

PART II
DISEASES OF THE GENITAL ORGANS

CHAPTER I

DISEASES OF THE PENIS—ANATOMY—ANOMALIES—
INJURIES—INFLAMMATIONS

ANATOMY

THE penis is a genital organ. Its urinary function is purely secondary. It is conformed anatomically to subserve the genital function. In the adult it measures, when at rest, from the root of the scrotum to the meatus urinarius, from 2½ to 4 inches; when erect, from 5 to 7 inches. It consists essentially of three segments—the two corpora cavernosa, lying together like the barrels of a gun, and the corpus spongiosum, like the ramrod, beneath them (Fig. 154, A), the whole surrounded by integument.

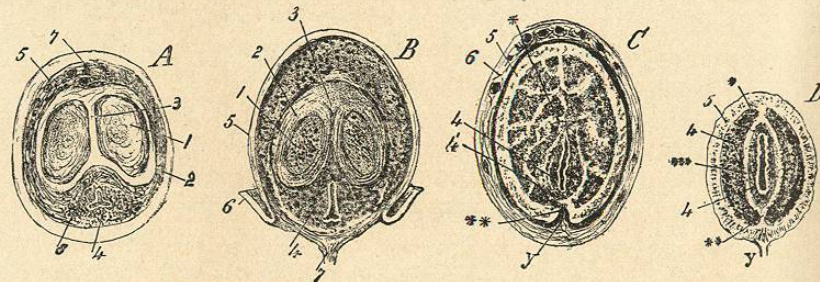


FIG. 154.—CROSS-SECTIONS THROUGH THE PENIS (Henle).
A, through the penis just behind the glans; B, through the posterior border of the glans; C, through the middle of the same; D, just behind the meatus; 1, corpus cavernosum; 2, sheath of same; 3, septum between the same; 4, corpus spongiosum; 5, skin of glans; 6, prepuce; 7, dorsal veins; *, connective tissue connecting frenum with sheath of corpus spongiosum; y, frenum.

The Corpora Cavernosa.—The corpora cavernosa arise on each side from the tuberosities and ascending rami of the ischium. They come together under the symphysis pubis, and continue side by side, forming the main bulk of the penis. They terminate ante-

riorly in a conical extremity, over which the glans penis (the terminal expansion of the corpus spongiosum) fits like a cap. There is no vascular communication between the corpora cavernosa and the glans penis, or the corpus spongiosum.

The corpora cavernosa are surrounded by fibrous sheaths which are so dense and strong that they will support the weight of the cadaver.¹ These sheaths are, however, plentifully supplied with elastic fibres, to allow for the variable size of the organ. The

anterior portion of the partition between the corpora cavernosa is perforated by numerous apertures, to insure thorough and symmetrical erection. The tissue proper of the corpora cavernosa is known as spongy or erectile. During erection the areolæ of this tissue become distended with blood, as shown in Fig. 155.

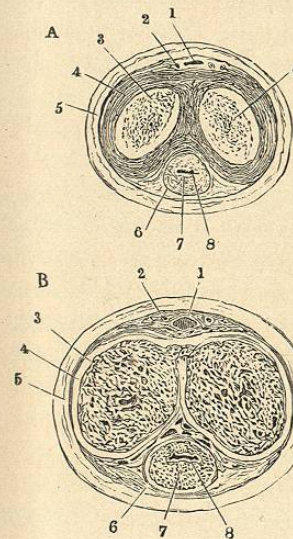


FIG. 155.—TRANSVERSE SECTIONS OF PENIS (Cruveilhier).

A, flaccid. B, in erection. 1, 2, dorsal vein and artery; 3, corpora cavernosa; 4, tunica albuginea; 5, integument; 6, tunica albuginea of corpus spongiosum; 7, erectile tissue; 8, urethra.

