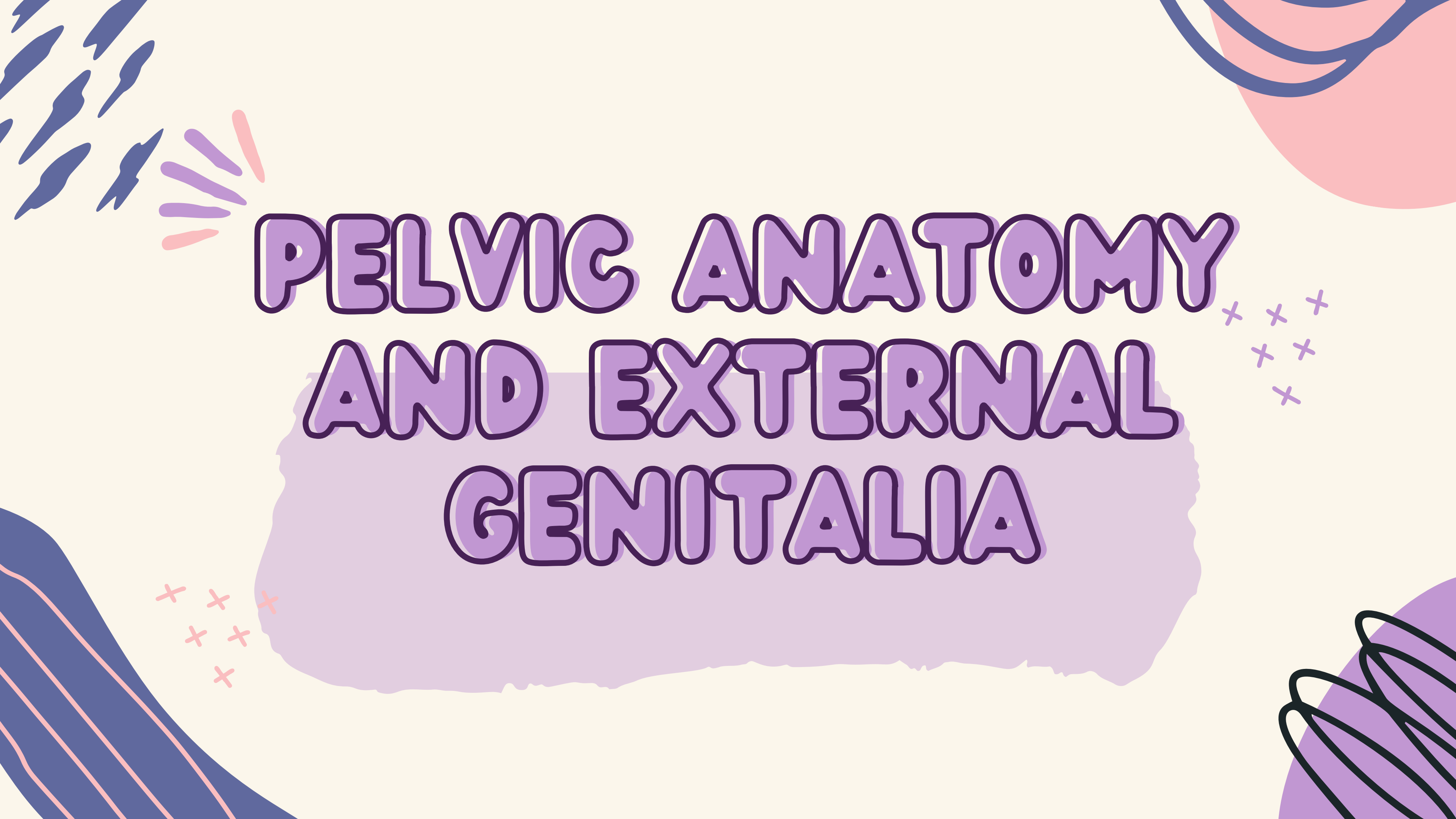




E.1. FOUNDATIONAL ANATOMY

Emily McGregor

MDWF 2090

The image features a central title in a bubbly, purple-outlined font. The background is a light cream color, decorated with stylized anatomical illustrations in the corners: a cluster of blue and pink lines in the top-left, a pink circle with a blue outline in the top-right, a blue shape with pink lines in the bottom-left, and a purple shape with black outlines in the bottom-right. Small clusters of pink and purple plus signs are scattered around the text.

PELVIC ANATOMY AND EXTERNAL GENITALIA



1. MON PUBIS OR MONS VENERIS:

DESCRIPTION:

"The fat pad over the pubic area of females is currently termed the mons pubis (pubic mountain-Latin). An older term, the mons veneris (the mountain of Venus) referred to the Roman Goddess of Love, also known as Aphrodite in Greek mythology."

<https://www.osmosis.org/answers/mons-pubis>

RISK OF BIRTH TRAUMA:

N/A

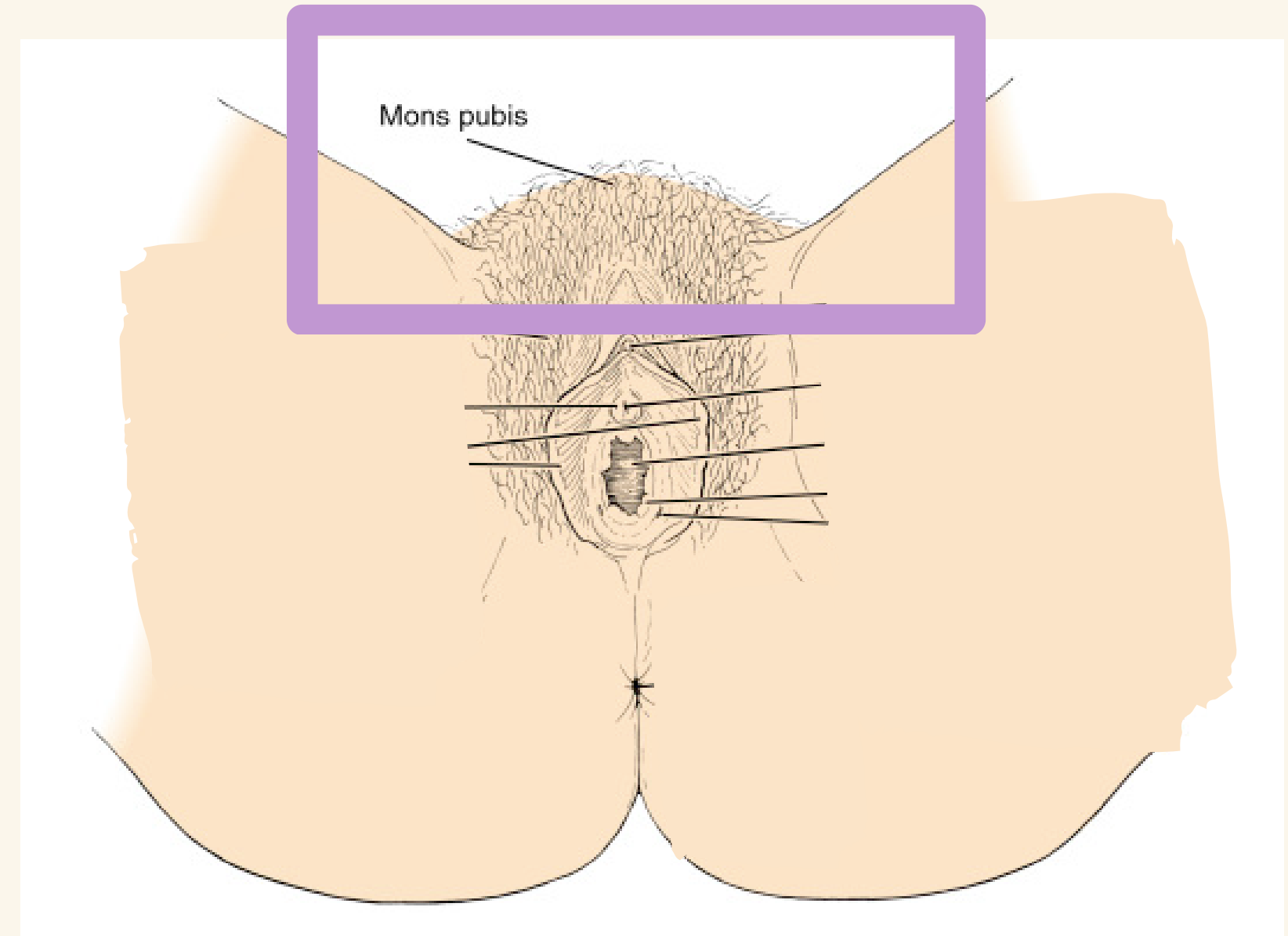


Image from: <https://www.sciencedirect.com/topics/medicine-and-dentistry/mons-pubis>



2. LABIA MAJORA:

DESCRIPTION:

"The labia majora are a prominent pair of cutaneous skin folds that will form the lateral longitudinal borders of the vulval clefts. The labia majora forms the folds that cover the labia minora, clitoris, vulva vestibule, vestibular bulbs, Bartholin's glands, Skene's glands, urethra, and the vaginal opening"

Nguyen JD, Duong H. Anatomy, Abdomen and Pelvis, Female External Genitalia. [Updated 2022 Jul 25]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK547703/>

RISK OF BIRTH TRAUMA:

Varicose veins, very rare for lacerations to happen

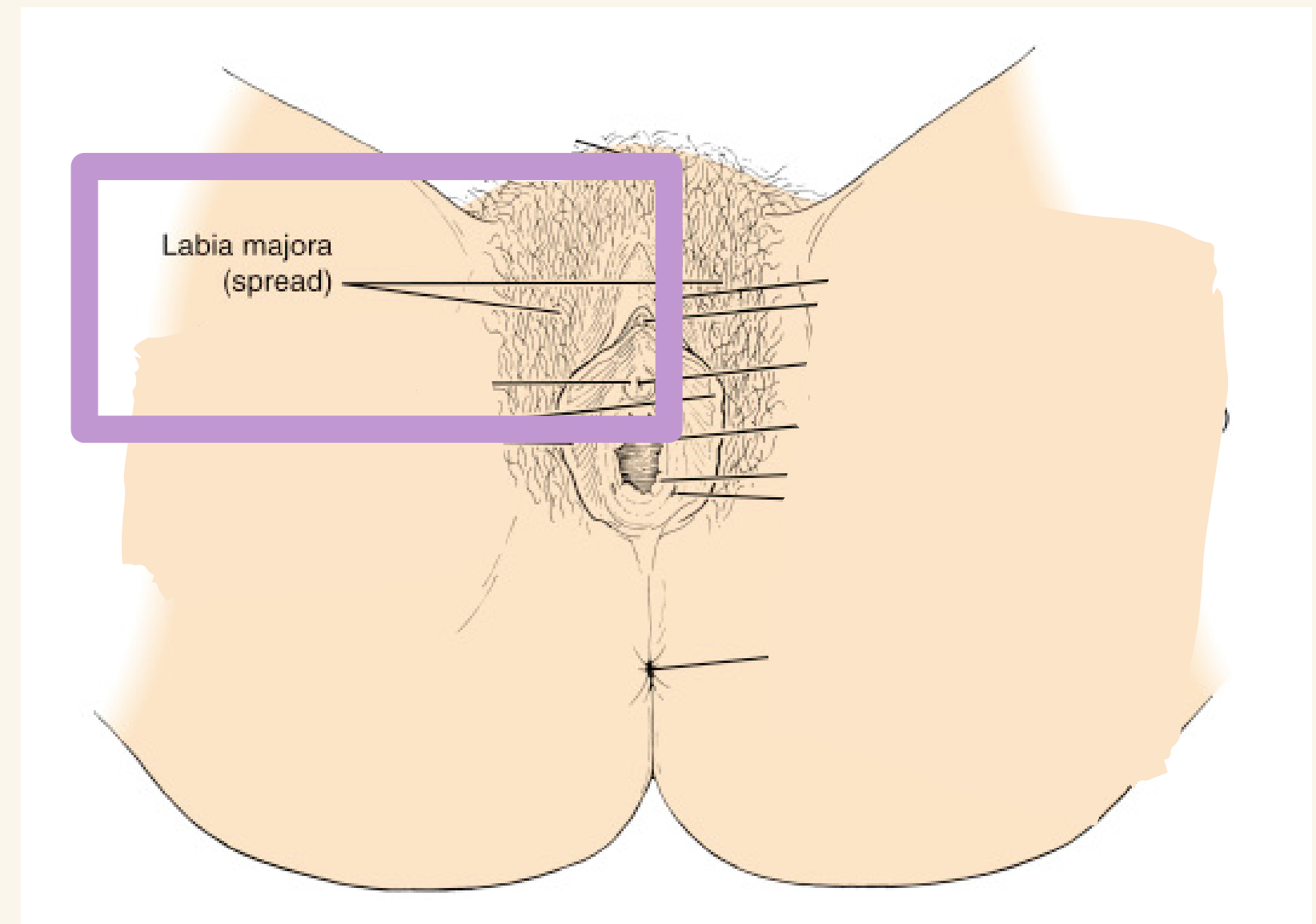


Image from: <https://www.sciencedirect.com/topics/medicine-and-dentistry/mons-pubis>



3.LABIA MINORA:

DESCRIPTION:

The smaller inner folds of the vulva.

Oxford Dictionary define: Labia Minora

RISK OF BIRTH TRAUMA:

Skin splits or tears during birth, especially with nuchal hands or arms.

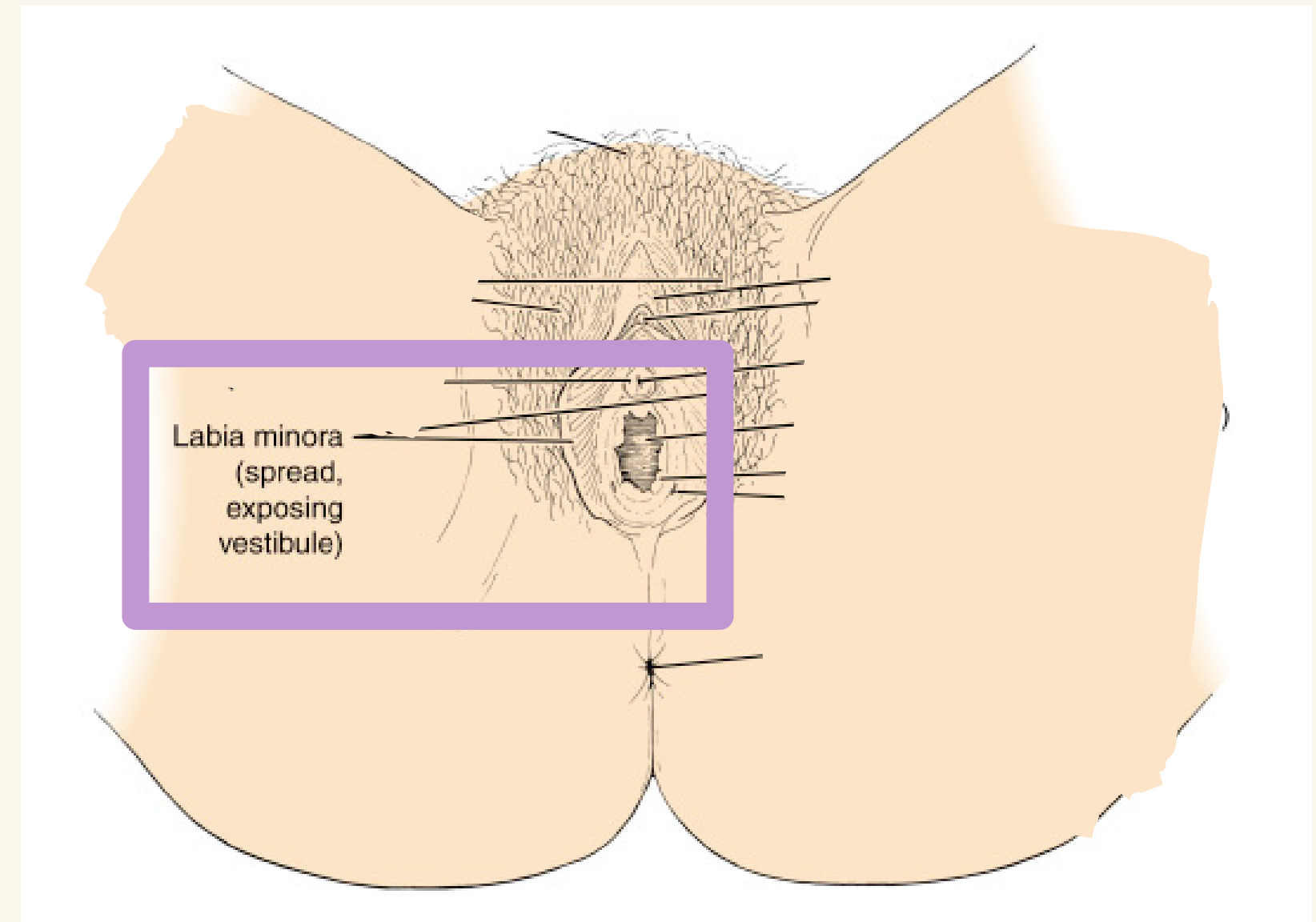


Image from: <https://www.sciencedirect.com/topics/medicine-and-dentistry/mons-pubis>

4.FOURCHETTE:

DESCRIPTION:

"At the bottom of the inner folds of the vulva is the fourchette. This is where the labia minora meet. Below the fourchette is the perineum."

