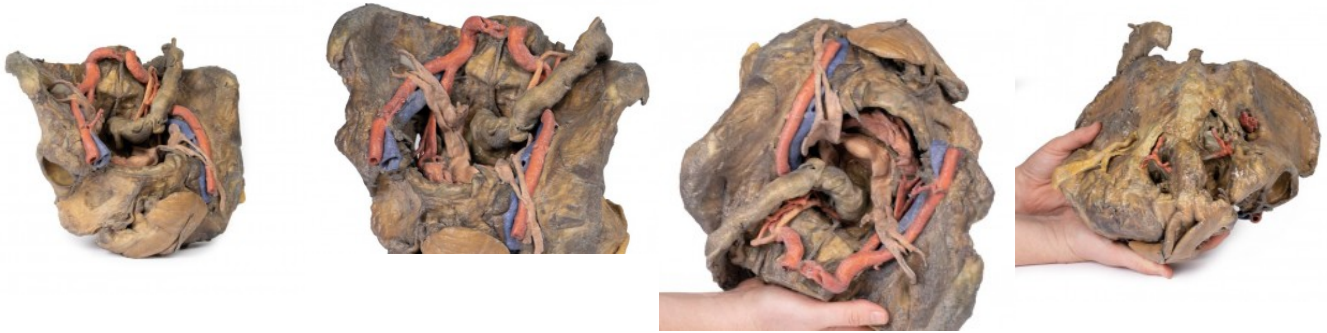
This 3D printed specimen represents a female right pelvis, sectioned along the midsagittal plane and transversely across the level of the L4 vertebrae and the proximal thigh. The specimen has been dissected to demonstrate the deep structures of the true and false pelvis, the inferior anterior abdominal wall and inguinal region, femoral triangle and gluteal region. Internal anatomy The muscular boundaries of the inferior abdominal cavity are defined posterolaterally by the quadratus lumborum, iliacus and psoas muscles; anteriorly by the (varyingly exposed) external and internal abdominal oblique muscles, the transversus abdominis and rectus abdominis. Inferiorly in the pelvic cavity, the obturator internus is visible traversing through the lesser sciatic foramen inferior to the sacrospinous ligament. Fibres of coccygeus merge with those of the sacrospinous ligament. Piriformis has been sectioned, with both origin visible within the cavity (and part visible in the gluteal region). The common iliac artery arises from its cut edge at the level of L5, bifurcating at the level of the sacral promontory into the external and internal iliac arteries. The external iliac artery crosses the pelvic brim to give off the deep circumflex iliac artery and inferior epigastric artery before exiting the pelvis deep to the inguinal ligament. The internal iliac artery runs posterolaterally, giving the iliolumbar artery posteriorly and lateral sacral arteries which enter the anterior sacral foramina. A radicular artery entering the anterior foramina of the coccyx can also be seen. Inferiorly, the superior gluteal artery, inferior gluteal artery and internal pudendal artery exit the pelvic cavity through the greater sciatic foramen. A branch from the inferior gluteal artery, supplying psoas, travels anteriorly along the pectineal line. Anteriorly, the umbilical artery gives off the superior vesical artery (supplying the bladder) before terminating against the anterior abdominal wall as the medial umbilical ligament. Posteriorly, the inferior vesical artery arises from the obturator artery before exiting the pelvis through the obturator canal. The uterine artery crosses over the ureter to enter the remnants of the broad ligament. The major veins preserved are the inferior epigastric vein and deep circumflex iliac vein draining into the external iliac vein, and the iliolumbar vein and lateral sacral vein draining into the internal iliac vein. The external iliac vein and internal iliac vein unite to form the right common iliac vein which, at the level of L5, joins the (cut edge) of the left common iliac vein to become the inferior vena cava. Two veins pass horizontally across iliacus and quadratus lumborum. Of the peripheral nerve structures preserved in this specimen, the lateral femoral cutaneous nerve passes laterally across the superficial aspect of the iliacus muscle and the femoral nerve is visible deep to the psoas major muscle. The genitofemoral nerve lies on the superficial surface of the psoas major, and the course of the genital branch entering the deep inguinal ring and the femoral branch passing deep to the inguinal ligament can be followed. The obturator nerve is also seen passing from deep to the psoas muscle anteriorly to the obturator foramen. In the true pelvis the lumbosacral trunk crosses the pelvic brim and joins the anterior ramus of S1. The S1-S3 anterior rami are visible and can be followed as they pass through the greater sciatic foramen and enter the gluteal region. In addition to the muscular and neurovascular structures, parts of pelvic viscera have been preserved. Posterior to the pubic symphysis the median umbilical ligament extends superiorly from the bladder to the anterior abdominal wall. The ureter descends anteriorly to the psoas major muscle, across the iliac vessels, and beneath the uterine artery to enter the posterior bladder wall. The urethra is seen passing downwards to its opening at the urinary meatus, just posterior to the clitoris. Posterior to the bladder

