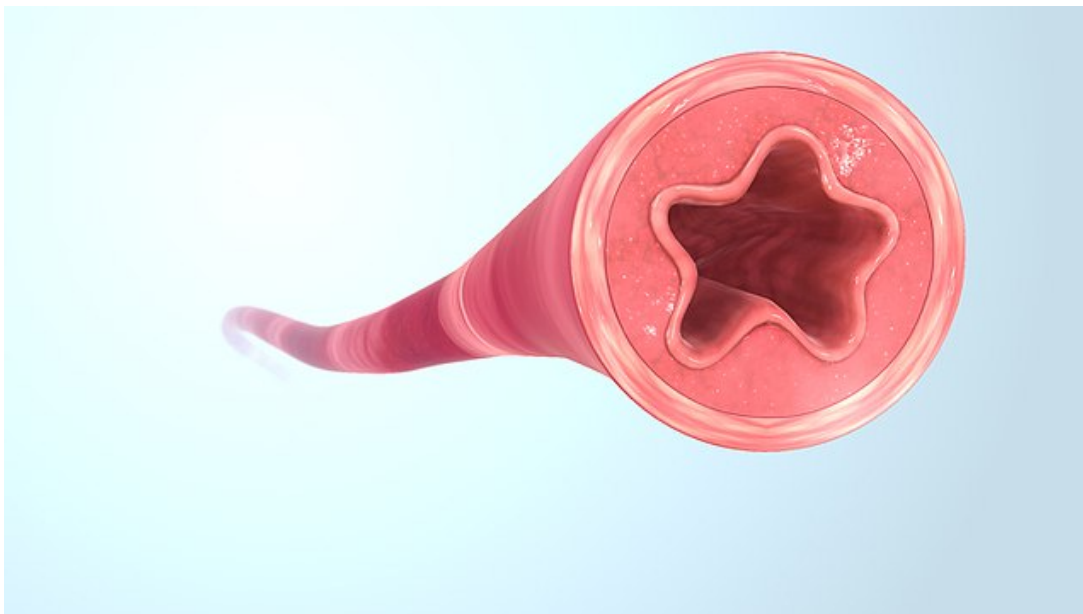


Branches of Internal Iliac Artery

[See online here](#)

The reproductive organs in women and men, as well as the urinary bladder, the pelvic part of the colon and the rectum, are located within the pelvic cavity. All these important organs receive their oxygenated blood via the internal iliac artery (formerly known as the hypogastric artery) and its myriad branches. The arrangement of the branches is very variable and, occasionally, a listed branch may originate from a direct branch instead of from the internal iliac artery. The anatomical variations are surgically important for surgery in the pelvic cavity. The uterus, ovaries and fallopian tubes receive their blood supply from the internal iliac. The blood supply to the external genitalia in both sexes is derived from the internal pudendal branch of the internal iliac artery. During sexual arousal, the branches of the internal iliac arteries provide for the increased demand for blood flow which causes the engorgement of the tissues.



Embryology of the Internal Iliac Artery

In fetal life, the internal iliac artery is a direct continuation of the **common iliac artery** and is twice the size of the **external iliac artery**. The internal iliac artery runs superiorly alongside the **urinary bladder** to the **umbilicus** to meet its partner from the other side, and the two arteries become the **umbilical arteries** within the **umbilical cord**.