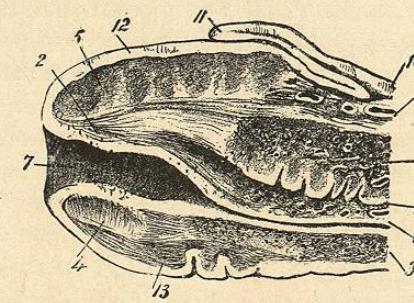


FIG. 156.—MEDIAN SECTION OF THE GLANS PENIS, ETC. (Henle).

1, corpus cavernosum; 3, corpus spongiosum; 5, substance of glans; 7, fossa navicularis; 8, venous network of dorsum; 10, skin; 11, prepuce; 12, epithelium of glans; 13, frenum.

The Corpus Spongiosum.—The corpus spongiosum urethræ is also composed of erectile tissue. It surrounds all that portion of the urethra lying in front of the triangular ligament, anteriorly forming the glans penis which caps the conical extremity of the corpora cavernosa, posteriorly terminating in the bulb, which lies just in front of the triangular ligament in the angle of the converging corpora cavernosa.

The Glans.—The glans penis (Fig. 156) is covered by a semi-mucous membrane endowed with peculiar sensibility, especially

¹ Cruveilhier, *Traité d'anatomie descriptive*, Paris, 1865, ii, I, 386.

around the raised posterior border—the corona glandis. The epithelium covering the glans is fine, the papillæ minute (Home), the sebaceous glands (of Tyson) large and numerous, and most plentiful about the frenum. These glands secrete the white, badly smelling material (smegma) which collects behind the corona. The function of the glans penis is to furnish a soft-skinned expansion for the distribution of the terminal filaments of the nerves of sexual sensibility.

Muscular Action.—One important function of the corpus spongiosum is acquired through its bulb—namely, that of assisting in the expulsion of the last drops of urine or semen from the urethra. The prostate, the levator ani, and the deep urethral muscles—especially the compressor urethræ—contract upon the fluid remaining in the canal after micturition in that spasmodic effort called by the French *coup de piston*. This forces the last few drops beyond the bulb of the urethra. Now the fibres of the accelerator urinæ surrounding the bulb and adjacent portions of the corpus cavernosum contract, and forcibly drive the blood contained in the areolæ of the bulb forward along the corpus spongiosum, forcibly distending that body, and thus bringing the walls of the urethra more closely into contact in a progressive wave. This helps to explain, as shown by A. Guérin,¹ why in cases of organic stricture the last few drops of urine do not escape promptly but dribble away; for the scar tissue which constitutes stricture obliterates the areolæ of the erectile tissue and thus obstructs the free passage of the wave of blood along the corpus spongiosum.

Fascia.—The three erectile bodies which have been briefly described are surrounded by the fascial sheath of the penis—a membrane important in its pathological relations, and sometimes known as Buck's fascia, from the distinguished surgeon who first accurately described it.² This fascia arises from the symphysis pubis by a triangular bundle of fibres, the suspensory ligament of the penis, and from the pubic rami at the attachment of the anterior layer of the triangular ligament. Thence it runs forward, surrounding the corpora cavernosa and the corpus spongiosum in two separate compartments. The lower plane of this fascia is in its posterior part identical with the deep layer of the perineal fascia. The cavity of Buck's fascia is bounded anteriorly by the base of the glans penis and posteriorly by the triangular ligament. Hence periurethral cellulitis and extravasation are habitually confined within these limits

¹ Mém. de la Soc. de Chir., vol. iv, 1857.

² Trans. Am. Med. Ass'n, vol. i, p. 367.

for an indefinite time, unless at the root of the penis where the fascia blends with that covering the pubes, and leaves a loophole of escape into the areolar tissue of the abdominal wall.

Vessels.—The lymphatics and veins of the penis run along the dorsum, and receive in their course branches from the corpus spongiosum. The lymphatics lead mainly to glands lying along and above Poupert's ligament on each side. The arteries arise from the internal pudics.

Connective Tissue.—The connective tissue between the skin and Buck's fascia is very loose and elastic, and, like that of the eyelids, does not contain fat.