<https://www.urmc.rochester.edu/encyclopedia/content.aspx?contenttypeid=34&contentid=19522-1>

RISK OF BIRTH TRAUMA:

May sustain damage with a perineal tear.

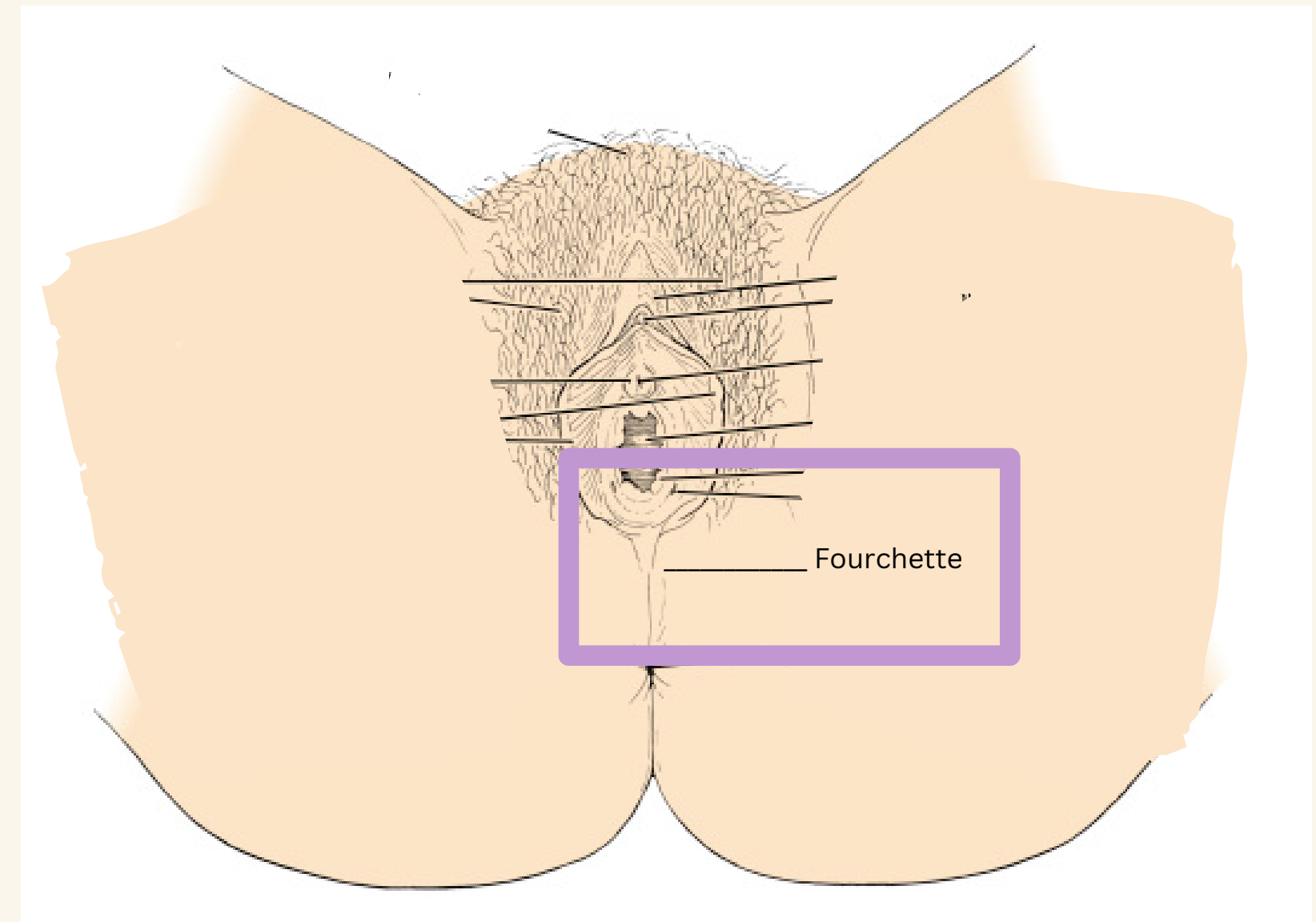


Image from: <https://www.sciencedirect.com/topics/medicine-and-dentistry/mons-pubis>

5. CLITORAL HOOD:

DESCRIPTION:

The inner folds of the vulva form a hood of skin called the prepuce or the hood of the clitoris. Below the prepuce is the clitoris.

<https://www.urmc.rochester.edu/encyclopedia/content.aspx?contenttypeid=34&contentid=19522-1>

RISK OF BIRTH TRAUMA:

Very uncommon to have clitoral hood damage, but splits damage may occur with a malpositioned or very large baby.

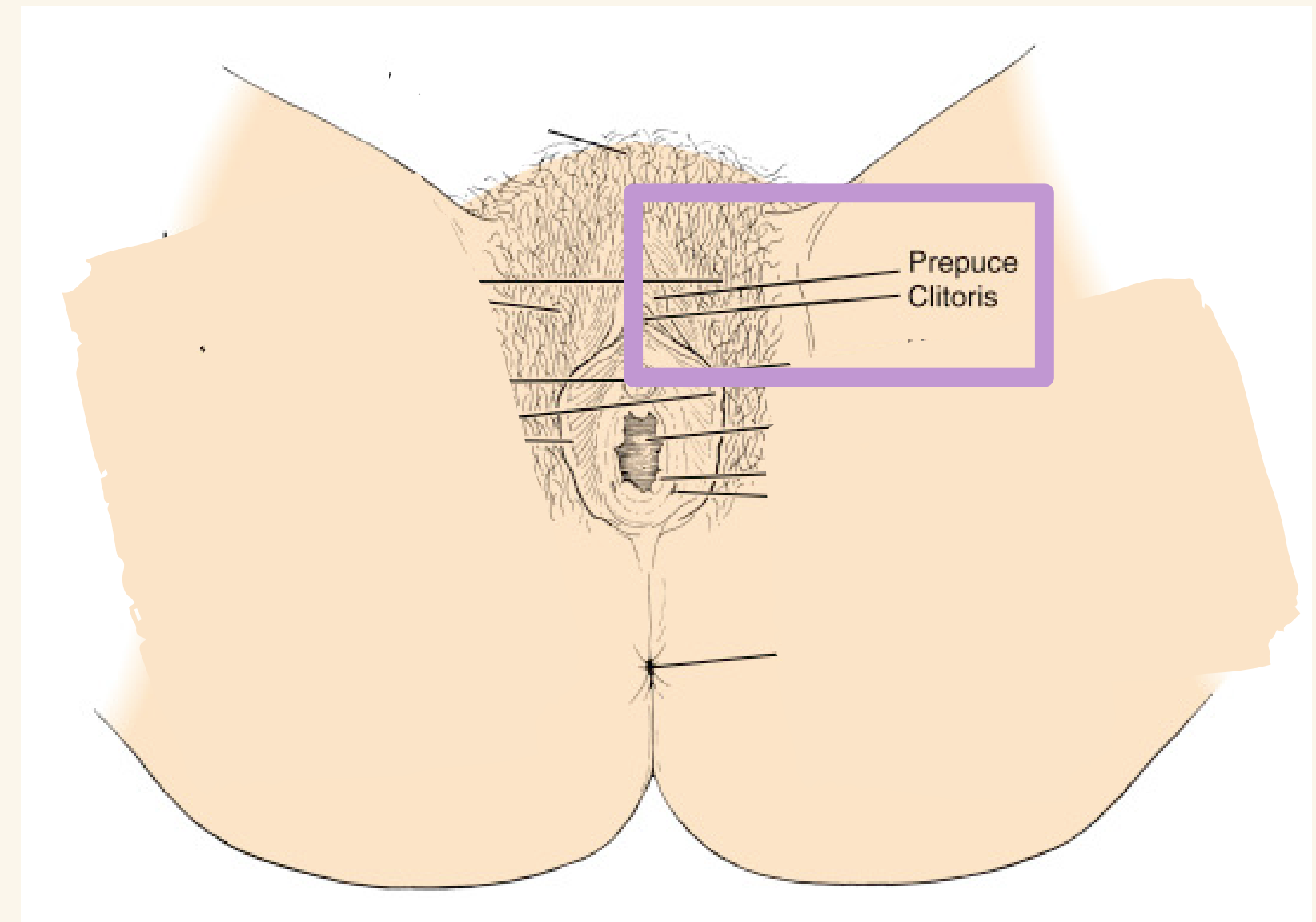


Image from: <https://www.sciencedirect.com/topics/medicine-and-dentistry/mons-pubis>



6. FRENULUM OF THE CLITORIS:

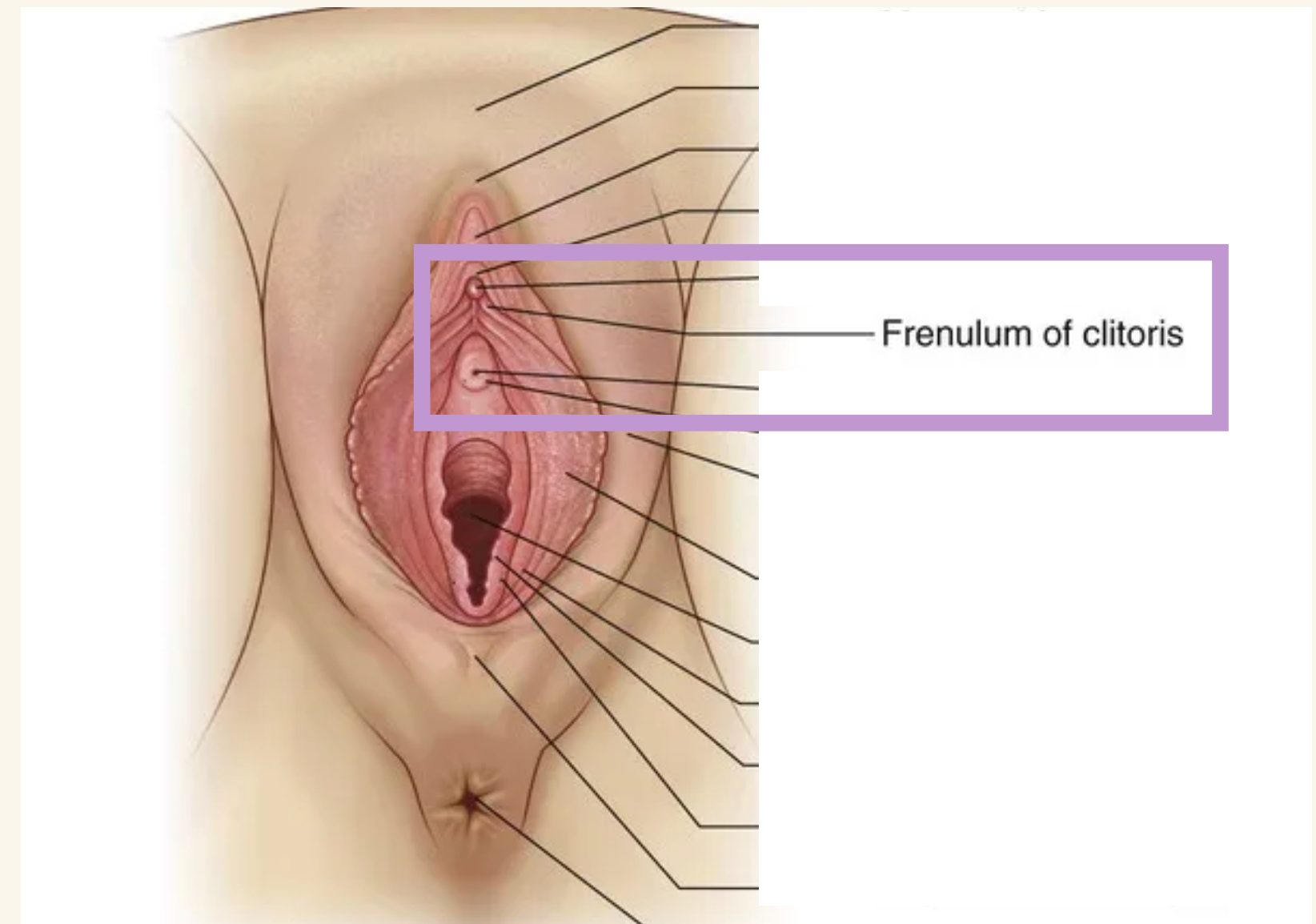
DESCRIPTION:

Is a small fold of integument or mucous membrane that limits the movements of an organ or part. frenulum of clitoris a fold formed by union of the labia minora on the undersurface of the clitoris.

<https://medical-dictionary.thefreedictionary.com/frenulum+of+clitoris#:~:text=%5Bfren%C2%B4u%2Dlum%5D,the%20undersurface%20of%20the%20clitoris.>

RISK OF BIRTH TRAUMA:

Very uncommon to have frenulum of the clitoris damage, but damage may occur with a malpositioned or very large baby.



<https://musculoskeletalkey.com/the-female-hip-and-pelvis/>

7. VESTIBULE OF THE VULVA:

DESCRIPTION:

This is a smooth surface that begins superiorly just below the clitoris and ends inferiorly at the posterior commissure of the labia minora. The vulva vestibule contains the opening to the urethra and the vaginal opening. The borders of the vulva vestibule are formed from the edge of the labia minora.

Nguyen JD, Duong H. Anatomy, Abdomen and Pelvis, Female External Genitalia. [Updated 2022 Jul 25]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK547703/>

RISK OF BIRTH TRAUMA:

N/A

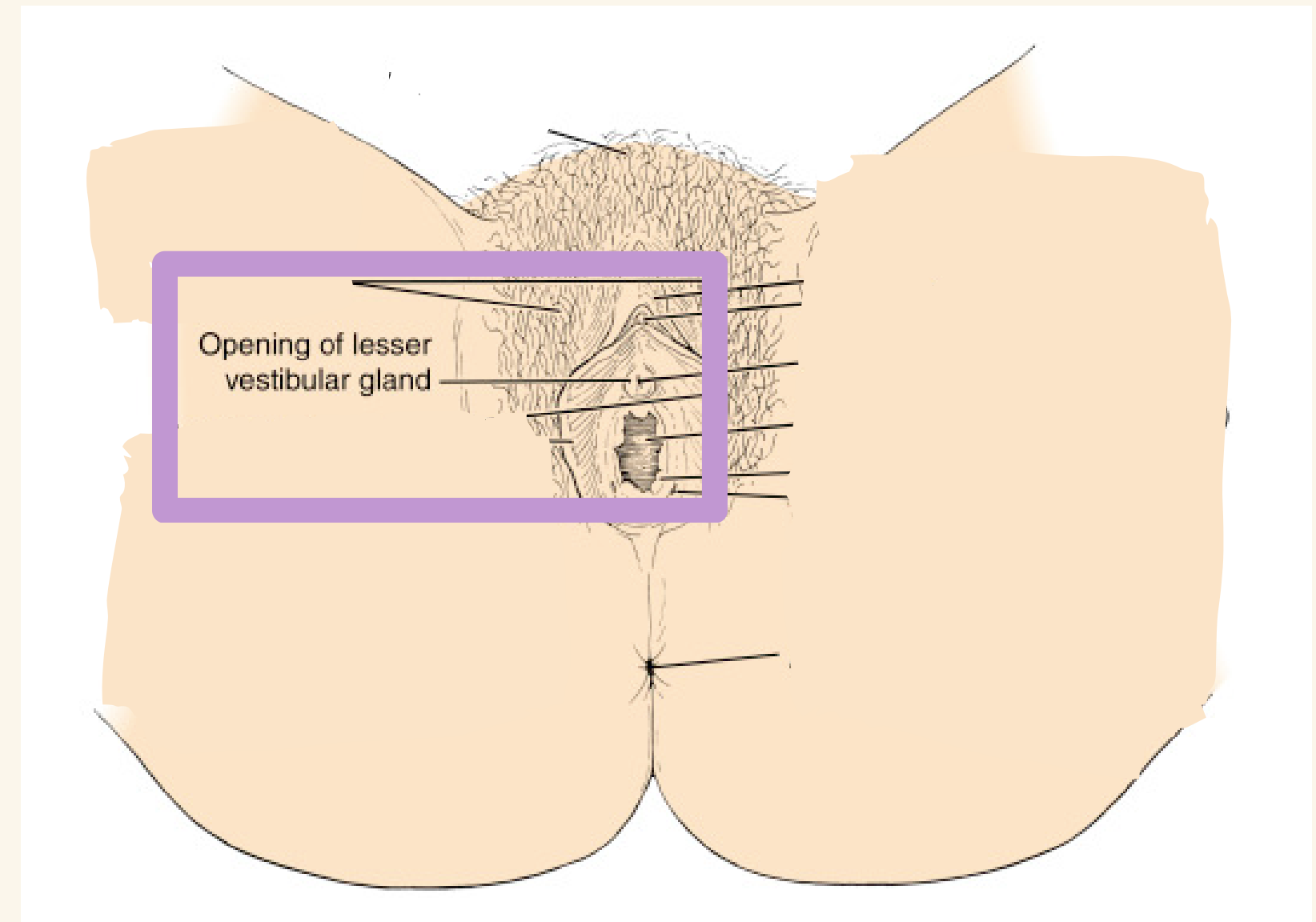


Image from: <https://www.sciencedirect.com/topics/medicine-and-dentistry/mons-pubis>

