Clinical topographic anatomy

2017/2018

Pelvis, perineal region

Miloš Grim

Institute of Anatomy, First Faculty of Medicine, Charles University
PELVIS
Bony pelvis, external measurements
Pelvic planes and their measurements
Pelvic floor muscles in relation to childbirth
Uterine tubes and ovaries
Female endopelvic fascias, ligaments supporting uterus, uterine prolapse
Nerve blocks of the perineum (pudendal and ilioinguinal)
Mechanisms of urinary continence
Peritoneum and the female pelvis
Peritoneum and the male pelvis
Syntopy of the prostate, per rectum examination
Syntopy of the rectum, per rectum examination
Blood supply of pelvic viscera
Perineum and episiotomy
Bony pelvis, external measurements
Pelvic planes and their measurements
Pelvis types in women:

A. Gynoid type (frequency 40%)
B. Android type (frequency 30%)
C. Anthropoid type (frequency 20%)
D. Platypelloid type (frequency 3%)
Vascular space
Muscular space
Obturator canal
Pelvic floor muscles in relation to childbirth, Female endopelvic fascia,
Pelvic diaphragm, pelvic floor

Levator ani

pubic part – **pubococcygeus** (pubovisceral)
  pubovaginal
  puboprostatic
  puboperineal
  pubo-analis
  – **puborectal**

iliac part – **iliococcygeus**

**Coccygeus** – **ischio coccygeus**

anococcygeal body, tendinous arch of levator ani, perineal body, urogenital hiatus, anal hiatus
Levator ani muscle and parts of external anal sphincter (9): deep part (10), superficial part (11), subcutaneous part (12)
Tendinous arch of levator ani

Tendinous arch of endopelvic fascia
Tendinous arch of levator ani

Tendinous arch of endopelvic fascia
Pelvic diaphragm
Fork formed by pubovaginal muscle

Fork formed by puborectal muscle
Pelvic diaphragm
Urogenital diaphragm

depth transverse perineal muscle (in man only)
sphincter urethrovaginalis (in woman only)
compressor urethrae (in woman only)

Fibrous structures

Perineal body,
Anococcygeal lig., Perineal membrane

Ischio-anal fossa

Fat body of ischio-anal fossa
Pudendal canal (Alcock’s canal)
Perineal muscles

Muscle of anal triangle
- external anal sphincter

Muscles of urogenital triangle
- external urethral sphincter
- ischiocavernosus
- bulbospongiosus
Perineal muscles in male, blood supply, innervation
Perineal muscles in female, blood supply, innervation

(A) Center of the anus to the anterior clitoral surface (AGD) and the center of the anus to the posterior fourchette (AFD) measurements made in female subjects.

(B) Center on the anus to the anterior base of the penis (AGD) and the center of the anus to the junction of the perineum with the rugated scrotal skin (ASD) measurements made in male subjects.

AGD AS 51.3 ± 14.5 mm

AGD AF 37.7 ± 6.3 mm

Mendiola et al.: Environ Health Persp 119:958, 2011


adults
Female endopelvic fascias, ligaments supporting uterus, uterine prolapse
Mechanisms of urinary continence
Perineal muscles of female

External urethral sphincter, Sphincter urethrovaginalis, Compressor urethrae

Bulbospongiosus, Ischocavernosus, Sphincter urethrovaginalis, Compressor urethrae
Female urethra

Fibromuscular tube (4 cm) internal orifice, (filling, voiding) external orifice

Parts: intramural, pelvic, perineal, external urethral sphincter, urethral glands, (paraurethral ducts)
Axial T2-weighted image of a 26-year-old nullipara. C demonstrates the multidirectional organization of the complex pelvic floor anatomy. The per-voxel vector values are color coded as follows: green (anteroposterior direction), blue (craniocaudal direction), and red (mediolateral direction).
Fiber tractography representing the anal sphincter complex from anterior (A) and right anterolateral view (B) and the urethral sphincter complex from cranial (C) and posterior view (D).
Anatomy of the urogenital hiatus (scheme based on MRI)