are the posthysterectomy remnants of the uterus at the apex of the closed, superior end of the vagina. Posterior to this part of the cut rectum, anal canal and anus are present. Some muscular fibres of levator ani and the external anal sphincter can be seen in the ischioanal fossa just posteriorly to the anal canal. External anatomy In the posterior view, most of the multifidus and origin of the gluteus maximus have been removed over the lumbar and sacral region, and the laminae of L4 and L5 and the dorsal sacrum have been sectioned to reveal the cauda equina in the vertebral and sacral canal. The dura mater has been partially sectioned to expose the roots traversing the region, including the passage of the sacral ventral rami through the ventral foramina. Laterally, a large window into the gluteal maximus has been opened to expose the deeper structures of the gluteal region. Part of the sectioned piriformis is visible in the greater sciatic foramen, with the sciatic nerve (preserving an early division of the common peroneal and tibial nerves within the gluteal region) surrounded by the superior and inferior gluteal arteries. The sectioned internal pudendal artery and pudendal nerve rest on the sacrotuberous ligament as they descend towards the lesser sciatic foramen. Inferior to the sacrotuberous ligament the obturator internus muscle (along with the superior and inferior gemelli muscles) passes laterally deep to the common peroneal and tibial nerves. Inferior to these lateral rotators, the quadratus femoris and common origin of the hamstring group are visible just proximal to the remaining portion of the gluteus maximus. In the anterior view, a window has been cut into the aponeurosis of the external oblique aponeurosis to reveal part of the transversus abdominis muscle. The inguinal ligament can be seen arising from the anterior superior iliac spine and extending towards the pubic tubercle. Inferior to the inguinal ligament, the fascia lata has been removed over the anterior thigh. The visible thigh muscles (from lateral to medial) on this specimen include the tensor fasciae latae, and those of the anterior (sartorius, rectus femoris and the iliopsoas) and medial (gracilis, pectineus [sectioned], obturator externus, adductor brevis, adductor longus and adductor magnus). Between these muscle groups the femoral sheath has been removed to expose the contents of the femoral triangle (femoral artery and vein; sectioned to display the deeper adductor muscle fibers) and the femoral nerve that have entered this region deep to the inguinal ligament. In this individual the lateral circumflex femoral artery arises directly from the femoral artery. Inferior to this, the deep femoral artery (profunda femoris) branches off. Several anastomosing veins draining into the femoral vein surround the deep femoral artery. The femoral vein preserves an opening on the medial side corresponding to the drainage point of the great saphenous vein. The medial circumflex artery, posterior branch of the obturator nerve and a muscular artery can be seen passing just superficial to obturator externus. The anterior branch of the obturator nerve can be seen more anteriorly, passing superficial to adductor magnus and deep to adductor longus. The sectioned thigh of the specimen allows for orientation of muscles and neurovascular structures in the proximal thigh. Other than the relations of anterior, medial and posterior thigh muscles, perforating arteries and veins are visible near the adductor magnus; and the common peroneal and tibial nerves are visible in the posterior compartment.

Female Pelvis Deep Dissection

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Product code: AM02729



This 3D model presents a deep dissection and isolation of the pelvis from surrounding regions, particularly demonstrating visceral and neurovascular structures relative to deep ligaments and osseous features.

Within the false pelvis, the sigmoid colon descends on the left side of the specimen to the rectum, passing superficially across the pelvic brim and the passage of the common and external iliac artery and vein. Adjacent to the sigmoid colon are parts of the sigmoid arteries and superior rectal artery, resting superficial to the common iliac vessels and near the descending ureter. Anterior in the true pelvis is the collapsed urinary bladder, and between the bladder and rectum rests the uterus. The organ is partially covered in the broad ligament, with both the suspensory ligament of the ovary and round ligament have been separated and pulled away from the peritoneum on both sides to expose surrounding blood vessels. While the ovarian ligaments, round ligaments, uterine tubes and ovaries are trapped within the peritoneal fold of the broad ligament, the reduction in ovary size (common with advanced age) has rendered these indistinguishable in the model.