8. CLITORAL GLANS:

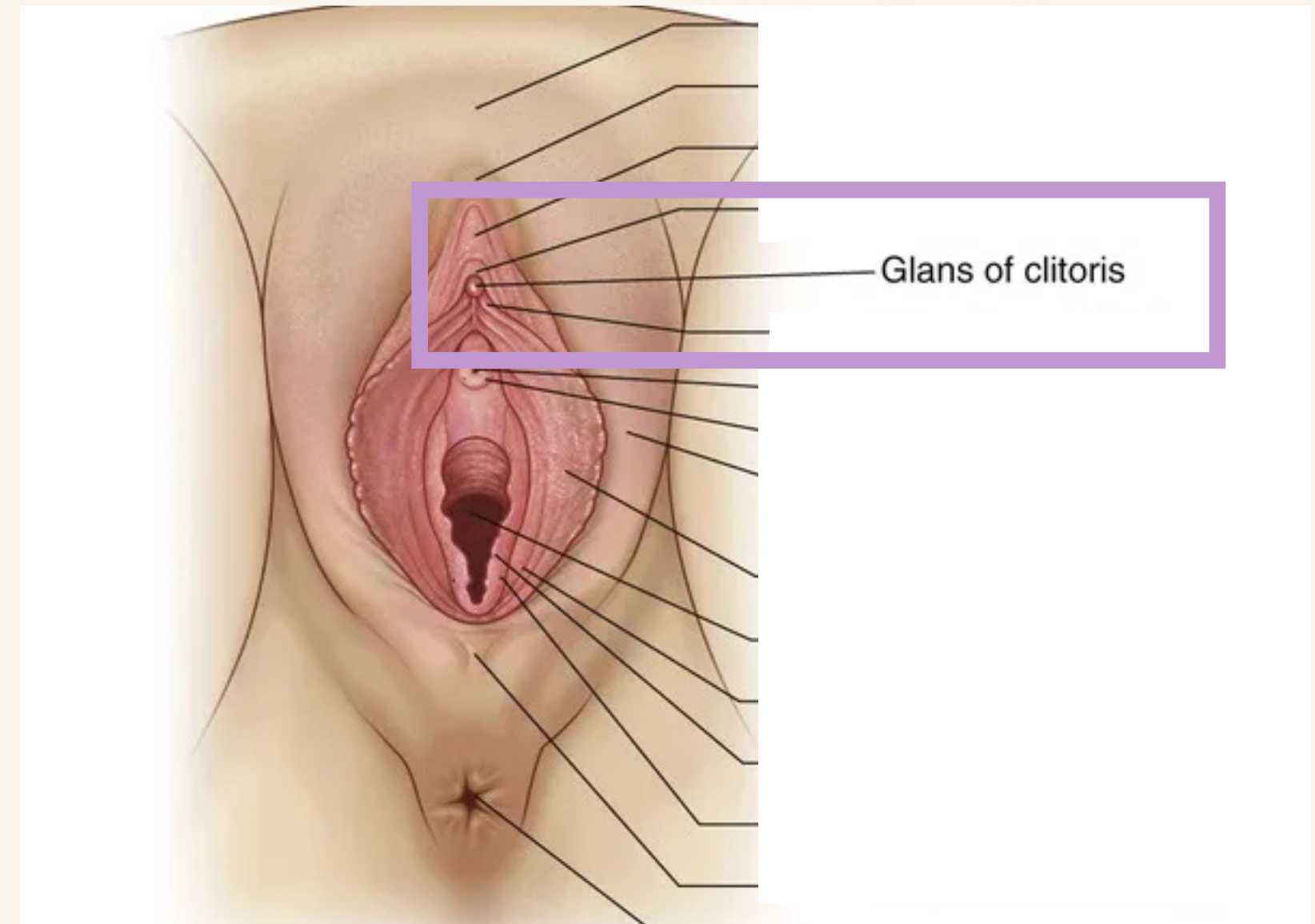
DESCRIPTION:

The exposed end of the clitoral body, projects out from under the clitoral hood

<https://medical-dictionary.thefreedictionary.com/frenulum+of+clitoris#:~:text=%5Bfren%C2%B4u%2Dlum%5D,the%20undersurface%20of%20the%20clitoris.>

RISK OF BIRTH TRAUMA:

Very uncommon to have clitoral glan damage, but damage may occur with a malpositioned or very large baby.



<https://musculoskeletalkey.com/the-female-hip-and-pelvis/>

9. URETHRAL MEATUS:

DESCRIPTION:

The meatus (opening) of the female urethra, the transport tube that leads from the bladder to discharge urine outside the body.

https://www.rxlist.com/meatus_female_urethral/definition.htm

RISK OF BIRTH TRAUMA:

Damage to the urethra during birth is not common, but if and when it does occur it requires transfer of care and transport to the hospital.

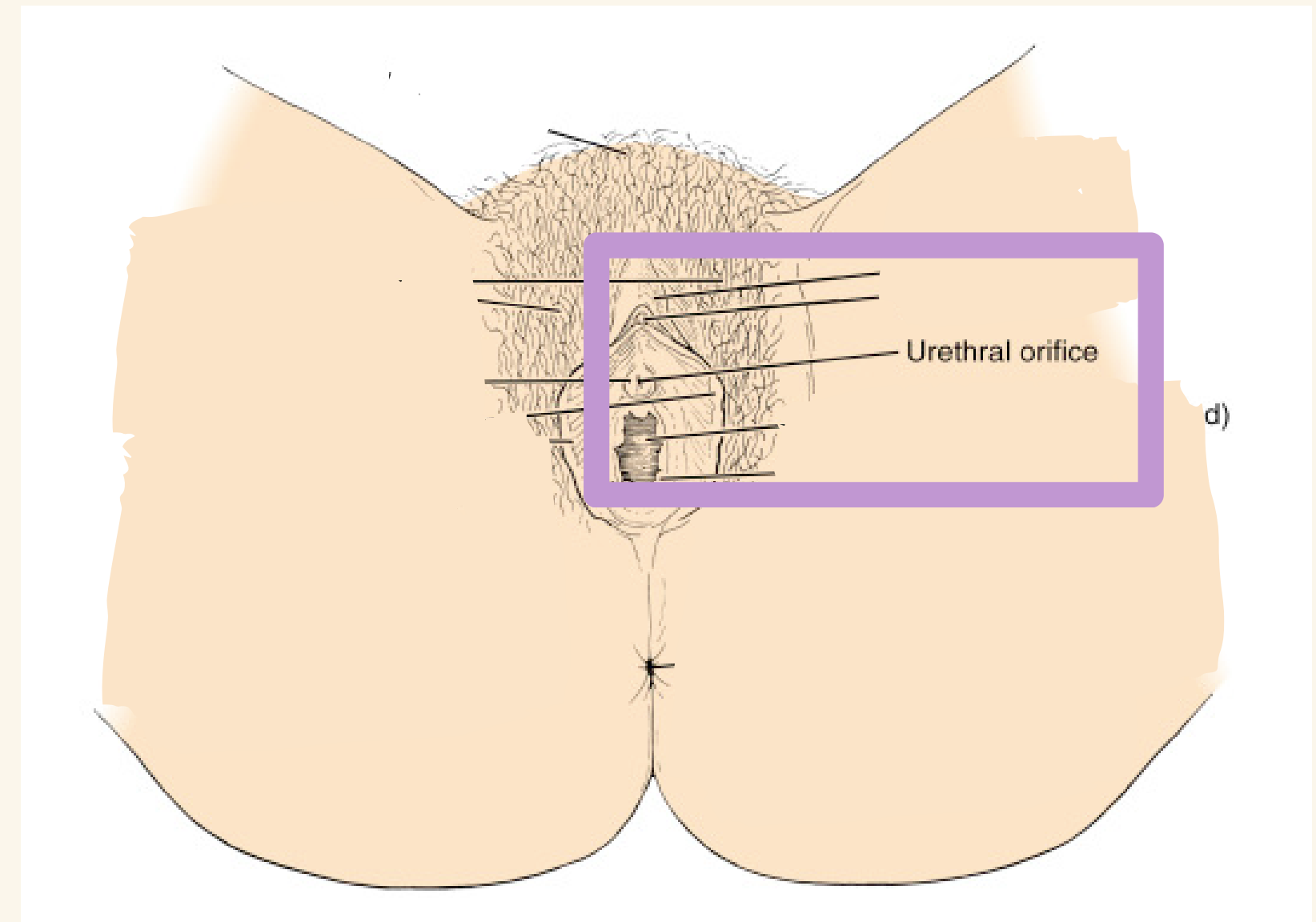


Image from: <https://www.sciencedirect.com/topics/medicine-and-dentistry/mons-pubis>

10.INTROITUS:

DESCRIPTION:

Exterior opening of the vagina, boundary is formed by the hymen

https://www.rxlist.com/meatus_female_urethral/definition.htm

RISK OF BIRTH TRAUMA:

Lacerations may go through the ring of the opening.

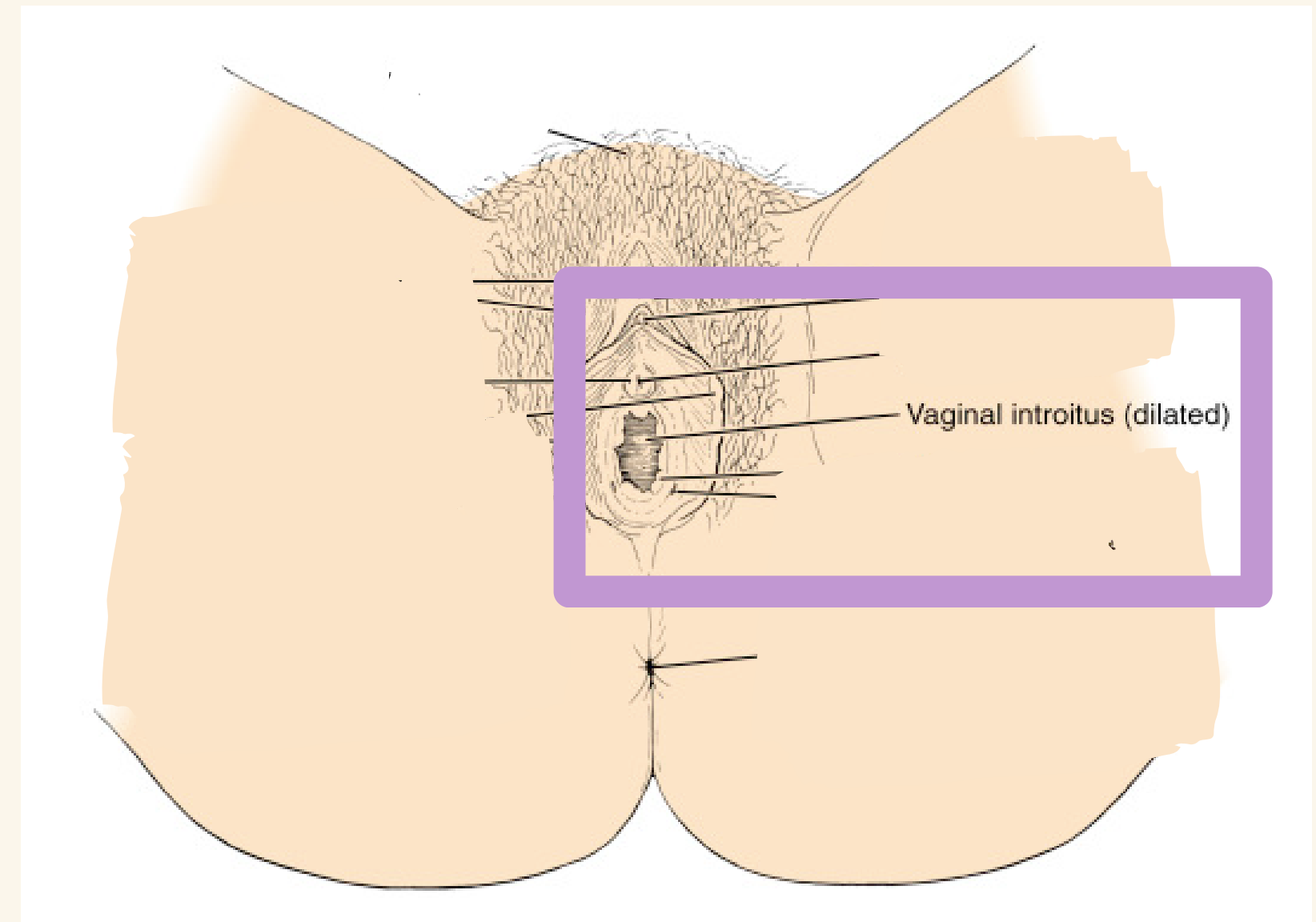


Image from: <https://www.sciencedirect.com/topics/medicine-and-dentistry/mons-pubis>



11. PERINEUM:

DESCRIPTION:

The area of skin between the opening of the vulva and the anus. It is a diamond-shaped structure inferior to the pelvic diaphragm and between the symphysis pubis and coccyx. The perineum is divided into the anterior urogenital triangle and the posterior anal triangle; the vulva represents the external genitalia.

<https://pubs.rsna.org/doi/abs/10.1148/rg.324115134?journalCode=radiographics>

RISK OF BIRTH TRAUMA:

This is the space that is most common to receive damage and lacerations during birth. Perineal lacerations vary in degree, and severity depending on several factors including fetal position at birth, parity and more.

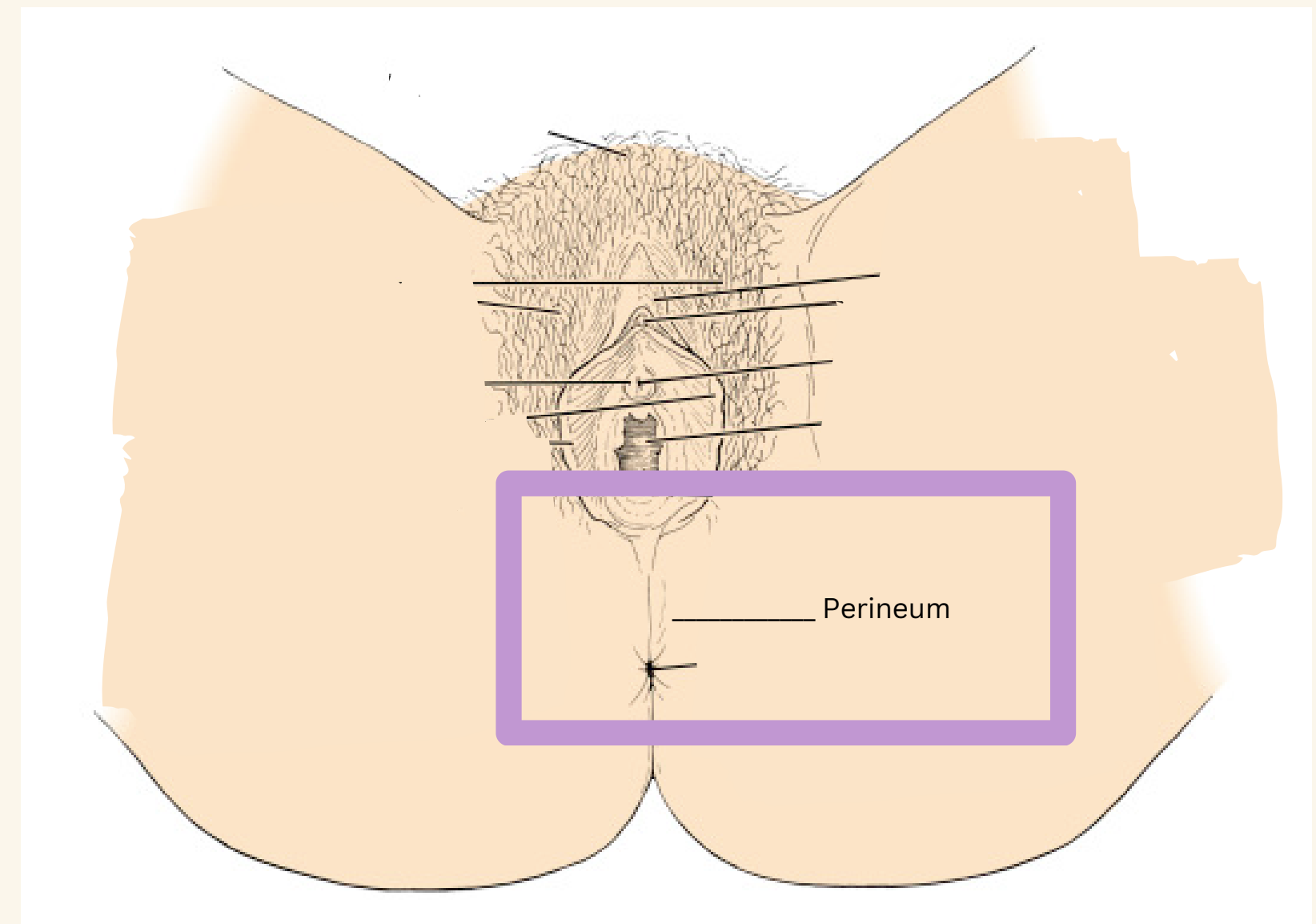


Image from: <https://www.sciencedirect.com/topics/medicine-and-dentistry/mons-pubis>

