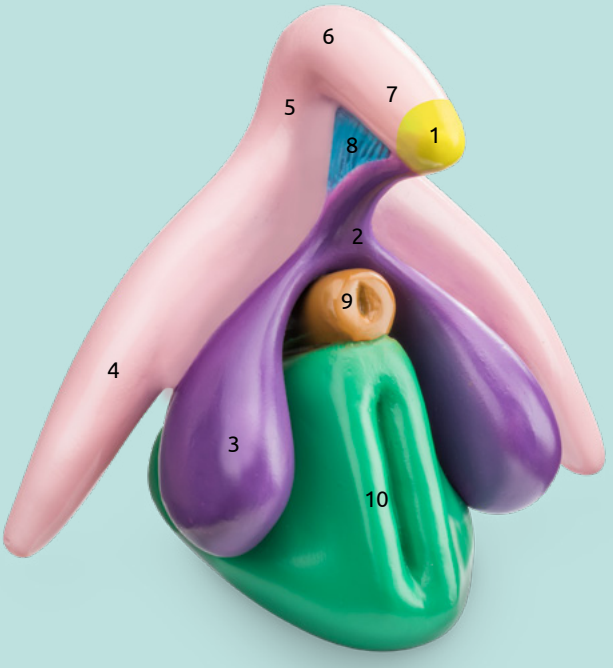
Clitoris Plus Model

Prof. Dr. D. Haag-Wackernagel



Description

1 Glans of clitoris *Glans clitoridis*
2 RSP (Infra-corporeal Residual Spongy Part) *Habenulae urethrales*
3 Bulb of vestibule *Bulbus vestibuli*
4 Crus of clitoris *Crus clitoridis*
5 Ascending part of the clitoral body *Corpus clitoridis pars ascendens*
6 Angle of the clitoral body *Angulus clitoridis*
7 Descending part of the clitoral body *Corpus clitoridis pars descendens*
8 Intermediate network of Kobelt *Pars intermedia*
9 Urethra *Urethra feminina*
10 Vagina *Vagina*

The „Clitoris Plus" model on a scale of 2:1 consists of two parts, the bulbo-clitoral organ (1–8) according to Di Marino & Lepidi (2014), and the urethra (9) with the underlying vagina (10). In reality, it is about 9 cm long from the tip of the clitoral glans (1) to the end of the crus of clitoris (4).

The bulbo-clitoral organ commonly referred to as the clitoris consists of various, closely interconnected structures with differing characteristics and embryonic origin. The erectile cavernous bodies (Corpora cavernosa) consist of a complex network of venous sinuses and a thick fibrous envelope, the tunica albuginea. It is formed by the crus of clitoris (4) that merges into the ascending clitoral body (5), the clitoral angle (6) and the descending clitoral body (7).

The spongy structures (corpus spongiosum) of the bulbo-clitoral organ include the glans of clitoris (1), the RSP (2), the vestibular bulbs (3), and the intermediate network of Kobelt (8), named after Georg Ludwig Kobelt (1844). The only structure visible from the outside is the glans of the clitoris, a cap-like formation on the tapered ends of the descending clitoral body (7). Due to its embryonic origin, it is connected to the vestibular bulbs via the RSP (Di Marino & Lepidi 2014). The vestibular bulbs (3) „ride" on the urethra (9) and the underlying vagina (10). The spongy structures also consist of cavernous tissue. Due to the absence of a true tunica albuginea and a sub-albugineal venous network, an erection is not possible. The intermediate network of Kobelt (8) can be regarded as a blood distributor that connects the vascular structures of the bulbo-clitoral organ to each other as well as to the inner vulva lips, the vestibule and the vascular tissue of the urethra (9). During arousal, the intermediate network of Kobelt enables a uniform drainage of all structures involved (Shih et al. 2013).

The female prostate (Prostata femina, Glandulae paraurethrales femininae) consists of glands located below the muscle layer of the urethra (9) that open with their ducts into the urethral lumen (Zaviacic 1999). Its form is very variably and it can also be completely absent. Its secretions are released continuously and additionally as female ejaculation during orgasm through the external urethral meatus (Meatus urethrae externus) in the vestibule. They could contribute to the lubrication and optimization of the environment for sperms.

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The structures of the vulva have varying degrees of sensory innervation (Haag-Wackernagel 2022). The sensitivity of the whole region is also subject to hormonal fluctuations. Different types of sensory nerve endings convert specific stimuli into action potentials, which are transmitted via the spinal cord to the brain and processed there. The most important sensors for generating sexual arousal are the genital corpuscles or „corpuscles of pleasure", which can sense subtle touch, friction, and sliding pressure. The Pacinian corpuscles also play an important role, which perceive vibration, touch and pressure stimuli. Other sensors responsible for sensory perception include free nerve endings for the perception of pressure, pain and temperature, as well as nerve endings specialized for different qualities of touch and pressure, such as Meissner's corpuscles and Merkel's corpuscles.

The glans of the clitoris (1) is one of the most sensitive structures of the human body. With its high density of genital corpuscles and Pacinian corpuscles, it serves to generate female pleasure and trigger orgasm. Also highly sensitive are the crus of clitoris (4), the ascending clitoral body (5) and especially the lateral areas of the descending clitoral body (7) and the upper part of the RSP (2). The clitoral glans as well as the structures directly surrounding it can be considered as the central spot for the generation of sexual arousal. In female genital mutilation/cutting, precisely these structures are removed and the sexual integrity of the affected person is damaged. The female prostate and the exit of the urethra are discussed as further sensitive structures with erogenous significance. The vagina (10) is only weakly sensitively innervated. Penile-vaginal penetration therefore plays a subordinate role in the generation of sexual pleasure in many women.

When stimulated, the sensory nerve endings are activated, leading to sexual arousal. This causes, among other responses, increased blood flow to the genitals via spinal cord reflexes. In the vascular sinuses of the erectile tissues (4 – 7), arterial blood inflow increases and, at the same time, the smooth muscle fibers relax, filling them with blood. Due to the increase in volume, the draining veins are pressed against the tunica albuginea, blocking the outflow of blood. This causes the erectile tissues to become hard. Clitoral erection causes a slight elevation of the clitoral body (5, 7) and protrusion of the clitoral glans (1). The spongy structures, which include the glans of the clitoris (1), the RSP (2) and the vestibular bulbs (3), also fill with blood, but remain soft because they lack a firm connective tissue envelope and thus cannot cause blood congestion. The vestibular bulbs expand and thus embrace the vagina. During high arousal, the muscles of the crura (musculus ischiocavernosus) and the vestibular bulbs (musculus bulbospongiosus) rhythmically squeeze blood via the intermediate network of Kobelt (8) into the clitoral body and the clitoral glans. The same effect is produced, for example, by penile thrusts or other forms of vaginal penetration, which mechanically compress the bulbs and clitoral crura. The increase in pressure reduces the threshold of the numerous „sensors of lust" – the genital corpuscles and Pacinian corpuscles whose stimulation is perceived as sexual arousal, which ultimately leads to orgasm. During arousal, the blood vessels of the vagina also fill, which leads to transudation of fluid via the increase in pressure in the capillaries and acts as a lubricant to protect the tissue from injury.

The female genitalia consist of a complex system of different closely interconnected and interacting structures, the integrity of which is a prerequisite for a satisfying sexuality and thus for the female sexual health. All interventions that are not medically justified, whether for aesthetic, religious or social reasons, are therefore strictly to be rejected.

Literature

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Model

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13.10.2022