Lateral to these organs, branches of the internal iliac artery can be identified – as well as a retained median sacral artery in the midline between the two common iliac arteries. On the left side only the uterine artery can be seen laterally. On the right side, the obturator, superior vesical, and uterine arteries can be observed. In addition, the origins of the inferior epigastric artery and vein can be seen arising from the external iliac vessels just prior to exiting the inferior abdominal cavity.

On the right side of the preserved pelvis, the entire femur and thigh musculature has been removed to demonstrate the obturator membrane, the articular cartilage of the acetabulum and the transverse ligament of the acetabulum. Posteriorly the entire gluteal region has been dissected to expose the superior gluteal foramen and the origin of the superior gluteal artery. The sacrotuberous ligament has been removed to demonstrate the sacrospinous ligament, with some branches of the inferior rectal artery retained within the exposed ischioanal fossa.

On the left side of the preserved pelvis the sciatic nerve has been maintained within the greater sciatic foramen, as has the sacrotuberous ligament. The ischioanal fossa mirrors that of the right side, where branches of the inferior rectal artery have been retained relative to the fibres of the pelvic diaphragm, and the integration of the external anal sphincter on the projecting external rectal surface.



Male left pelvis and proximal thigh

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Product code: AM01238



This 3D printed male left pelvis and proximal thigh (sectioned through the midsagittal plane in the midline and transversely through the L3/4 intervertebral disc) shows superficial and deep structures of the true and false pelvis, inguinal and femoral region. In the transverse section, the epaxial musculature, abdominal wall musculature (rectus abdominis, external and internal abdominal obliques, transversus abdominis), psoas major and quadratus lumborum are visible and separated from each other and the superficial fat by fascial layers such as the rectus sheath and the thoracolumbar fascia. The psoas major muscle lies lateral to the external iliac artery, with the left testicular artery and vein lying on its superficial surface. More laterally (and moving inferiorly), the ilioinguinal nerve, the lateral cutaneous nerve of the thigh and the femoral nerve are positioned over the superficial surface of the iliacus muscle. The left common iliac artery bifurcates at the level of the sacral promontory into the external and internal iliac arteries. This specimen does not possess a clearly defined anterior and posterior division of the internal iliac artery; instead, the terminal arteries sequentially radiate from the internal iliac. The lateral sacral, inferior rectal, inferior gluteal, internal pudendal, superior vesical, obturator and umbilical arteries (which terminates in the medial umbilical ligament) are visible adjacent to the sacral ventral rami. The inferior gluteal and internal pudendal arteries have not bifurcated in this view and track inferiorly over piriformis. The deep circumflex iliac artery and vein can be seen passing deep posterior to the inguinal ligament, while the branches from the inferior epigastric artery and veins can be seen perforating rectus abdominis and the overlying rectus sheath. The left common iliac vein lies deep to the left common iliac artery; the obturator branch and the external iliac vein have been preserved. In the midline the pubic symphysis and sagittal sections of the pelvic viscera are visible: from anterior to posterior, the bladder (receiving the left ureter, which passes over the iliac vessels at the level of the pelvic brim), the left seminal vesicles and vas deferens, and rectum (with surrounding external anal sphincter muscle). The pathway of the urethra is visible from the inferior pole of the bladder through the prostate gland, pelvic diaphragm and the corpus spongiosum of the penis. Inferior to the sectioned erectile bodies (corpus cavernosa and corpus spongiosum) lies the scrotum, where the skin has been removed to reveal the parietal tunica vaginalis. On the preserved proximal thigh the fascia lata has been removed to highlight the transition of the neurovasculature and musculature from the pelvic region. Superior to the inguinal ligament a window has been cut to reveal the underlying aponeurosis of the transversus abdominis muscle. From medial to lateral, the femoral vein and artery have been removed from the femoral sheath, and the termination of the femoral nerve lies superficial to the iliopsoas muscle. The great saphenous vein can be seen coursing medially over the pectineus, adductor longus and gracilis muscles, while branches of the femoral nerve pass over the profunda femoris artery. The thigh musculature is visible, with the cut sartorius muscle overlying the iliacus muscles and the origins of anterior thigh muscles (rectus femoris, vastus lateralis, vastus intermedius, vastus medialis). The tensor fasciae latae can be seen inserting on the anterior border of the iliotibial tract, which extends over the lateral surface of the thigh. A window has been cut to expose the underlying gluteus medius muscle, which



terminates at the lateral aspect of the greater trochanter.