Skin.—The skin of the penis, except that it tends to become pigmented after puberty, does not differ essentially from ordinary integument. Over the glans penis it folds back upon itself, forming a non-adherent sheath for the glans (the prepuce), evidently intended to preserve the delicate sensibility of this portion of the member.

The Prepuce.—The prepuce is composed of two layers, a cutaneous (external) and a more delicate semi-mucous (internal). The point of junction of these two is called the orifice of the prepuce. Between these layers is a very loose and elastic connective tissue, without fat, which permits the two surfaces to be entirely separated from each other, and the prepuce effaced, by drawing back the integument of the penis until the glans is entirely uncovered. The mucous layer of the prepuce is supplied with glands (of Tyson). It is much less elastic than the cutaneous layer.

The prepuce is attached to the lower angle of the meatus urinarius by a triangular fold of mucous membrane called the frenum preputii—analogue to the frenum linguæ. The frenum contains a small artery which when cut or torn bleeds freely.

ANOMALIES OF THE PENIS

Deformities of the penis are constituted by abnormalities in some of its constituent parts. The most common examples will be mentioned in connection with these parts. As anomalies of the penis as a whole, two conditions demand special notice—double penis and absence of the organ. Anomalies in size occur, as when the penis is 9 or 10 inches long when at rest, or only a couple of inches long when erect; but these variations require no comment.

Double Penis.—Double penis is excessively rare. It is analogous to double uterus and vagina in the female, but by no means so common. Undoubtedly it is not so rare as the records of surgery

imply, for the existence of this deformity is naturally accompanied by an excessive sensitiveness on the part of the patient which leads him to shun observation; and, as the defect is not necessarily accompanied by any injurious symptoms, the patient does not voluntarily subject himself to the inspection of a physician, and thus keeps himself out of the books. Hence the cases usually reported, such as those of Hart,¹ and Gorre,² accompany grosser malformations of fetal inclusion. The case reported in the first edition of this treatise³ is a notable exception. Similar ones are reported by Drs. Alan P. Smith,⁴ J. Lorthior,⁵ and Carl Beck.⁶

Smith's patient had a stone in one of his bladders, was cut and cured. He could urinate from either bladder at will.

Torsion of the Penis.—With epispadias and hypospadias the penis may be more or less completely twisted upon itself. Jacobson⁷ has collected a number of cases. In Caddy's⁸ case the torsion was unaccompanied by any urethral defect.

Absence of Penis.—The various amputations of the penis, surgical, traumatic, or gangrenous, do not concern us here. The congenital deformity is a rare one, and usually unaccompanied by any faulty development of the testicles or of other parts of the body. The scrotum, however, is usually small and may be bifid. In either case the external genitals closely resemble those of a woman. In fact this is male pseudo-hermaphroditism. Harris,⁹ in a recent review, emphasizes what he claims is an infallible sign of the sex of such a person if an adult. If a female, the upper border of the pubic hair forms a clearly cut transverse line across the hypogastrium, while the hair of the male rises up in a curved line towards the umbilicus.

The urethra opens in the median perineal raphe or on the anterior rectal wall. In the latter case there is danger of ascending infection, as actually occurred in Matthews's¹⁰ case. This patient, in spite of his manifest impotence, was a married man. Harris collected 6 cases, including 1 of his own, omitting 2, Révolat's¹¹ and Wright's.¹² More recently Preston¹³ has reported a case.

¹ Lancet, 1866, i, 71.

² Compt. rend. de l'Acad. des Sciences, 1844.

³ Case I, p. 5.

⁴ Trans. Med. and Chir., Faculty of Maryland, April, 1878.

⁵ Centralbl. f. d. Krankh. d. Harn. u. Sex.-Org., 1901, xii, 381.

⁶ Med. News, 1901, lxxix, 451.

⁷ Diseases of the Male Organs of Generation, 1892, p. 612.

⁸ Lancet, 1894, ii, 634.

⁹ Phila. Med. J., 1898, i, 71.

¹⁰ Amer. Practitioner and News, 1894, xvii, 27.