The umbilical arteries coil around the **umbilical vein** and finally branch out within the **placenta**. At birth, the part of the umbilical arteries within the pelvis persists as the **superior vesical arteries** in adults, while the rest form the **medial umbilical ligament**. The **medial umbilical ligament** (or cord of **umbilical** artery) is a paired structure found on the deep surface of the anterior abdominal wall and is covered by the

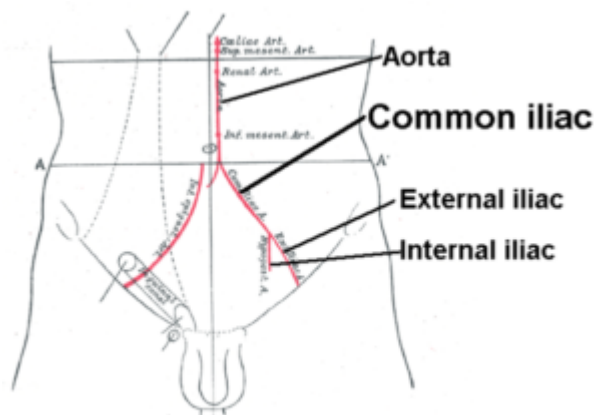
medial umbilical folds (plicae umbilicales mediales).

Arterial Supply to the Pelvis

The **abdominal aorta** branches into the two large **common iliac arteries** at the level of the L4 vertebra. The common iliac arteries end at the **sacroiliac articulation** by bifurcating into the paired external and internal iliac arteries. The arteries entering the pelvis are:

- A. Paired: internal iliac, ovarian and testicular arteries
- B. Unpaired: medial sacral, superior rectal.

Internal Iliac Artery



[Image](#): "Branches of the Common Iliac Artery." by Häggström, Mikael. "Medical Gallery of Mikael Häggström 2014". Wikiversity Journal of Medicine 1 (2). DOI:10.15347/wjm/2014.008. ISSN 20018762. Public Domain. - Image:Gray1227.png. License: Public Domain

The internal iliac artery begins anterior to the **sacroiliac joint**, at the **common iliac artery bifurcation**, and then runs inferiorly to the superior border of the **sciatic foramen** where it divides into two divisions: the anterior and the posterior division.

The internal iliac artery is the primary supplier of oxygenated blood to the medial compartment of the thigh, the buttocks, urinary system, the walls, and the organs within the pelvic cavity. In adults, the internal iliac artery is a 3-4 cm thick [vessel](#) and is smaller than the external iliac artery.

Relations of the internal iliac artery with clinical significance

During its course, the internal iliac artery is

- Anterior to the sacroiliac articulation, the piriformis muscle, internal iliac vein, the lumbosacral trunk.
- Posterior to the ureters in males and females; posterior to the ovaries and fallopian tubes in females.
- Medial to the external iliac vein.
- Lateral to the parietal [peritoneum](#) and internal iliac vein tributaries.

- Superior to the obturator nerve.

Classification of the Internal Iliac Artery

The internal iliac artery is of clinical significance to surgeons, obstetricians – gynecologists, orthopedic surgeons, urologists, as well as radiologists. All these medical professionals have to be able to identify the **variations and branching pattern of the internal iliac artery** to prevent inadvertent injury during surgery. Several classifications have been proposed over the years.

- I. Based on the **terminal course of the artery** (Herbert, 1825): branches in the pelvic wall, the pelvic viscera and the extra pelvic branches.
- II. Based on the **terminal course** (Power, 1862): internal and external branches.
- III. Based on the **size of the artery** (Jastschinski, 1891):
 - Large caliber: superior gluteal, inferior gluteal, internal pudendal
 - Medium caliber: obturator artery
 - Small caliber: iliolumbar, lateral sacral arteries.
- IV. Based on **anatomical branching pattern** (Carter, 1867; Sharpey et al, 1867; Wilson, 1868): anterior and posterior trunks.
- V. **Adachi classification** (1928):

Type I: the superior gluteal arises independently while the inferior gluteal and the internal pudendal arteries arise from a common trunk and divide either inside or outside the pelvis.

Type II: the superior gluteal and the internal pudendal arteries arise from a common trunk, while the inferior gluteal arises independently.

Type III: all three arteries, the superior gluteal, inferior gluteal and the internal pudendal, arise independently.

Type IV: all three arteries arise from a common trunk.

Type V: the inferior gluteal arises separately, while the superior gluteal and the internal pudendal arise from a common trunk.