Female left pelvis and proximal thigh

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Product code: AM01240



This 3D printed female left pelvis and proximal thigh preserves both superficial and deep structures of the true and false pelvis, inguinal region, femoral triangle, and gluteal region. The specimen has been sectioned transversely through the fourth lumbar vertebra, displaying the cross-section of the musculature (epaxial musculature, psoas and quadratus lumborum muscles) and cauda equina within the vertebral canal. The ventral and dorsal roots of the cauda equina are also visible exiting the intervertebral and sacral foramina in the sagittal section. The abdominal aorta is preserved from the fourth lumbar vertebra to the bifurcation into the common iliac arteries; the root of the inferior mesenteric artery, lumbar arteries, and median sacral artery are also preserved. At the level of the sacral promontory, the common iliac artery bifurcates into the external and internal iliac arteries. Superficial to the sacral ventral rami the major branches of the internal iliac artery are visible (iliolumbar, lateral sacral, superior gluteal, inferior gluteal, internal pudendal, obturator, superior vesicle, obturator, uterine). These latter arterial branches pass to the sectioned bladder (collapsed against the pubis and receiving the ureters), uterus and vagina. The pelvic viscera (bladder, uterus, vagina and rectum) are visible in the midsagittal section extending to the anterior and posterior triangles of the perineum; in the anterior triangle the sagittal section of the clitoral body and part of the corpus spongiosum are visible inferior to the pubic symphysis. The external iliac artery passes anteriorly along the pelvic brim, giving rise to the inferior epigastric and deep circumflex iliac arteries before passing deep to the inguinal ligament. The psoas major and minor muscles pass lateral to the external iliac artery, with the femoral nerve and lateral cutaneous nerve of the thigh resting on the superficial surface of the iliacus muscle. The fascia lata inferior to the inguinal ligament has been removed to expose the muscular borders and contents of the femoral triangle (and surrounding anterior and medial thigh musculature). The great saphenous vein is visible joining the femoral vein adjacent to the femoral artery, with the branches of the femoral nerve just overlying the deep artery of the thigh. The distal cross-section through the proximal femur displays the anterior, medial and posterior compartment musculature, neurovascular bundles (femoral artery and vein, deep artery of the thigh, and the sciatic nerve), and tributaries of the great saphenous vein. Posteriorly the gluteal region has been dissected to demonstrate deep structures. The gluteus maximus and gluteus medius muscles have been removed exposing the piriformis muscle. Superior to piriformis the superior gluteal artery and nerve pass laterally towards the gluteus minimus. Inferior to piriformis the inferior gluteal artery and nerve are visible (and pinned towards the sectioned edge of the gluteus maximus). The sciatic nerve and posterior cutaneous nerve of the thigh are also visible exiting the greater sciatic foramen inferior to the piriformis, running superficial to the lateral rotators (superior and inferior gemelli, obturator internus, quadratus femoris) and common origin of posterior thigh muscles (semitendinosus, semimembranosus, long head of biceps femoris) from the ischial tuberosity. The sacrotuberous ligament has been sectioned to show the internal pudendal artery and pudendal nerve exiting the greater sciatic foramen to wrap around the sacrospinous ligament and coccygeus muscle to enter the lesser sciatic foramen. The fat of the ischioanal fossa has been removed to demonstrate the course of these vessels in the perineum just lateral to the levator ani and external anal sphincter muscles.



Male Pelvis model

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Product code: AM01259



This multipart 3D printed specimen represents the inferior portions of our larger posterior abdominal wall print (AM01261) that displays the inferior posterior abdominal wall, the pelvic cavity and the proximal thigh (including the gluteal regions and femoral triangles).