12. SUBCUTICULAR TISSUE

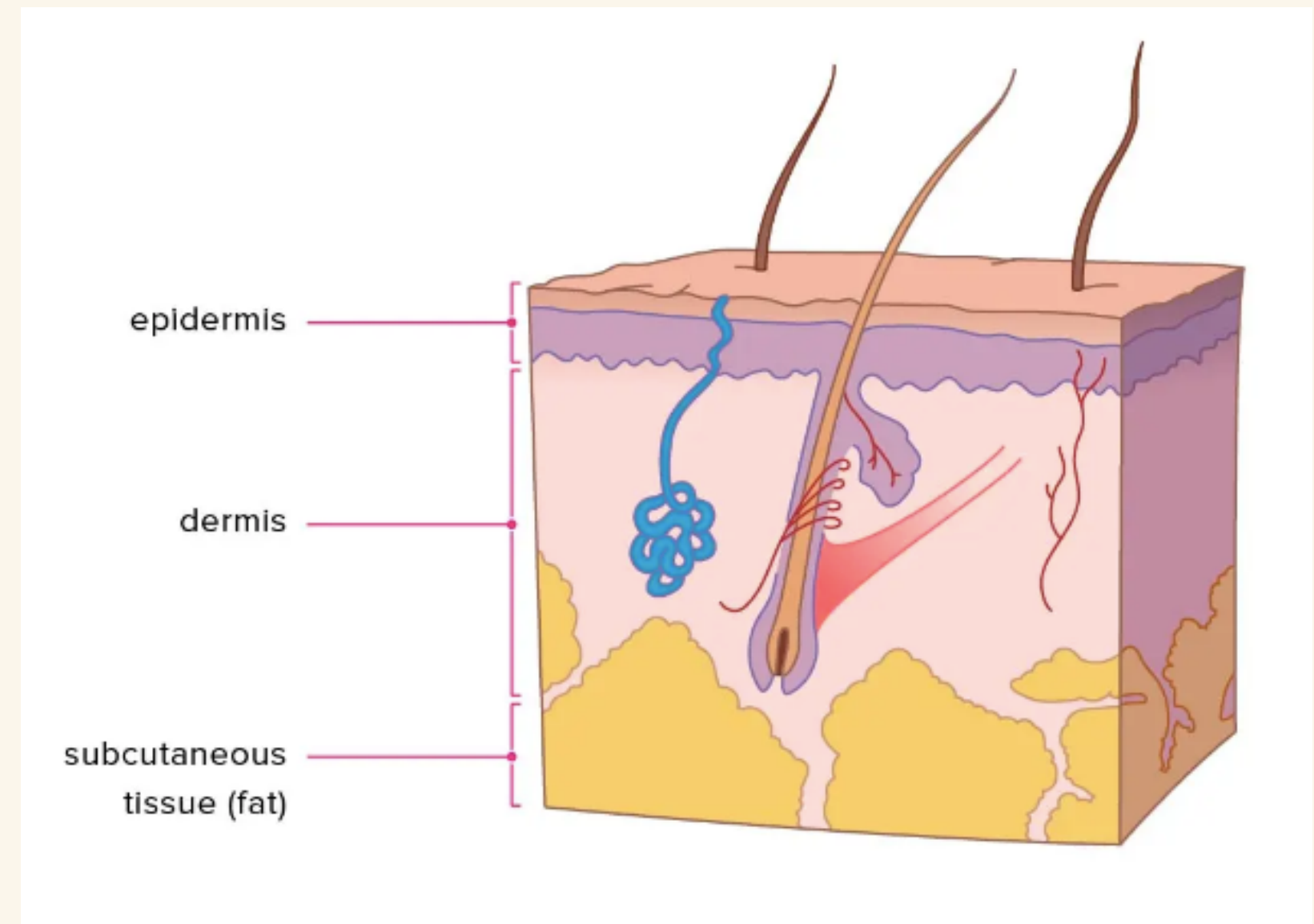
DESCRIPTION:

This is the tissue that lies between the dermis (skin) and the deeper muscles. This is immediately below the epidermal layer.

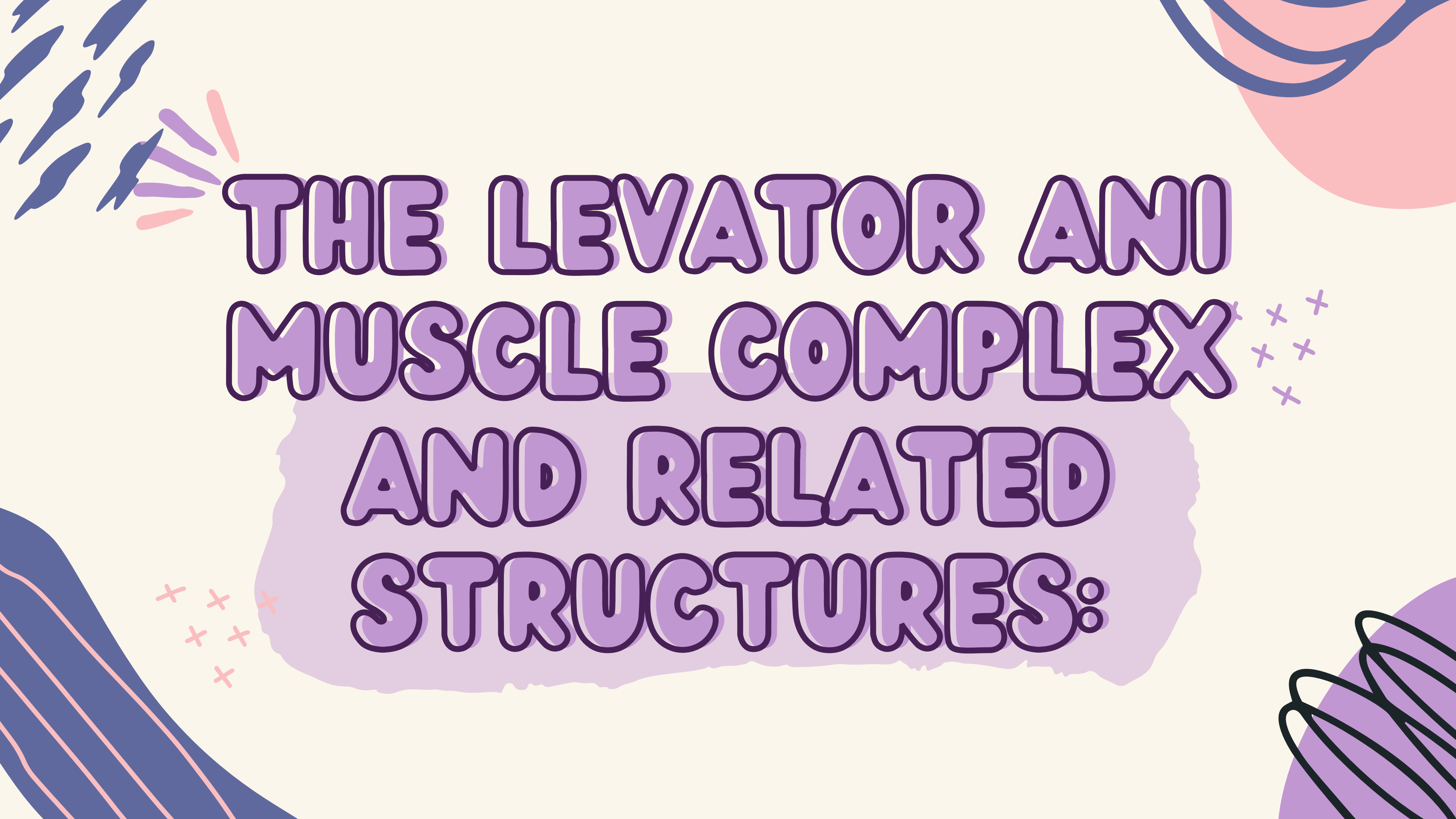
Goto S, Hida K, Furukawa TA, Sakai Y. Subcuticular sutures for skin closure in non-obstetric surgery. Cochrane Database Syst Rev. 2016 Mar 18;2016(3):CD012124. doi: 10.1002/14651858.CD012124. PMCID: PMC6699652.

RISK OF BIRTH TRAUMA:

1st degree lacerations reach this layer of tissue.



Healthline.com



THE LEVATOR ANI MUSCLE COMPLEX AND RELATED STRUCTURES:



1. LEVATOR ANI:

DESCRIPTION:

The levator ani is a complex funnel-shaped structure mainly composed of striated muscle, with some smooth muscle component.[1] Located on either side of the lower pelvis, it takes part in supporting and raising the pelvic floor and allows various pelvic structures to pass through it.

Gowda SN, Bordoni B. Anatomy, Abdomen and Pelvis, Levator Ani Muscle. [Updated 2022 Aug 8]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK556078/>

RISK OF BIRTH TRAUMA:

Uncommon for birth trauma to occur.

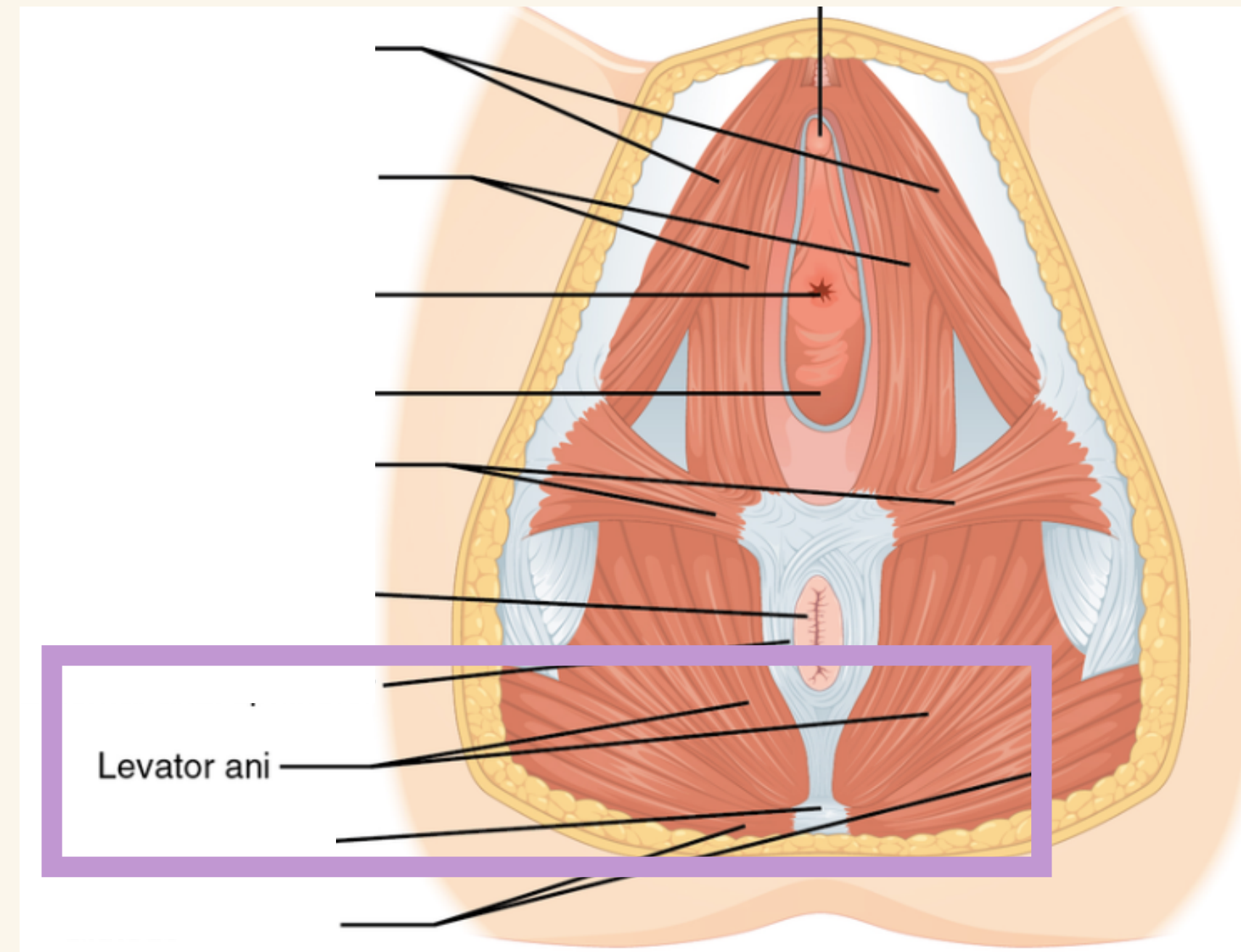


Image from:

<https://www.sciencedirect.com/topics/medicine-and-dentistry/mons-pubis>
https://en.wikipedia.org/wiki/Vaginal_support_structures#/media/File:1116_Muscle_of_the_Female_Perineum.png



2. PUBOCOCCYGEUS/PUBOVISCERAL:

DESCRIPTION:

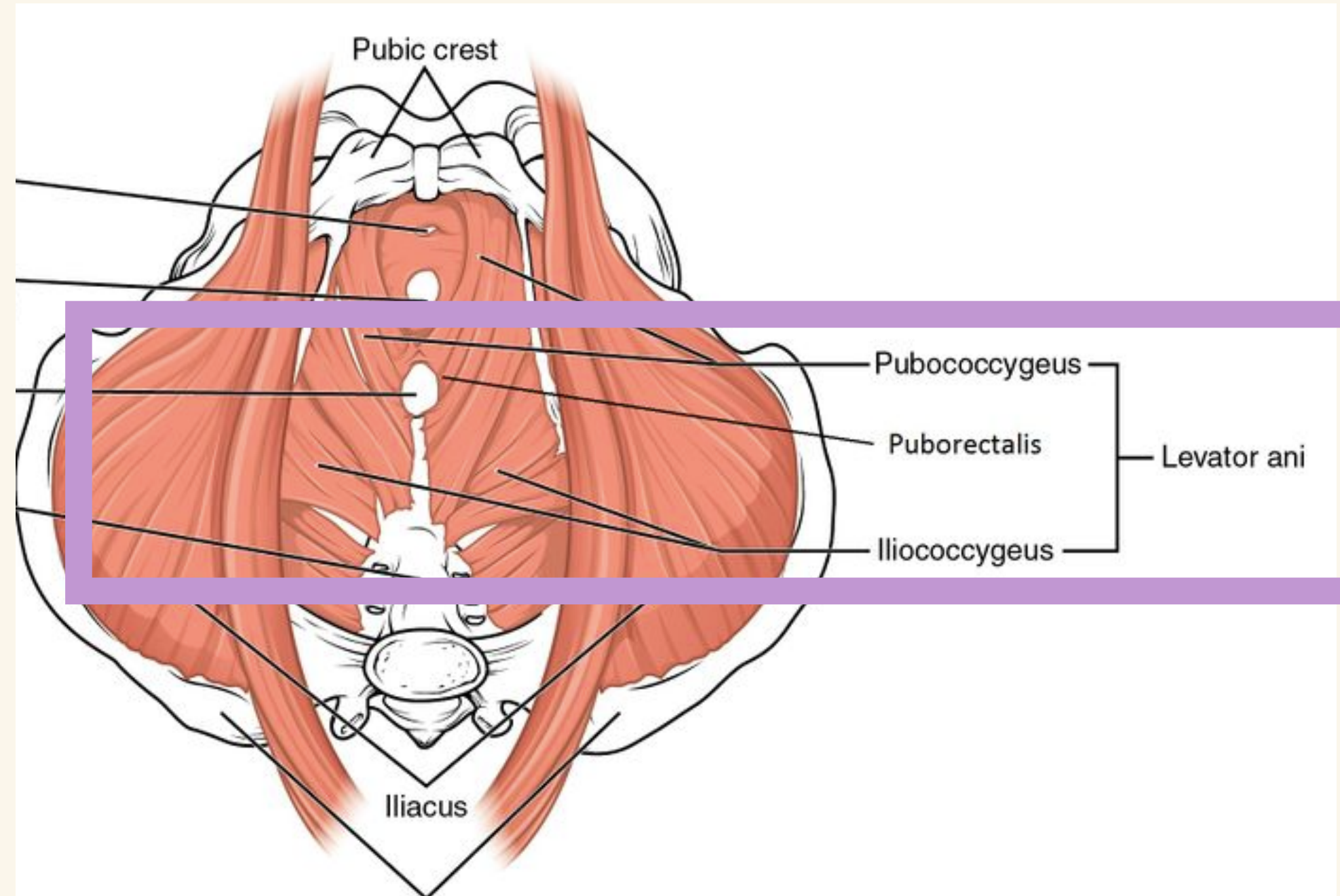
a hammock-like muscle, found in both sexes, that stretches from the pubic bone to the coccyx (tail bone) forming the floor of the pelvic cavity and supporting the pelvic organs. It is part of the levator ani group of muscles.