Branches of the Internal Iliac Artery

As aforementioned, the branches of the internal iliac artery are **variable**. Occasionally, the branches arise from other named branches instead of from the internal iliac artery.

The internal iliac artery has two main divisions: **the anterior and the posterior division**. In addition, it gives off **several visceral and parietal branches**. The anterior division gives off eight branches, while the posterior division gives off three branches, as listed below:

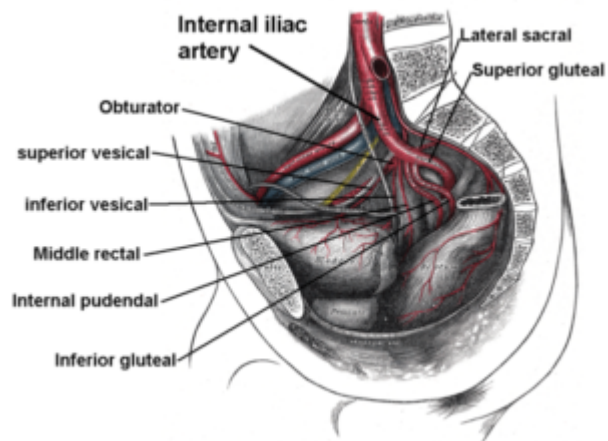


Image: "The Arteries of the Pelvis. Right Side (Distal from Spectator)." by Häggström, Mikael. "Medical Gallery of Mikael Häggström 2014". Wikiversity Journal of Medicine 1 (2). DOI:10.15347/wjm/2014.008. ISSN 20018762. Public Domain. - Image:Gray539.png. License: Public Domain

Anterior division

- Umbilical
 - Superior vesical
- Obturator
- Inferior vesical/vaginal
 - Artery to the ductus deferens
 - Branches to the prostate
- Uterine
 - Vaginal branch
- Internal pudendal
- Middle rectal
- Inferior gluteal

Posterior division

- Iliolumbar
- Lateral sacral
- Superior gluteal

Male reproductive organs

Testes in males is supplied by the **testicular artery** (also called the **internal spermatic artery**), which is a branch of the **abdominal aorta**. Each testicular artery runs inferiorly, in the **retroperitoneum**, to the **scrotum** through the **inguinal canal** encased within the **spermatic cord**.

On the right side, the testicular artery lies anterior to the **inferior vena cava** and posterior to the **middle and ileocolic arteries** and the **terminal ileum**. On the left, the testicular artery lies posterior to the **sigmoid** and **left colic arteries** and the **iliac colon**.

Female reproductive organs

In females, the **ovarian artery**, a direct branch from the **abdominal aorta**, travels inferiorly through the **suspensory ligament of the ovary** to enter the **mesovarium** and then supplies oxygenated blood to the **ovary** and **uterus**.