Lower posterior abdominal wall and false pelvis: The specimen is transected at approximately the level of the L2/L3 intervertebral disc. The common iliac veins unite to form the inferior vena cava. The common iliac arteries are close to uniting at the top of the print. The iliacus and psoas muscles are easy to identify, the latter has a prominent psoas minor tendon. They can be seen to unite as they pass under the inguinal ligament. The nerves of the iliac fossa (from superior to inferior: ilioinguinal nerve, lateral cutaneous nerve of thigh, femoral nerve) and their course is clearly visible, as is the genitofemoral nerves on the surface of psoas muscle. The ureters also descend on the superficial surface of the psoas and cross from its lateral to its medial border. They enter the pelvis at the bifurcation of the common iliac arteries into external and internal arteries. The external iliac arteries and veins running along the pelvic brim are clearly visible, as is the vas deferens crossing the brim from the deep inguinal ring to enter the pelvis.

True pelvis: The pelvis is dominated by a dilated rectum, dissected to demonstrate a transverse fold. The bladder is seen anteriorly in the pelvis (with the obliterated urachus passing towards the anterior abdominal wall) and the ureters can be seen entering the bladder wall posteriorly. The branches of the internal iliac artery can be clearly seen, with the obturator exiting the pelvis through the obturator foramen with its accompanying artery and vein. There is an accessory obturator vein crossing the brim in addition to the usual branch which drains to the internal iliac vein. The obliterated umbilical arteries are seen exiting the pelvis anteriorly and ascending on the anterior abdominal wall (reflected anteriorly).

The femoral triangle: On the right the muscles on the floor of the triangle are dissected. On the left the vein, artery and nerve have been retained as they pass deep to the inguinal ligament.

Gluteal region: The right gluteal region is dissected down to the gluteus maximus and no further. The perforating cutaneous nerves (S2-S3)/cutaneous branches of the inferior gluteal nerve can be seen winding around the lower edge of the gluteus maximus muscle. The extensive origin of the gluteus maximus is readily seen and its course

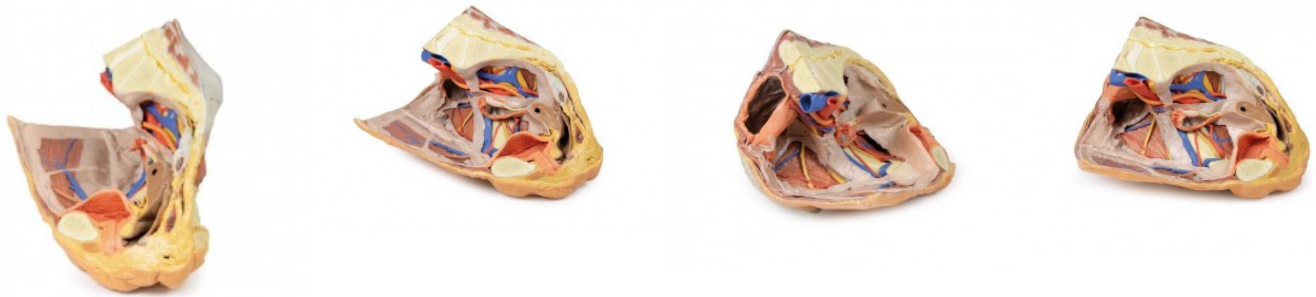


inferiorly to its insertion on the femur is visible (though not the actual insertion). The tensor fascia lata and iliotibial tract are evident on the lateral aspect. On the left a 'window' has been made in the gluteus maximus to reveal the deeper lying gluteus medius and piriformis. The sciatic nerve arises deep to piriformis, and passes superficially to the superior and inferior gemelli, obturator internus and the quadratus femoris muscles. Descending adjacent to the sciatic nerve is the inferior gluteal nerve with its accompanying artery. The inferior cluneal nerve and perineal branch of the posterior cutaneous nerve of thigh can be seen just briefly lying above semitendinosus. The superior gluteal artery can be seen just superior to the piriformis