[https://rgd.mcw.edu/rgdweb/ontology/view.html?](https://rgd.mcw.edu/rgdweb/ontology/view.html?acc_id=UBERON:0011528#:~:text=The%20pubococcygeus%20muscle%20or%20PC,levator%20ani%20group%20of%20muscles.)

[acc_id=UBERON:0011528#:~:text=The%20pubococcygeus%20muscle%20or%20PC,levator%20ani%20group%20of%20muscles.](https://rgd.mcw.edu/rgdweb/ontology/view.html?acc_id=UBERON:0011528#:~:text=The%20pubococcygeus%20muscle%20or%20PC,levator%20ani%20group%20of%20muscles.)

RISK OF BIRTH TRAUMA:

Uncommon for birth trauma to occur.



https://www.physio-pedia.com/File:Muscles_of_the_Pelvic_Floor.jpg



3. ILIOCOCCYGEUS

DESCRIPTION:

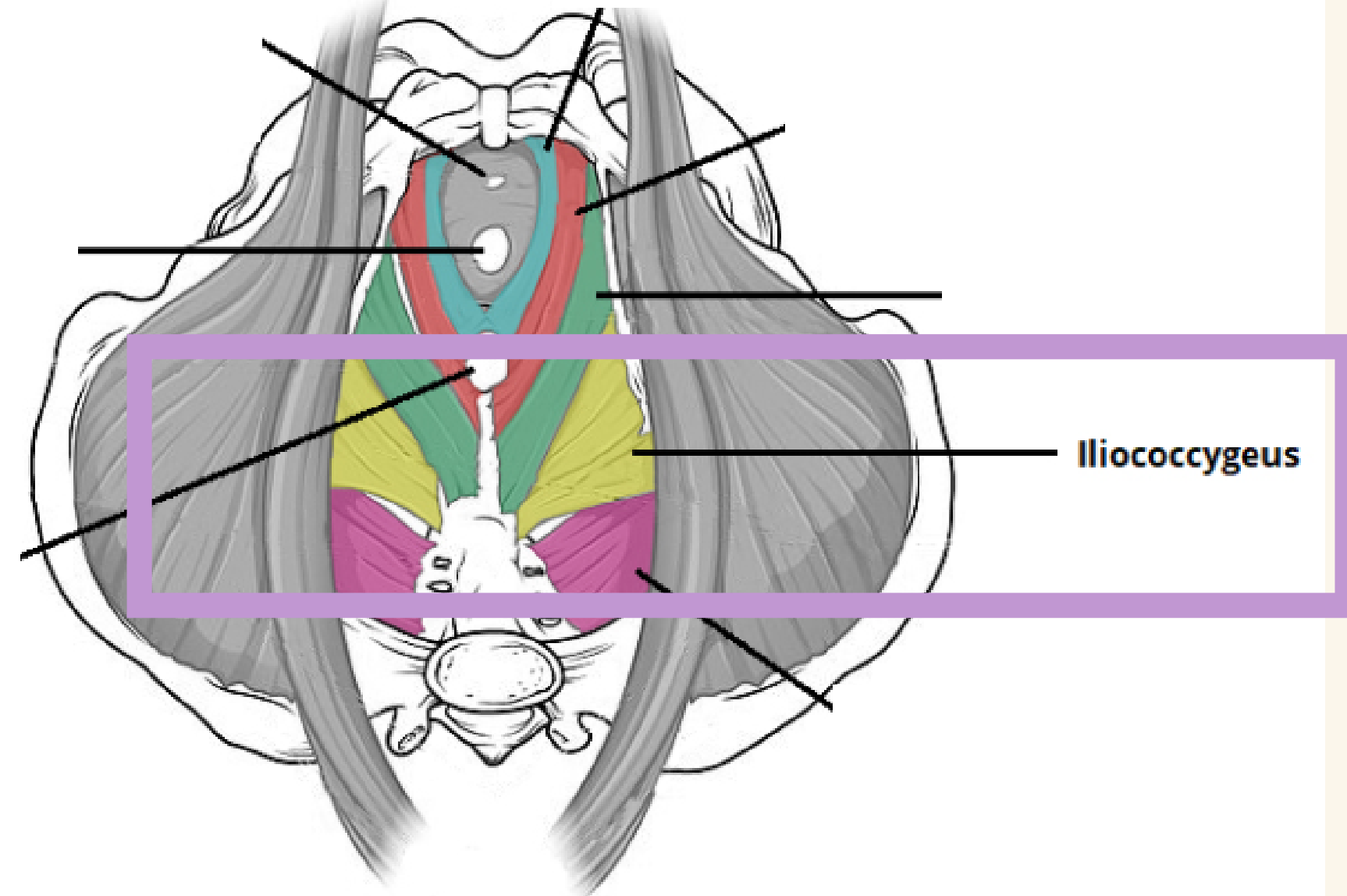
iliococcygeus (plural iliococcygei)
(anatomy) A muscle arising from the inner side of the ischium and from the posterior part of the tendinous arch of the obturator fascia, and attached to the coccyx and anococcygeal raphe

[https://rgd.mcw.edu/rgdweb/ontology/view.html?](https://rgd.mcw.edu/rgdweb/ontology/view.html?acc_id=UBERON:0011528#:~:text=The%20pubococcygeus%20muscle%20or%20PC,levator%20ani%20group%20of%20muscles.)

[acc_id=UBERON:0011528#:~:text=The%20pubococcygeus%20muscle%20or%20PC,levator%20ani%20group%20of%20muscles.](https://rgd.mcw.edu/rgdweb/ontology/view.html?acc_id=UBERON:0011528#:~:text=The%20pubococcygeus%20muscle%20or%20PC,levator%20ani%20group%20of%20muscles.)

RISK OF BIRTH TRAUMA:

Uncommon for birth trauma to occur. If trauma from birth does occur, most commonly it is nerve damage.



https://www.physio-pedia.com/File:Muscles_of_the_Pelvic_Floor.jpg



4. ISCHIOCOCCYGEUS

DESCRIPTION:

The levator ani is a complex funnel-shaped structure mainly composed of striated muscle, with some smooth muscle component.[1] Located on either side of the lower pelvis, it takes part in supporting and raising the pelvic floor and allows various pelvic structures to pass through it.

Gowda SN, Bordoni B. Anatomy, Abdomen and Pelvis, Levator Ani Muscle. [Updated 2022 Aug 8]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK556078/>

RISK OF BIRTH TRAUMA:

Uncommon for birth trauma to occur.

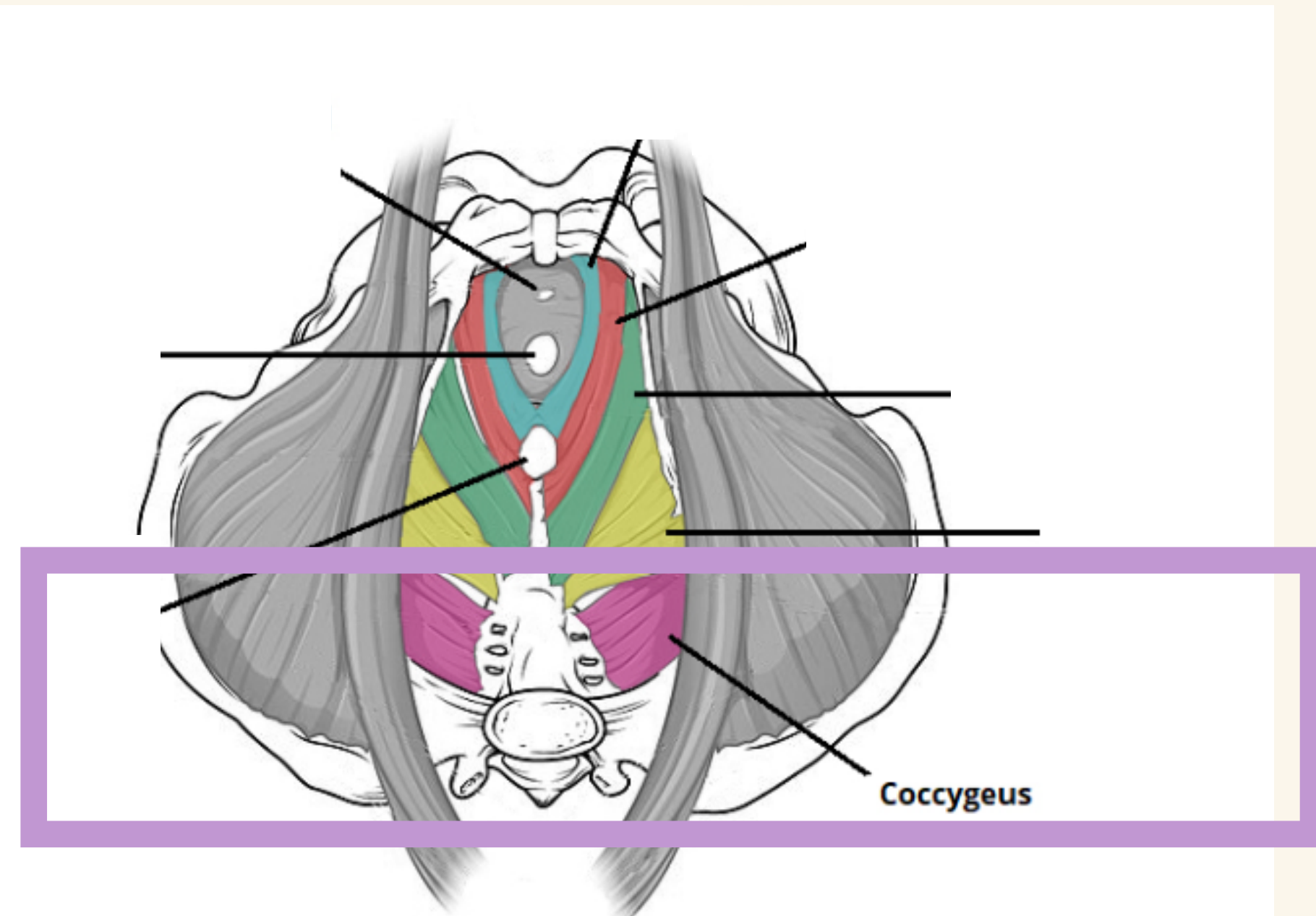
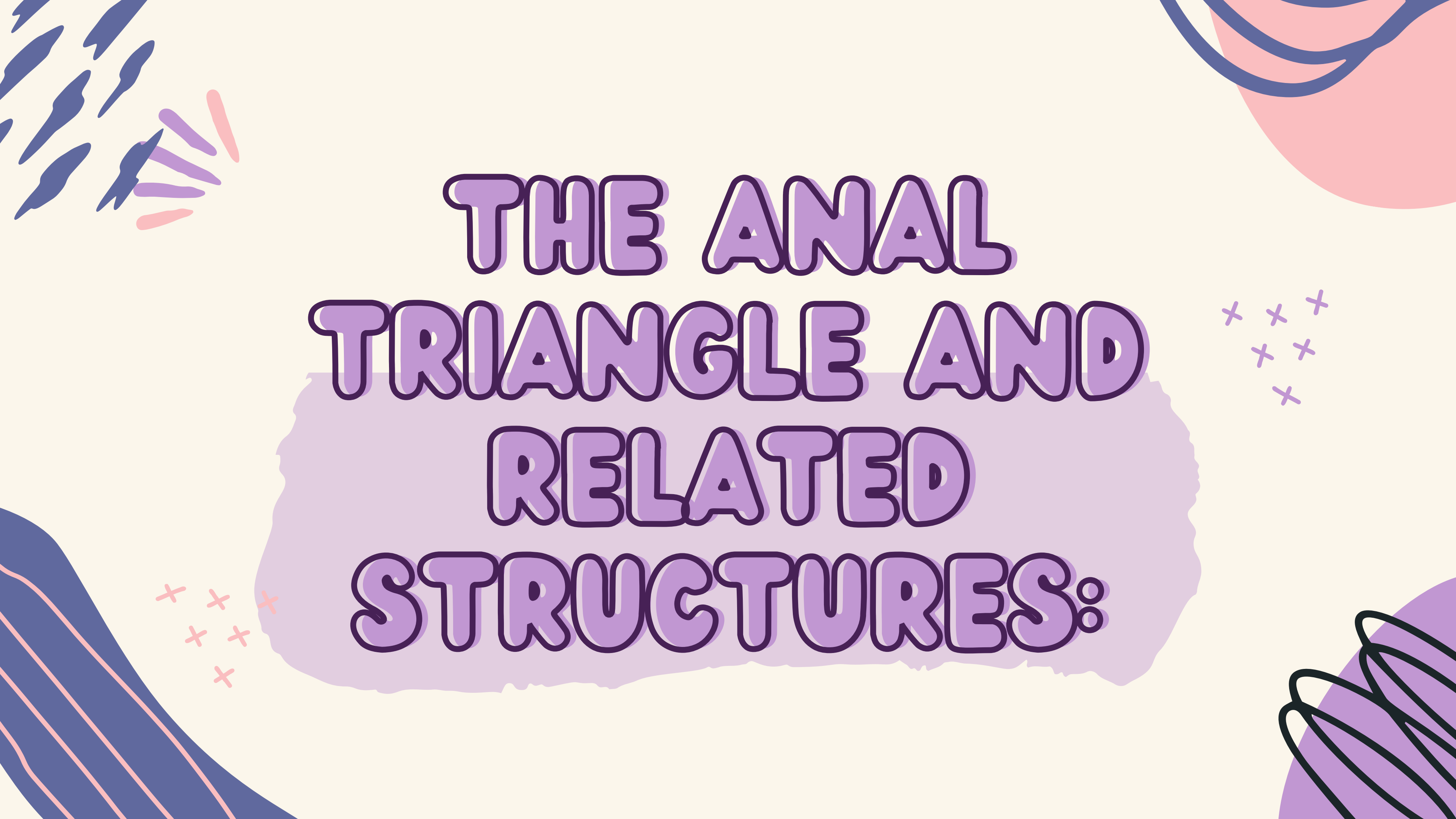


Image from:
<https://www.sciencedirect.com/topics/medicine-and-dentistry/mons-pubis>
https://en.wikipedia.org/wiki/Vaginal_support_structures#/media/File:1116_Muscle_of_the_Female_Perineum.png

The background is a light cream color with several abstract decorative elements. In the top left, there are dark blue and purple brushstroke-like marks. In the top right, a large pink circle is partially visible with a dark blue outline. In the bottom left, there are dark blue and pink diagonal stripes. In the bottom right, there are purple and black curved lines. Small clusters of '+' signs are scattered around the text: pink ones at the bottom left, purple ones at the top right, and orange ones at the bottom left.

THE ANAL TRIANGLE AND RELATED STRUCTURES:



1. THE INTERNAL ANAL SPHINCTER

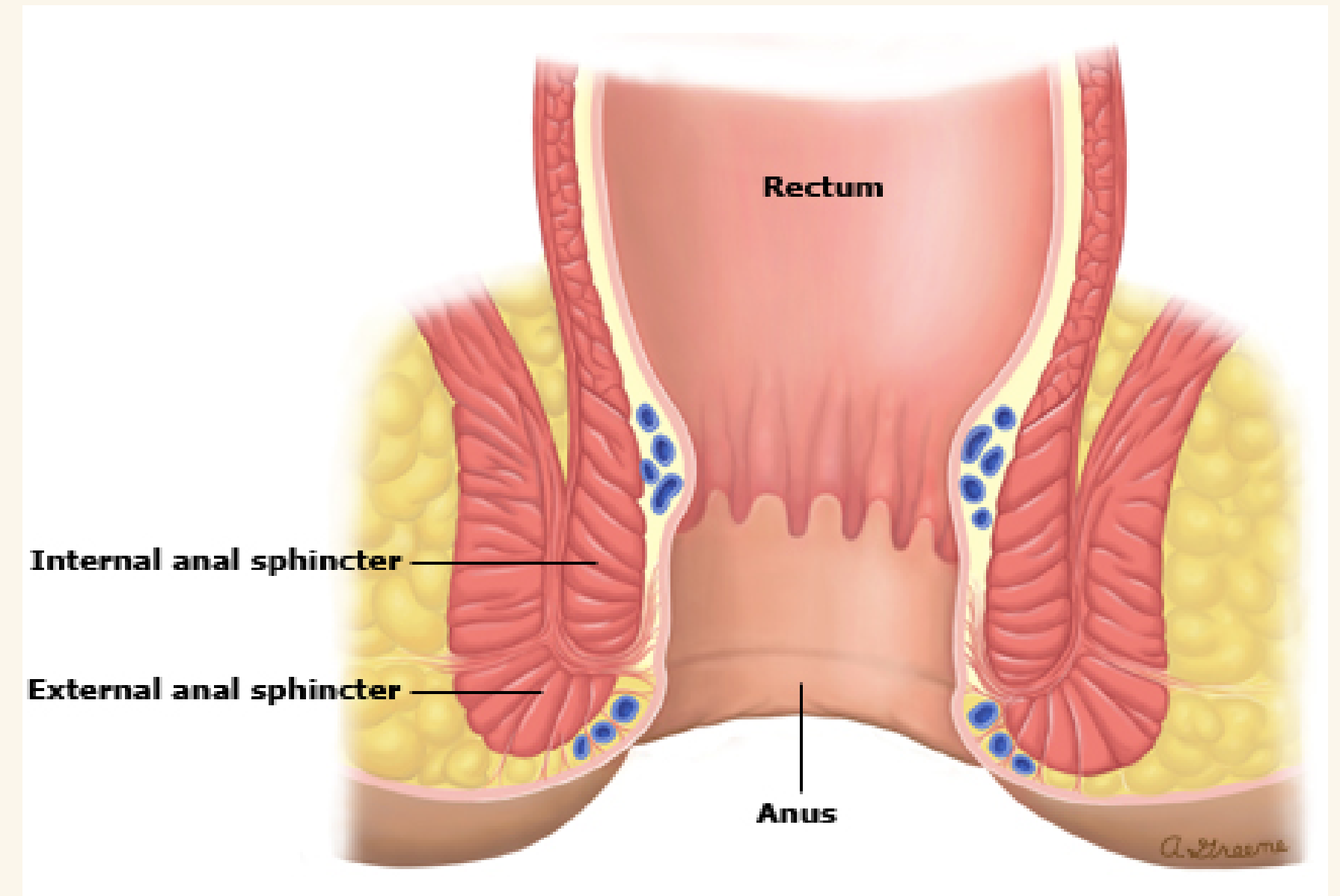
DESCRIPTION:

The anal sphincter is made up of 2 sets of muscles called the "internal" and "external" sphincters. These muscles form a ring around the anus. When these muscles are working normally, they squeeze the anus shut so that gas and bowel movements cannot leak out.