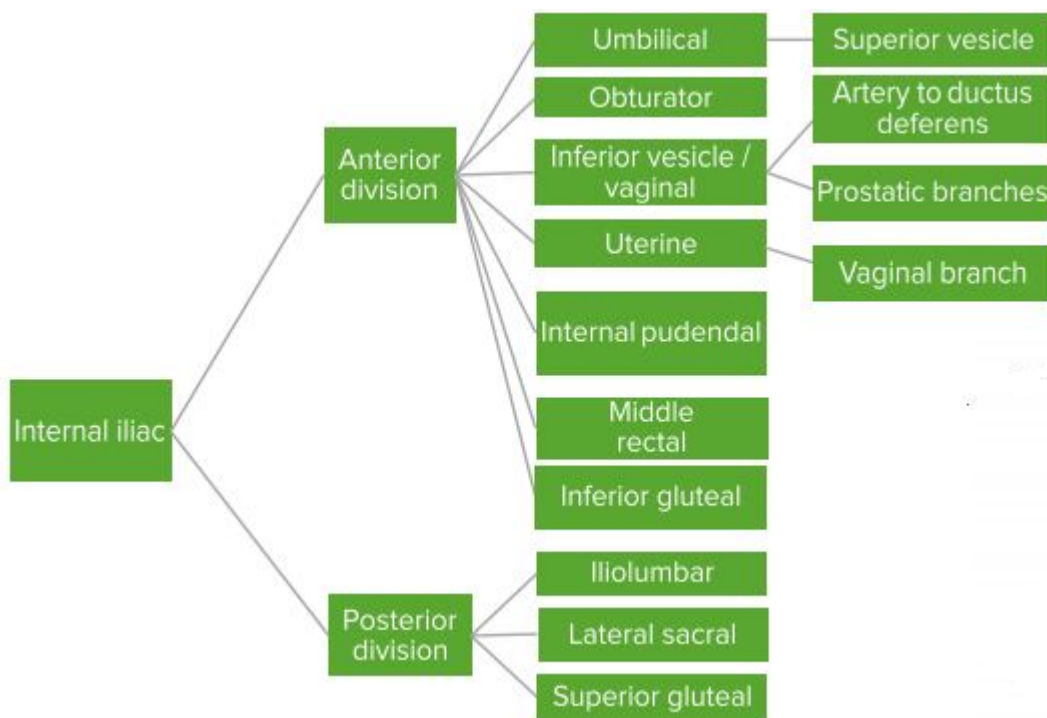
The ovarian arteries are the female counterparts of the testicular arteries in males. Their origin and course are identical to the **internal spermatic arteries** in the first part, but, at the **pelvic brim**, the ovarian arteries travel medially through the layers of the **ovarian-pelvic ligament** and the **broad ligament of the uterus** to supply the ovary.

The testicular arteries follow a different course as the testes are located in the scrotum. The ovarian arteries are also shorter as compared to the testicular arteries and, during **pregnancy**, become engorged to provide for the increased requirements of the **uterus**.

Rectum

The arterial supply to the rectum is from the following arteries:

- The **superior rectal**, which is a terminal branch of the **inferior mesenteric artery**, supplies the proximal part of the rectum.
- The **middle rectal branch of the internal iliac artery** supplies the middle and inferior parts of the rectum.
- The **inferior rectal artery**, which is a branch of the **internal pudendal artery**, which in turn is a branch of the **internal iliac artery**, supplies the **anorectal junction** and the **anal canal**.



"Branches of internal iliac" Image created by Lecturio

Clinical Relevance of the Internal Iliac Artery

Branching pattern of the internal iliac artery: Knowing the variability of the internal iliac branching pattern is extremely important for endovascular radiologists, surgeons, obstetricians – gynecologists, orthopedic surgeons, and urologists. The organization of the branching pattern can be studied with **pelvic embolization**. This can avoid unnecessary embolization, embolectomy or ligation, and iatrogenic injury to the internal iliac artery can be prevented if the branching pattern is known.

Internal iliac ligation: is required for **hemostasis** in cases of **severe pelvic**

hemorrhage e.g. severe postpartum hemorrhage or open-book pelvic fractures. As there are extensive anastomoses, collateral circulation develops soon after ligation.

Aneurysms of the internal iliac artery: These are rare but are not easy to diagnose. The aneurysm causes obstructive symptoms by compressing the ureters or rectum leading to constipation or difficulty passing urine. Rupture of the aneurysm can be fatal due to **severe hemorrhagic shock**. Treatment is **endovascular stenting** in asymptomatic aneurysms or **surgical ligation** in symptomatic aneurysms.

References

[Major Arteries of the Pelvis: Internal Iliac and its branches](#) via teachmeanatomy.info

[Internal Iliac Artery](#) via kenhub.com

[Internal iliac artery](#) via wikipedia.org

[Internal Iliac Artery Classification and its Clinical Significance](#) via anatclinar.com.ar

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