Female right pelvis superficial and deep structures

Price inquiry: +48 605999769, kontakt@openmedis.pl

Product code: AM01272



This 3D printed female right pelvis preserves both superficial and deep structures of the true and false pelvis, as well as the inguinal ligament, the obturator membrane and canal, and both the greater and lesser sciatic foramina. Somewhat unique is the removal of portions of the peritoneum (a grayish colour) to create 'windows' displaying extraperitoneal structures. The specimen has been sectioned transversely through the L4 vertebra, displaying a cross section of the colon, the epaxial musculature (psoas and quadratus lumborum muscles), and the abdominal wall musculature. The common iliac artery has been preserved from the level of the L4 vertebra, and its bifurcation into the external and internal iliac arteries can be observed at the level of the sacral promontory. Deep to the arteries the common iliac vein and the origin of the inferior vena cava are visible. The external iliac artery and vein passes anteroinferiorly along the pelvic brim, giving rise to the inferior epigastric and deep circumflex arteries and veins before passing deep to the inguinal ligament. The psoas major muscle lies lateral to the external iliac artery, with the femoral nerve evident on its lateral margin close to the inguinal ligament. The lateral cutaneous nerve of the thigh travels laterally on the superficial surface of the iliacus muscle to exit the 'false' pelvis close to the anterior superior iliac spine. Following the course of the internal iliac artery deep to the undissected peritoneum, many of the major branches of its anterior and posterior divisions can be identified. The anterior division divides (deep to the peritoneum) into the superior vesical, obturator and obliterated umbilical artery. With a course parallel to the obturator artery, the obturator nerve can be seen running over obturator internus before entering the obturator canal together with the obturator vein (nerve, artery, vein in that order from superior to inferior). Branches of the posterior division of the internal iliac artery, iliolumbar, and several lateral sacral arteries, can be seen arising from the posterior aspect of the internal iliac just below the sacral promontory. Its terminal branch, the superior gluteal, usually passes posteriorly between the lumbosacral trunk and S1 nerve, but this is hidden from view. The internal iliac vein and its tributaries - the obturator veins, uterine vein, vesical veins, etc. can be seen lying internal to the nerves and muscles. The large S1 and S2 roots and the smaller S3 nerve root can be seen emerging from the sacral foramina to pass laterally where it is joined by the lumbosacral trunk (L4 and L5 roots) which is not visible, to form the sciatic nerve which exits through the greater sciatic foramen to emerge on the posterior aspect in the gluteal region. In the pelvis as these roots pass laterally they are interdigitated between the fibres of piriformis muscle. The right ureter can be clearly seen as it passes inferiorly on the posterior abdominal wall superficial to psoas muscle. It passes over the pelvic brim at the bifurcation of the common iliac artery to descend on the lateral wall of the pelvis before passing medially in the base of the broad ligament (hidden from view as the peritoneal folds that 'drape' over the uterine [Fallopian] tubes are still intact) to reach the lateral angles of the bladder. In the pelvis the viscera which lies most anteriorly is the bladder. Its thick wall and cavity is easily seen in this mid-sagittal cut. Indeed the ureteric orifice can be seen at the angle of the trigone of the bladder on its internal mucosal surface. The relations of the uterus to the vagina are clearly visible in the mid-sagittal section. Indeed the anterior and posterior fornices are clearly seen as is the os of the cervix. The round ligament of the uterus has been removed along with some peritoneum to display the structures in the lateral pelvic wall. The entire right Fallopian tube is identifiable as it passes from the lateral aspect of the body of the uterus to terminate as the fimbria which overhangs the right ovary which is still held in place by its mesovarium. The ovary is attached laterally to the pelvic brim by the suspensory ligament of the ovary (sometimes called the infundibulopelvic ligament) which contains its named artery and veins. The ligament of the ovary is clearly visible leading from the medial aspect of the ovary to the lateral surface of the



uterus. There are only small cut surfaces of the rectum (visible as little islands of mucosa) visible on the sagittal cut surface suggesting that it is slightly off the midline plane. Some pararectal lymph nodes (coloured pale green) can be seen close to these islands of rectal mucosa. On the anterior aspect of the 3D print the inguinal ligament has been retained and deep to it the femoral artery, vein and nerve pass to the anterior compartment of the thigh. In the gluteal region (note the femur has been removed to expose the acetabulum) the sciatic nerve can be seen emerging from the greater sciatic foramen (GSF) alongside the inferior gluteal vessels below the remains of the piriformis fibres, whereas the superior gluteal vessels and nerve emerges above the piriformis. Below these vessels the pudendal nerves and vessels can be seen exiting the GSF and passing over the sacrospinous ligament to enter the lesser sciatic foramen, thereby entering the perineum along the lateral wall of the ischioanal fossa.