<https://www.uptodate.com/contents/image?imageKey=PI%2F56581>

RISK OF BIRTH TRAUMA:

Impacted with a 3rd and/or 4th degree tear.



<https://www.uptodate.com/contents/image?imageKey=PI%2F56581>

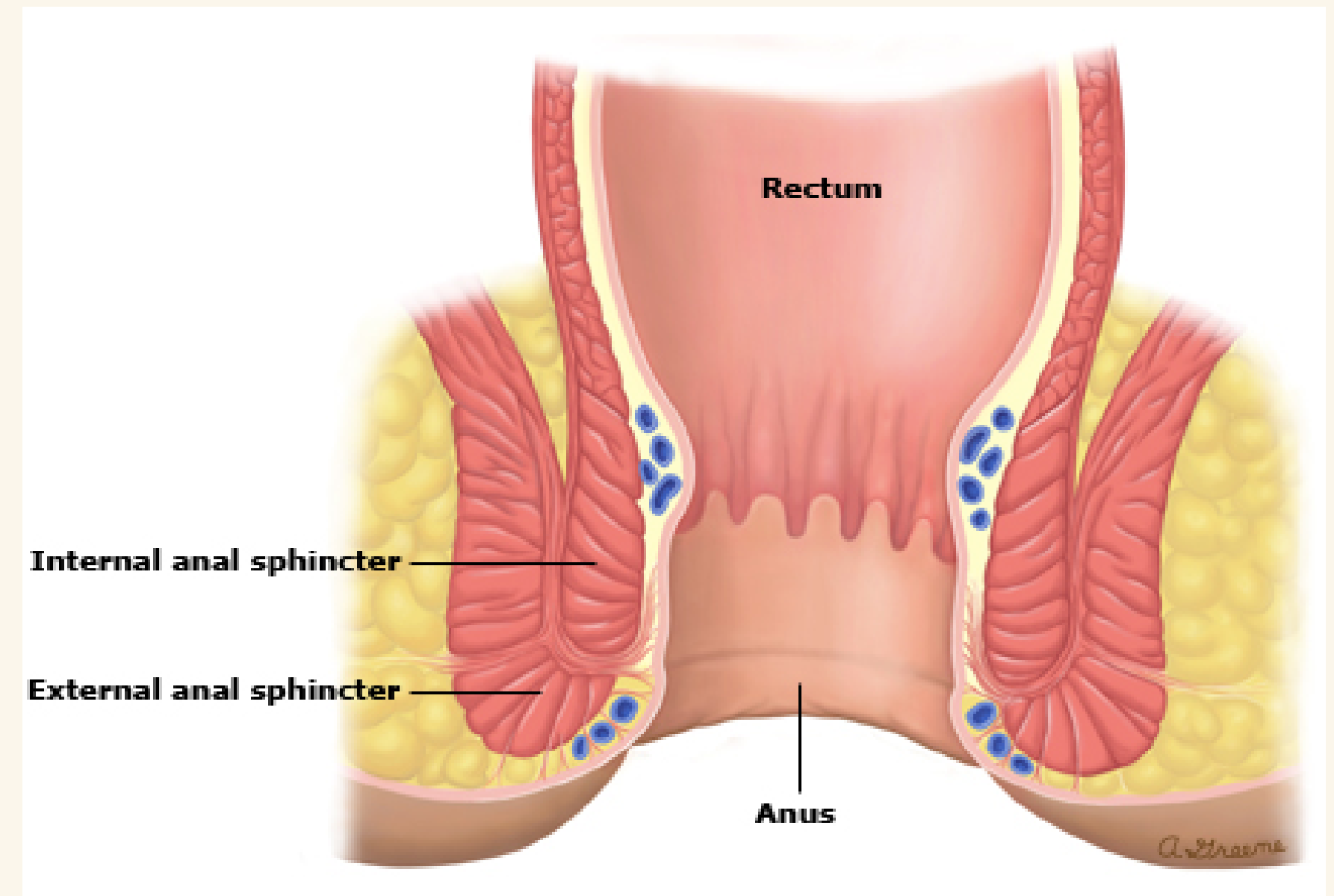
2. WINGED EXTERNAL ANAL SPHINCTER

DESCRIPTION:

This deep external anal sphincter is a portion of the external anal sphincter and flares off to either side giving it that winged shape in at least 75% of women. This muscle primarily helps with continence by compressing the anal canal. This U-shape helps the sphincter withstand the pressure and stretch of vaginal dilation; during pushing.

FUNCTION:

The function of this sphincter is to control the contraction and release of stool.



<https://www.uptodate.com/contents/image?imageKey=PI%2F56581>



3. ANAL/RECTAL COLUMNS

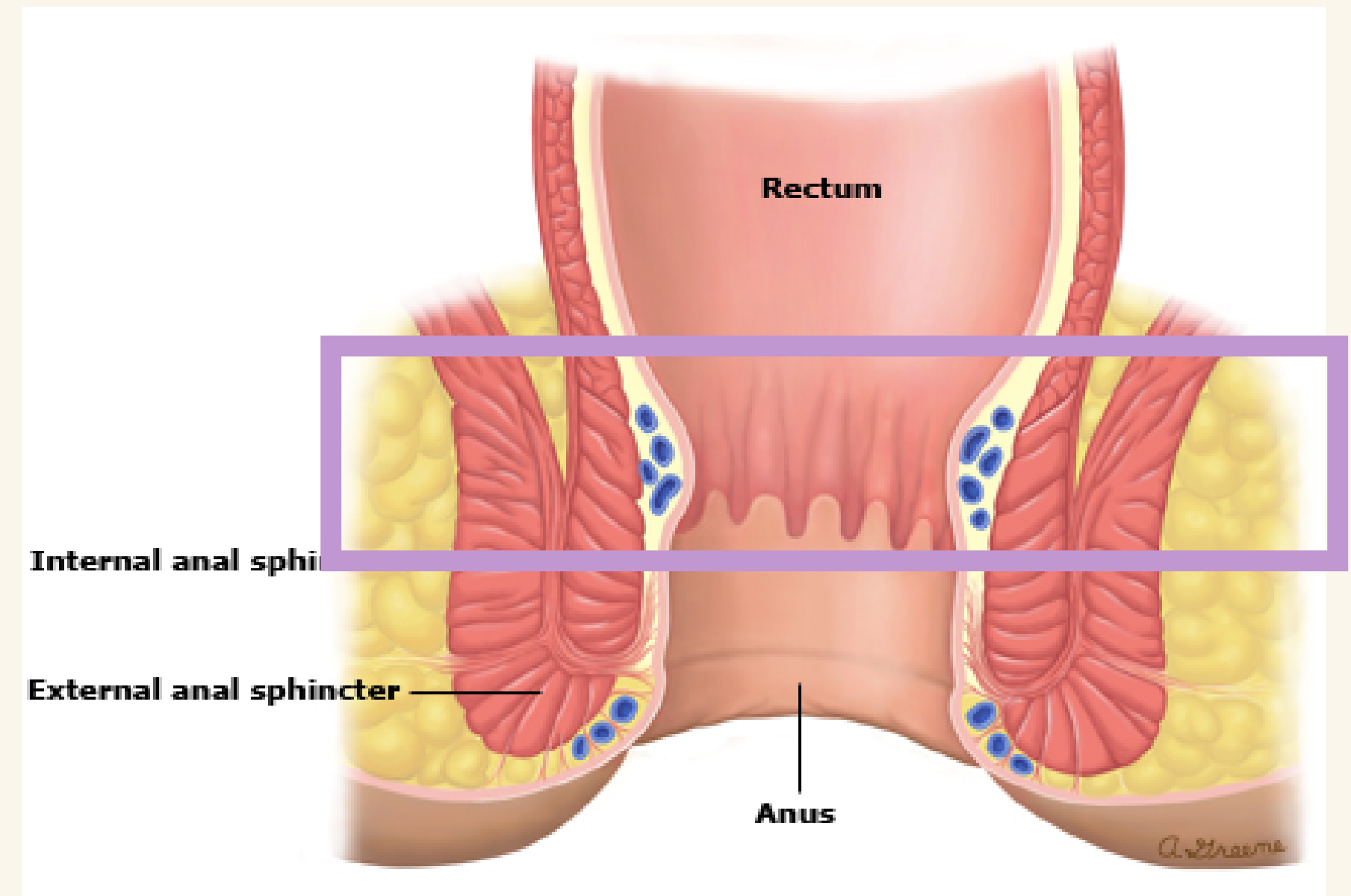
DESCRIPTION:

"Anal columns (Columns of Morgagni or less commonly Morgagni's columns) are a number of vertical folds, produced by an infolding of the mucous membrane and some of the muscular tissue in the upper half of the lumen of the anal canal"


[https://en.wikipedia.org/wiki/Anal_columns#:~:text=Anal%20columns%20\(Column%20of%20Morgagni,lumen%20of%20the%20anal%20canal.](https://en.wikipedia.org/wiki/Anal_columns#:~:text=Anal%20columns%20(Column%20of%20Morgagni,lumen%20of%20the%20anal%20canal.)

RISK OF BIRTH TRAUMA:

These muscular membranes are filled with blood vessels that form internal hemorrhoids when enlarged. They would also be torn through in 4th degree tears.



<https://www.uptodate.com/contents/image?imageKey=PI%2F56581>

The background is a light cream color with various abstract decorative elements. In the top left, there are several dark blue and purple brushstroke-like shapes. In the top right, a large pink circle is partially visible with a dark blue outline. On the right side, there is a cluster of small purple plus signs. In the bottom left, there are orange plus signs and a solid dark purple circle. In the bottom right, there are purple and black curved lines. The text is centered in a large, bubbly, purple font with a dark purple outline and a slight drop shadow.

UROGENITAL TRIANGLE AND RELATED STRUCTURES:



1. VAGINA

DESCRIPTION:

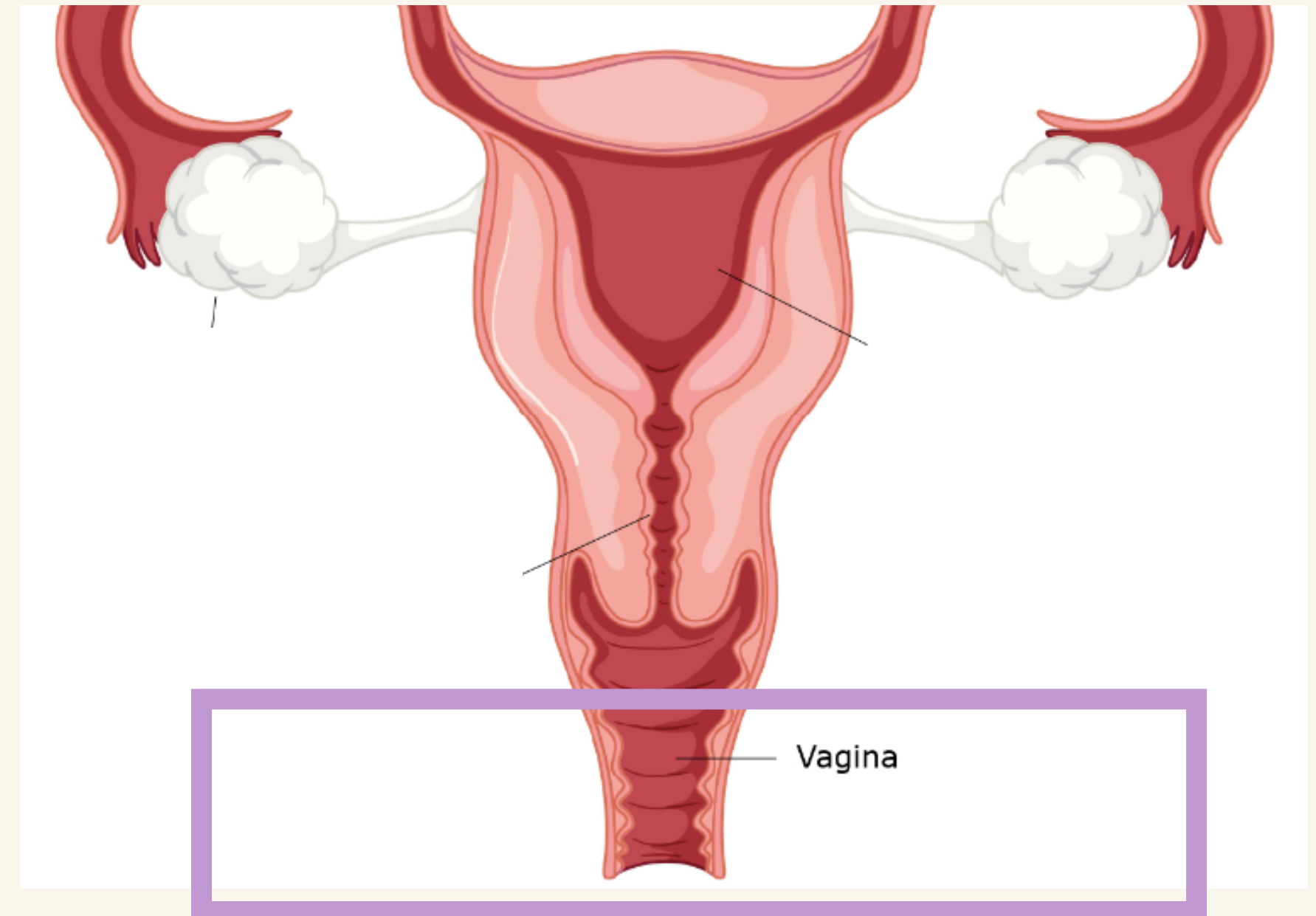
The vagina is a hollow, collapsed tube that functions as the birth canal during labor. The upper 2/3s seem to be simply a canal. The lower third is much more complex. The urethra is embedded in its anterior wall and clitoral structures are connected throughout.

TISSUE LAYERS:

The vaginal wall is made up of several layers, totally about 0.35 cm thick. The outside layer is a dense connective tissue embedded with blood vessels, lymph, and nerves. It anchors the vagina to the pelvis. The next layer is a thin wall of smooth muscle, both circular and longitudinal fibers connected at the distal end to the anal sphincter. Within this is a layer of submucosa linking it to the mucosal wall within. This wall, called the lamina propria mucosae, is relatively thick and made of highly elastic connective tissue. Finally the innermost layer is a thick epithelial lining made up of squamous epithelium. It is similar to regular skin, but without hair follicles and sweat glands. The wall is heavily supplied with blood flow. The inner walls front and back form two columns and are covered with transverse wrinkles called rugae.

DEPTH:

It is about 7–10 cm long, though longer along the posterior creating an oblong shape. Its width/depth widens near the cervix and is much smaller toward the lower part.