- Symphysis
- Urogenital hiatus
- Urethra
- Vagina
- Anal canal
- Puborectal sling (levator ani)
- Tendinous arch of levator ani
- Tendinous arch of pelvic fascia
Hammock
endopelvic fascia
(pubocervical fascia)
fixation: tendineus arch of endopelvic fascia
Attachments of the cervix and vagina to pelvic walls (uterine corpus and the bladder have been removed)

- Obturator int.
- Tendinous arch of endopelvic fascia
- Vagina
- Tendinous arch of levator ani
- Levator ani
- Projection of trigon of the bladder
Transverse section of the female pelvis

Parametrium, broad ligament, cardinal lig., transverse cervical lig., uterosacral lig., recto-uterine lig., pubocervical lig., round lig. of uterus
**Parametrium**
Supporting apparatus of uterus, cardinal lig. (broad ligament) round ligament pubocervical lig. recto-uterine lig.
Levator ani muscle and parts of external anal sphincter (9): deep part (10), superficial part (11), subcutaneous part (12)
Peritoneum and the male pelvis
Syntopy of the urinary bladder in male

recto-vesical pouch, pubo-vesical lig., pubo-prostatic lig., retropubic space, recto-vesical septum, paracystium
Interampullar trigon, syntopy of prostate
Ischioanal fossa
Syntopy of urinary bladder in male on frontal section
Peritoneum and the female pelvis
Uterus,
Uterine tubes,
Ovaries
Uterus - fundus, horns, body, isthmus, cervix, intestinal surface, vesical surface, perimetrium, round ligament
Ovary, Uterine tube
Female genital organs

Internal genital organs
Ovary, Uterine tube, Uterus, Vagina

External genital organs
Pudendum (vulva)
Mons pubis
Labium majus
Labium minus
Pudendal cleft
Labium minus
Vestibule
Bulb of vestibule
Clitoris
Sagittal section of the female pelvis

MRI of female pelvis in sagittal plane
Ischioanal fossa, frontal section
Syntopy of the urinary bladder in female

vesicouterine pouch, rectouterine pouch, pubovesical lig., retropubic space, vesicovaginal septum, paracystium, rectovaginal septum
Urogenital hiatus (MRI)
Anatomy of the pelvic outlet (scheme based on MRI)

- Urethra
- Vagina
- Anal canal
- Puborectal sling (levator ani)
- Symphisis
- Urogenital hiatus
Mesovarium, Uteroovaric lig., Suspensory lig. of ovary, Mesosalpinx, Mesometium, Round ligament of uterus
Innervation and blood supply of pelvic viscera
Corona mortis
Blood supply of the rectum
A. Iliaca interna

A. ovarica, a. uterina

ureter

A. ovarica, a. uterina
Innervation of pelvic organs and perineum
Female external genitalia: mons pubis, pudendal cleft, labia majora, praepu ce of clitoris, glans of clitoris, frenulum of clitoris, labia minora, ostium urethrae externum, ostium vaginae, carunculæ hymenales, commisura labiorum posterior, perineum, ostium of greater vestibular gland

n. ilioinguinalis, n. genitofemoralis, n.cutaneus femoris posterior, n. pudendus
Lymph nodes: lumbar, sacral, internal iliac, external iliac, superficial inguinal

Uterovaginal plexus
sympathetic, parasympathetic, sensory fibres from ovarian and inf. hypogastric plexuses
Lymph nodes: common iliac, external iliac, inguinal
Sources of used illustrations:

Gray´s Anatomy,
Sobotta: Atlas der Anatomie des Menschen
Grim, Druga: Regional anatomy Galén, 2012
Benninghoff, Drenckhahn: Anatomie I., II.

Recommended Textbooks:

or
and
or
Grim, Druga: Regional anatomy Galén, 2012