<https://www.healthdirect.gov.au/female-reproductive-system>



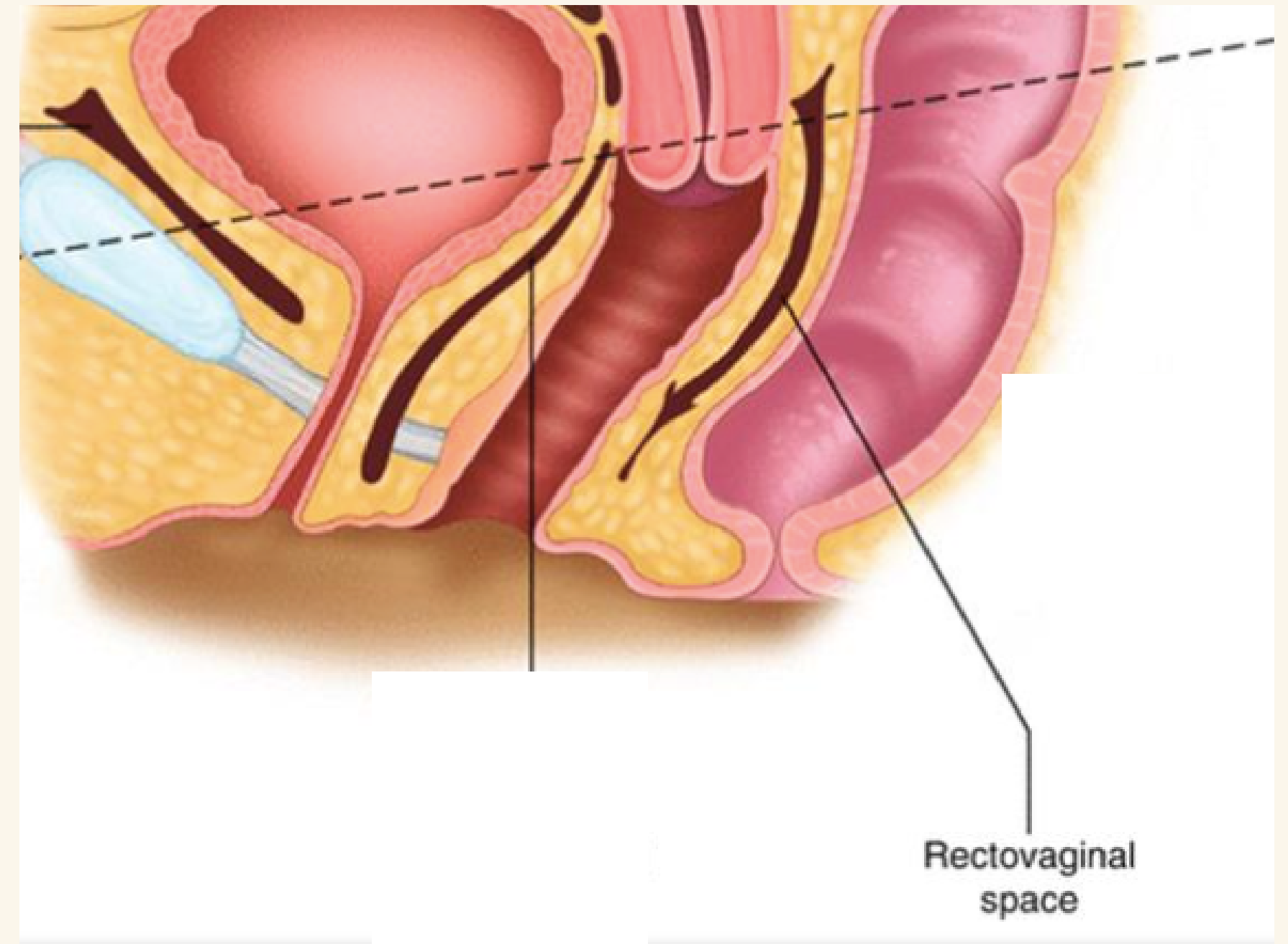
2. RECTOVAGINAL SPACE

DESCRIPTION:

This is a space loosely filled with connective tissue. It begins just above the hymenal ring between the vagina and the rectum and extends posteriorly to the rectouterine pouch and around the sides of the rectum.

RISK OF BIRTH TRAUMA:

A tear through the vaginal wall in the right depth and angle can lead the vagina to separate from the connective tissue beneath creating a space. This separation must be addressed specifically in creating a repair plan.





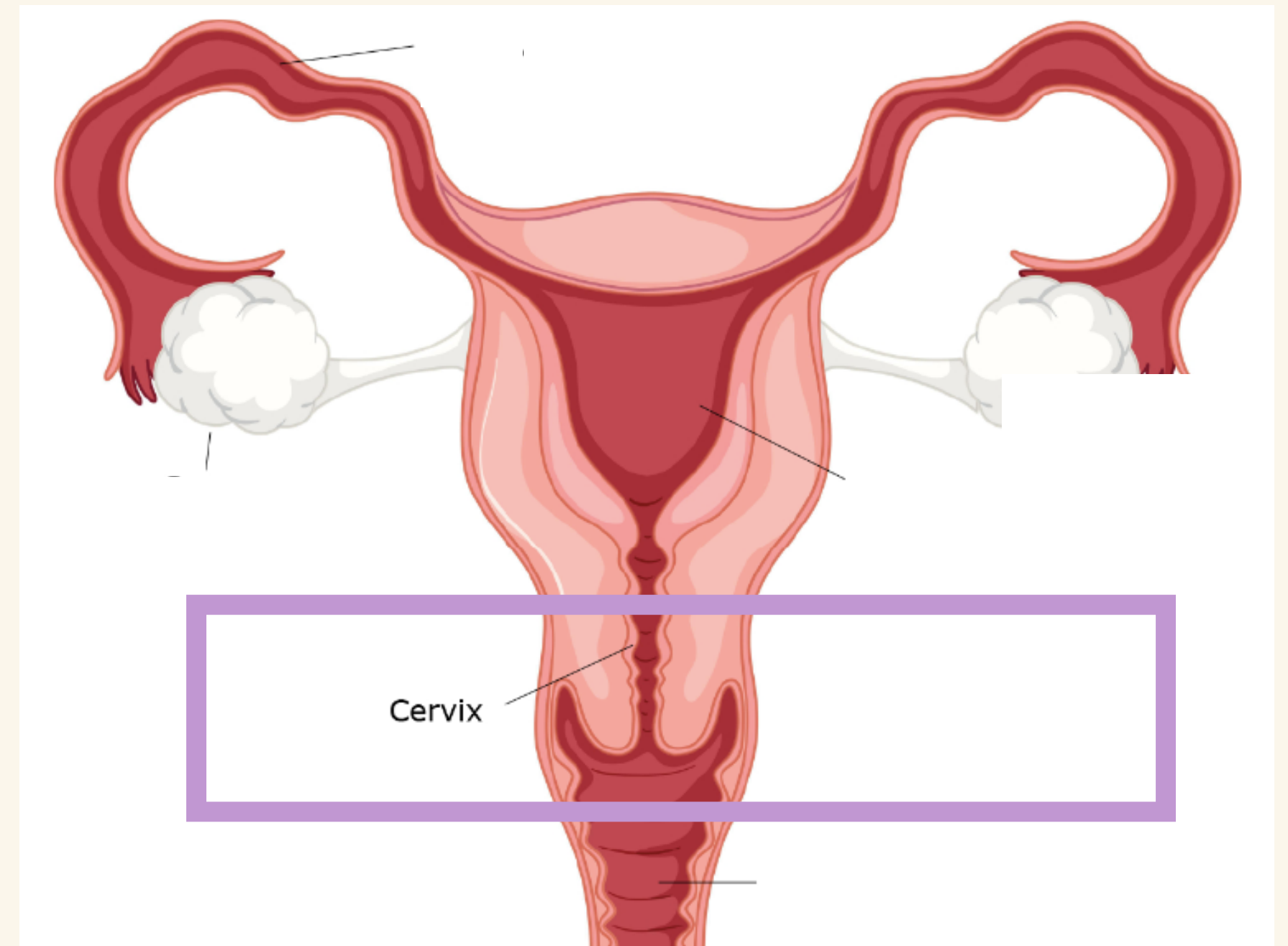
3. CERVIX

DESCRIPTION:

The cervix is the neck of the uterus. During labor the cervix dilates, softens, and effaces to allow passage of the fetus.

RISK OF BIRTH TRAUMA:

Damage to the cervix is relatively rare, but can occur. Tears to the cervix require transport to the hospital for repair.





4. LATERAL VAGINAL FORNIX

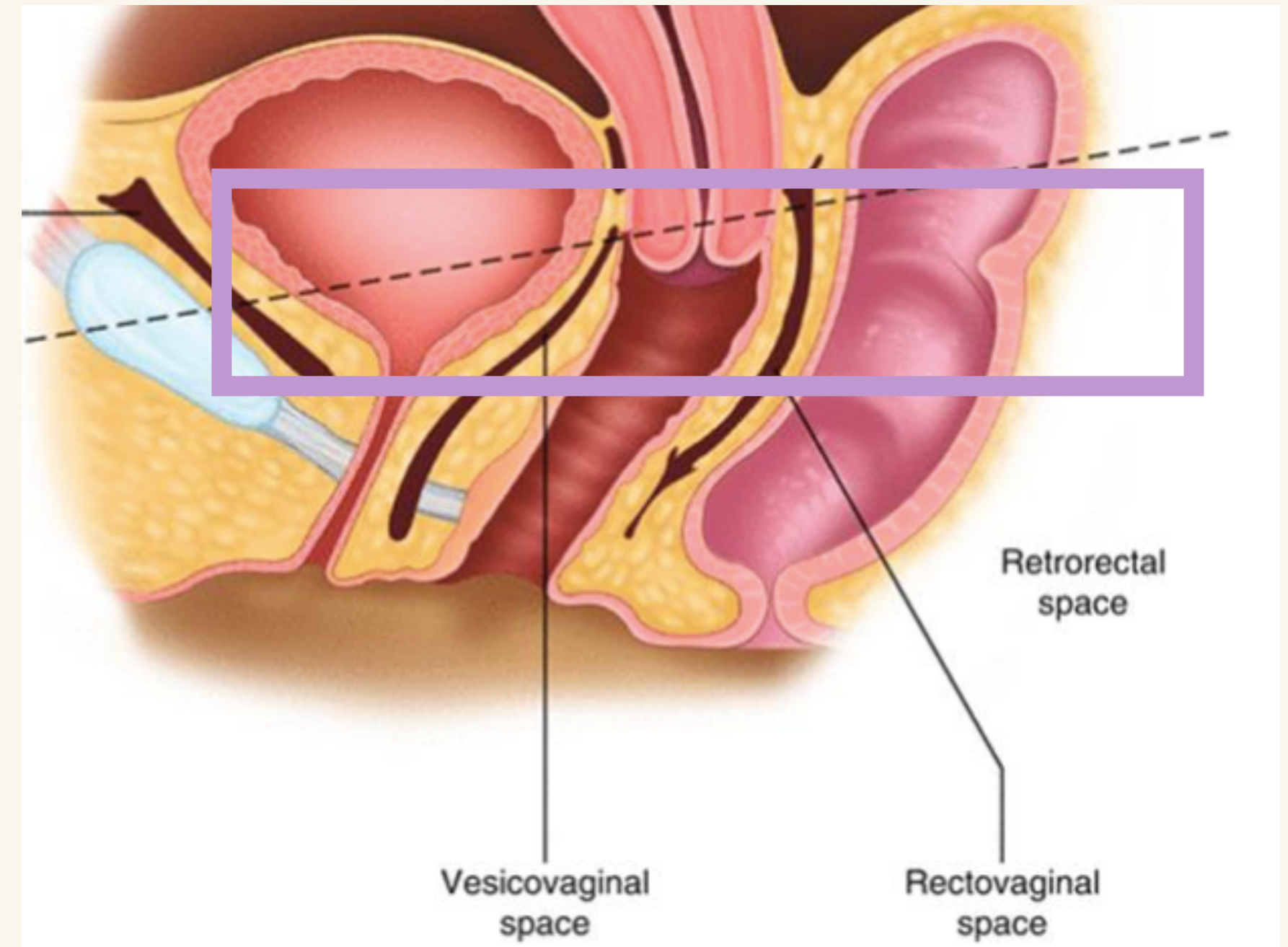
DESCRIPTION:

The fornices of the vagina (sing. fornix of the vagina or fornix vaginae) are the superior portions of the vagina, extending into the recesses created by the vaginal portion of cervix. The word "fornix" is Latin for "arch".

https://en.wikipedia.org/wiki/Vaginal_fornix

RISK OF BIRTH TRAUMA:

Tears in the vaginal wall can occur along these grooves.



<https://www.healthdirect.gov.au/female-reproductive-system>

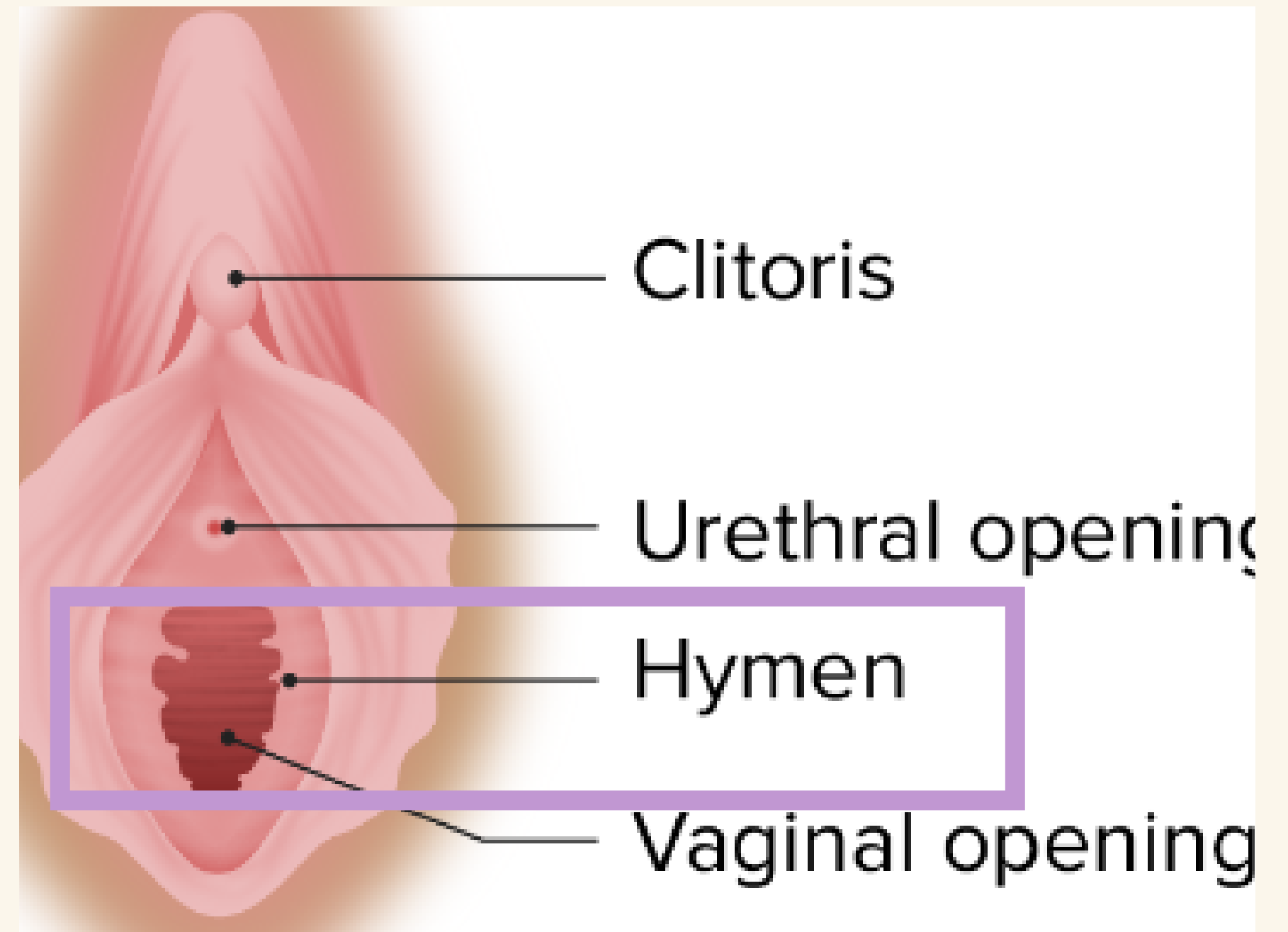
5. HYMEN

DESCRIPTION:

The hymen is a band of thin mucous membrane just inside the introitus. It is damaged by initial penetrative intercourse and/or masturbation. Often times the hymen may be damaged by other activities/injuries prior to penetration. Typically present at birth as a ring of tags of fibrous scar tissue.

RISK OF BIRTH TRAUMA:

While lacerations may cross the hymenal ring, it is not a specific source of additional trauma. It can be used as a landmark during repairs and sutures should not cross over the top of it.



<https://www.healthdirect.gov.au/female-reproductive-system>

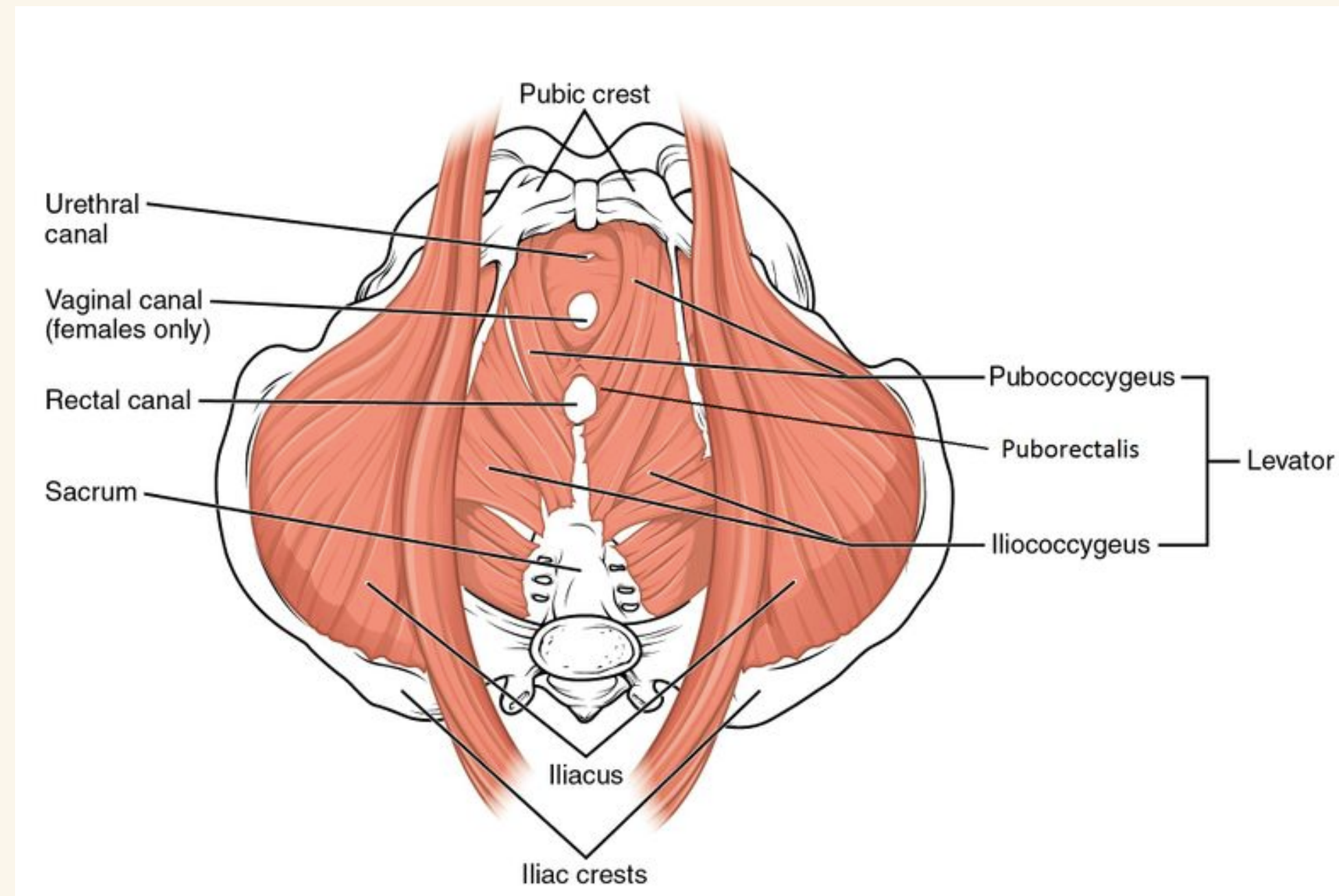
6. PERINEAL MEMBRANE CONNECTIVE TISSUE COMPLEX:

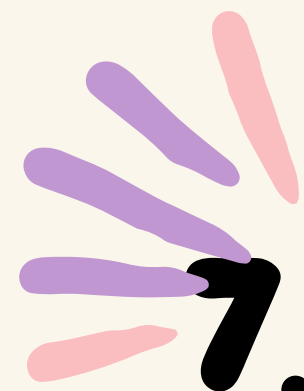
DESCRIPTION:

A complex, three-dimensional network of tissues that anchor the vaginal walls, urethra, and perineal body. It consists of two main parts and the exact structure is unknown. The network is believed to help support the vaginal floor, particularly when the levator ani is relaxed during childbirth.

RISK OF BIRTH TRAUMA:

This complex of connective tissue is connected to the perineal body and when this is torn/cut, these structures are shifted and moved. A repair brings these back. Also a large median laceration with cut through some of this complex and a mediolateral laceration would damage a much larger portion and could compromise its function as an anchor for the levator ani and external anal sphincter on that side.





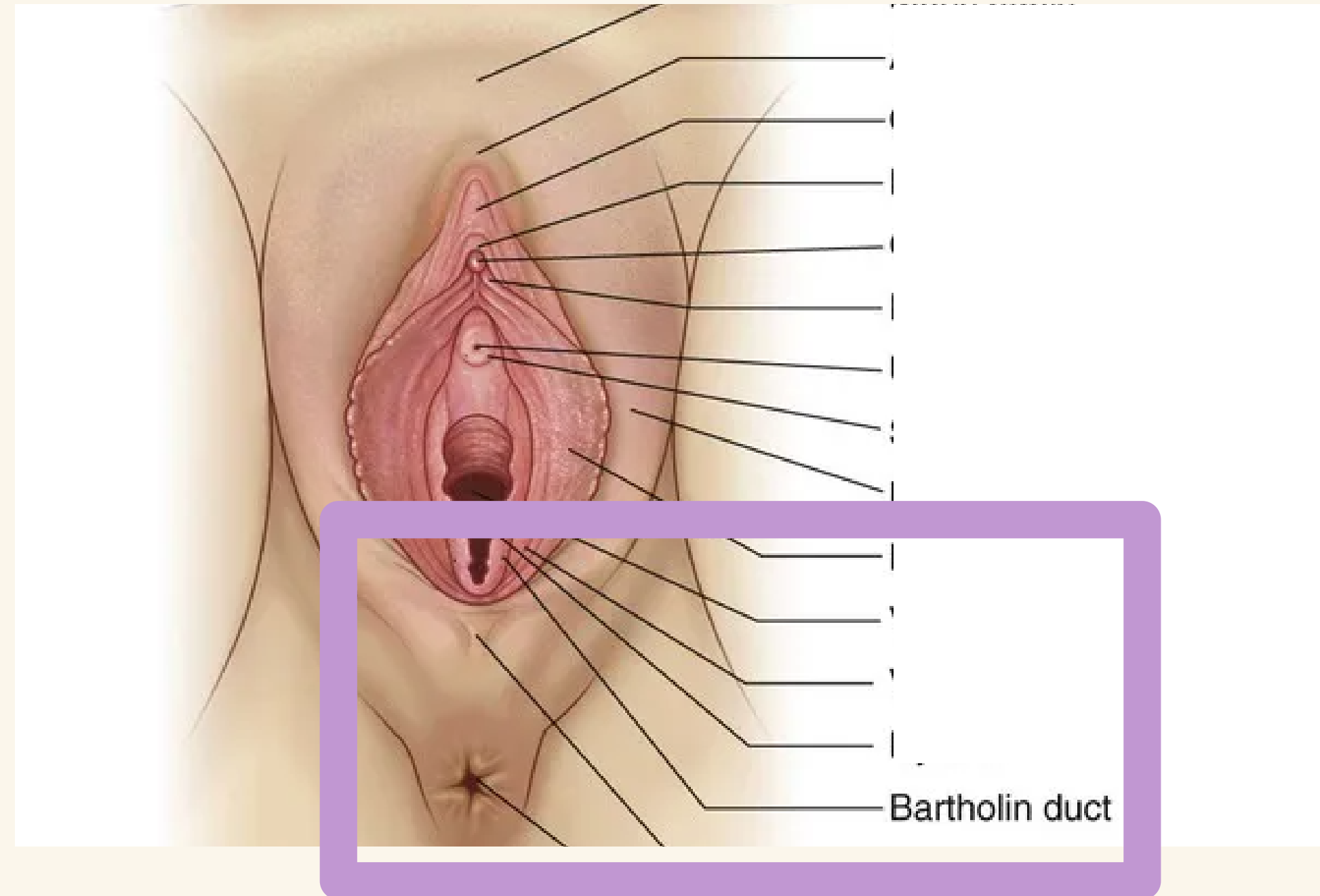
7. BARTHOLIN GLANDS

DESCRIPTION:

These are two glands located on either side of the vaginal between the vaginal wall and the clitoral bulbs near the posterior end of the labia minora. They are about 1 cm in diameter. These ducts are the primary mucinous glands of the vulva.

RISK OF BIRTH TRAUMA:

N/A



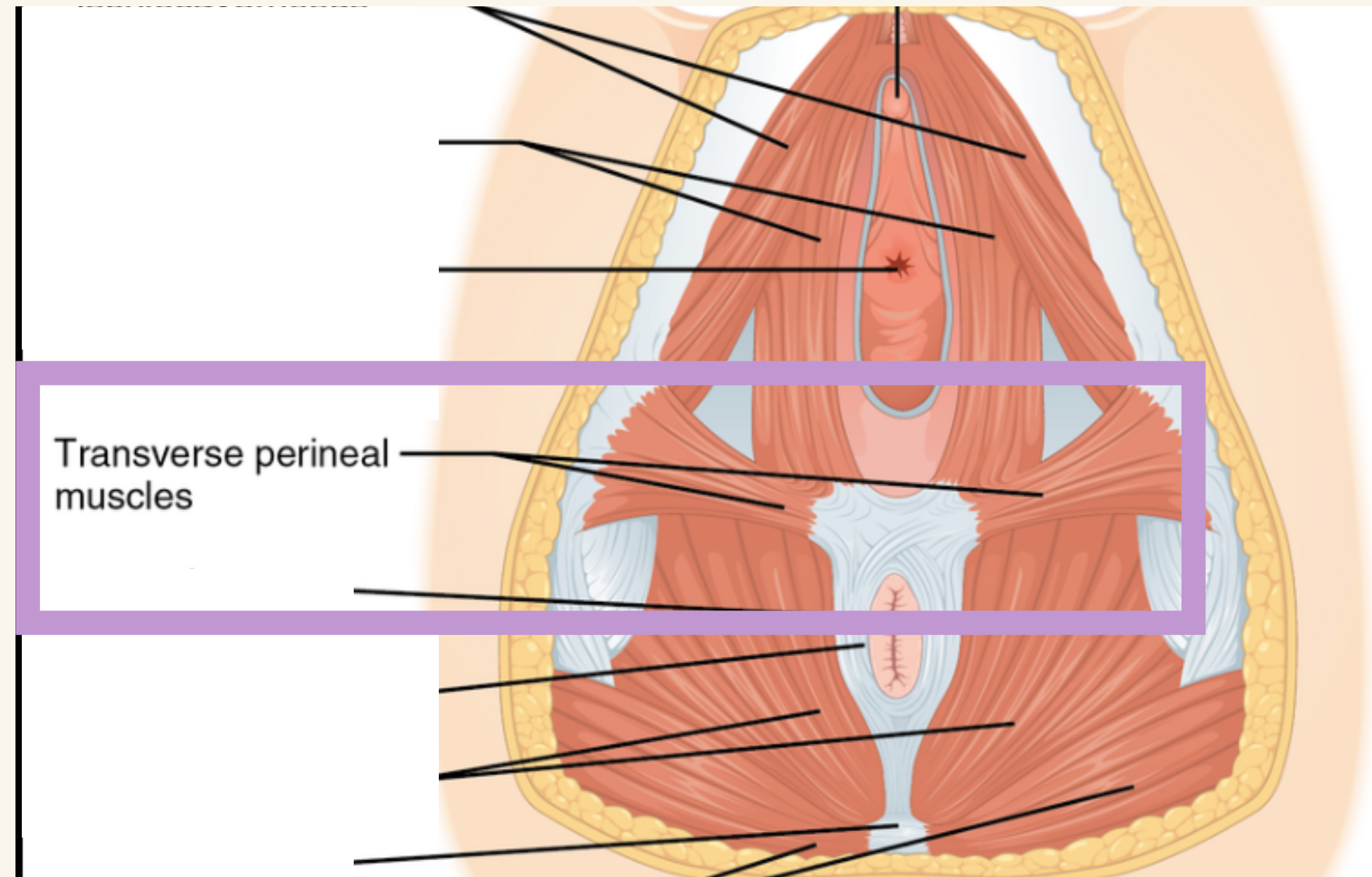
SUPERFICIAL TRANSVERSE PERINEAL MUSCLE

DESCRIPTION:

One of the primary muscles that crosses and anchors the perineal body. Originates from the ischial tuberosities and is continuous across the midline.

RISK OF BIRTH TRAUMA:

In most second degree or greater perineal lacerations, this muscle is impacted. Repairs to this muscle are common.





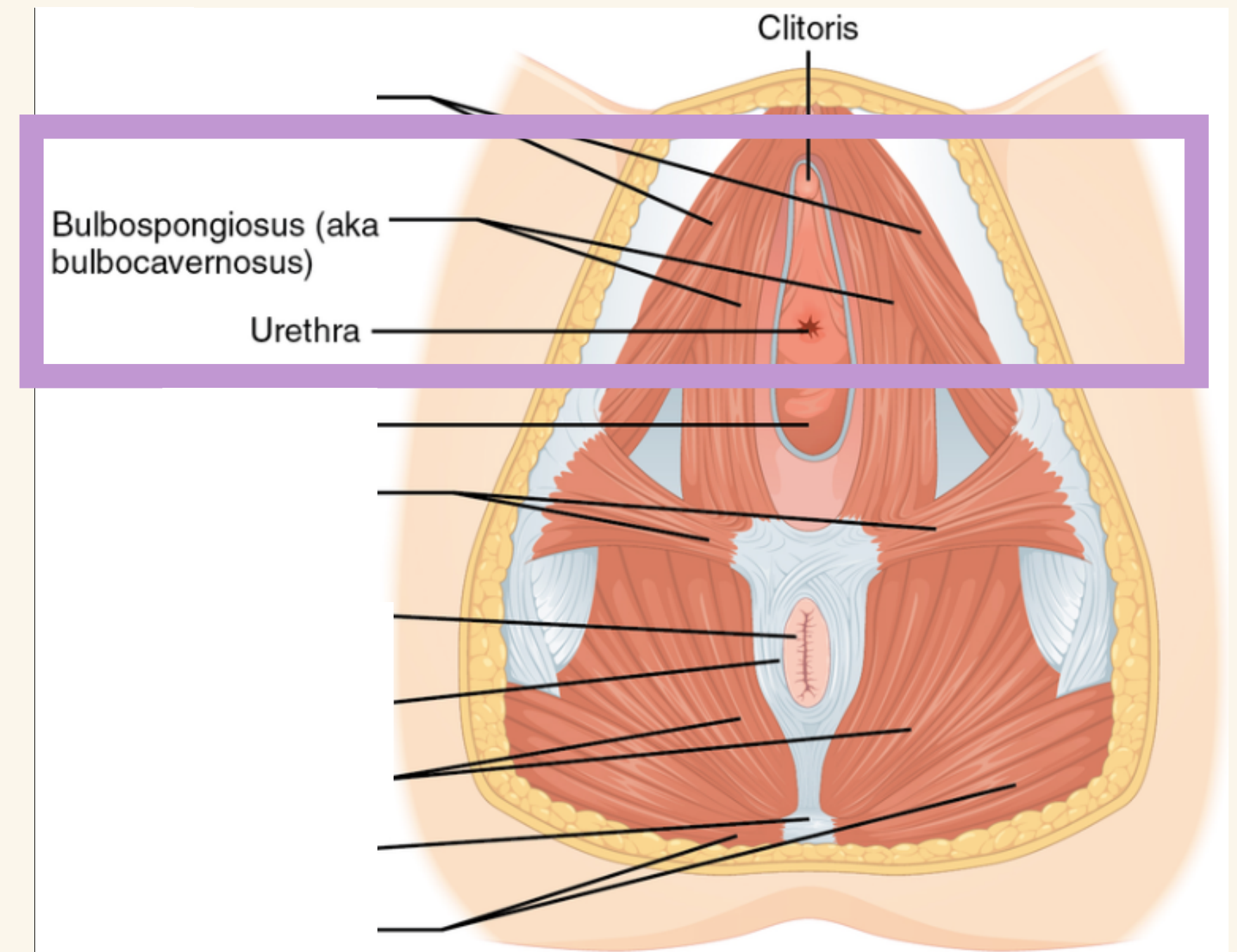
9. BULBOCAVERNOSUS MUSCLES

DESCRIPTION:

Paired muscles that are adjacent to the lateral vaginal walls. They run longitudinally from the midline perineal body past the urethra and cover the clitoral bulbs on either side to above the clitoris. They assist with closing the introitus and the erection of the clitoris.

RISK OF BIRTH TRAUMA:

These muscles run longitudinally, so are typically parted rather than cut by midline lacerations. Mediolateral lacerations would directly impact these muscles and be a part of any repair of these areas.



PERINEAL BODY (SIZE & TISSUE CONSISTENCY: DECUSSATION, FUNCTIONS)

DESCRIPTION:

The perineal body is a complex mass of fibromuscular and vascular tissue filling the space between the posterior fourchette and the anus. It is roughly 4 cm in each direction, but is irregularly shaped with fibers reaching out as far as the ischial spines. It is a combination of crisscrossing muscle fibers and veins with other muscles and structures connecting and/or passing through it. In this space, fibers from different muscle groups intersect with each other creating an effect known as decussation which allows them to stretch in either direction. This allows a firm, flexible arrangement that adjusts to the varied needs of these tissues. This network serves many functions. It is a spacer protecting the rectum during childbirth and the vaginal from fecal contamination. It anchors the external anal sphincter as well as several perineal tissues. It is a key player in normal sexual function. Finally, it is the meeting point for the lower part of the perineal membrane complex and other muscles that work together to support the perineal floor.