¹¹ J. de Sédillot, xxvii, 370, Demarquay, Maladies chir. du pénis, Paris, 1879, p. 538.

¹² Ashby and Wright, Diseases of Children, p. 531.

¹³ Med. Record, 1898, liv, 315.

Apparent Absence of Penis.—Congenital dislocation or apparent absence of the penis exists when the penis, lacking its proper sheath of skin, lies buried beneath the integument of the abdomen, thigh, or scrotum. Boutelier¹ reports such a case. Under the skin above the scrotum a movable body was felt, liberated by incision, and discovered to be the penis. Another case, reported by J. Murphy,² would seem to be rather a penile adhesion to the hypogastrium, for the child could urinate through a hole in the lower part of the abdomen. The *treatment* of such a condition implies the immediate liberation of the incarcerated member to avoid urinary infiltration. In this emergency any method of covering the denuded penis with skin may be employed, the simpler the better, leaving until later years the task of affording a more satisfactory envelope to the organ.

Congenital incurvation of the penis and scrotal concealment of that organ occur as phenomena accessory to hypospadias, and will be considered as such in the proper place.

Hermaphroditism.—Accepting Klebs's definition of true hermaphroditism—viz., the existence of dissimilar genital glands (i. e., at least one testis and one ovary) in one individual—there is still some doubt whether any such individual has existed. Dr. Blacker and Mr. Lawrence³ maintain the positive side of the question, and find in the literature foundation for their belief. However this may be, we may rest assured that in no case has it been recorded that the person was, functionally, both male and female, producing both spermatozoa and ova. On the contrary, as a general rule they are sexually neuter. These true hermaphrodites resemble clinically the pseudo-hermaphrodites—persons whose sex can with difficulty be determined—and they sometimes come to the surgeon asking him to make them distinctively male or female, whichever he may deem more appropriate. In deciding such a question, if the external genitals are quite indeterminate—as they often are—the chief characteristics to be considered are the shape of skeleton, the disposition of the superficial fat, the growth of hair, facial and pubic (see above), the voice and the shape of the larynx, and, finally, the sexual sentiments of the individual. The process of “making a man of him” or “a woman of her” may be long and tedious, but may prove successful, as in a case reported by Gruber,⁴ in which amputa-

¹ Union méd. de la Seine infér., 1875, xi, 27.

² Brit. Med. J., 1885, ii, 62.

³ Trans. Obstet. Soc., Lond., 1896, xxxviii, 265.

⁴ Centralbl. f. d. ges. Therap., Wien, 1897, xv, 385.

tion of the hypertrophied clitoris, posterior colpotomy to enlarge the rudimentary vagina, and electric epilation of the facial hair sufficed to establish the external female characteristics.

ACCIDENTS TO THE PENIS AS A WHOLE

Wounds.—The penis is liable to be wounded by accident or by design. In the latter case insanity, or the melancholy depression produced by masturbation, usually induces the patient to mutilate himself; or the injury may be inflicted by a jealous woman.

Superficial cuts are unimportant, but wounds extending through the sheaths of the corpora cavernosa may give rise to troublesome, possibly fatal, hemorrhage, while the cicatrices left after healing may distort the penis and render erection imperfect and painful.

In a case of traumatic aneurysm of the penis due to a knife-cut, Malgaigne¹ had to tie the dorsal artery.

Treatment.—Cleanse the wound. If a large artery be spurting, tie it, but disregard the oozing points. Endeavour to obtain primary union by immediate suture. Introduce the sutures just deep enough to hold the fibrous sheath. Employ moderate pressure in dressing. Erections, which are sure to occur, since the local inflammation induces a flux of blood, always retard healing.

Even in cases seemingly desperate, where the penis has been almost wholly severed from the body, an attempt should be made to save it. A remarkable success in a case of this sort, where the whole penis was severed except a portion of one corpus cavernosum, is related by Artaud.² Erectile power is not regained after such a recovery.

Contusions.—The escape of blood under the skin after superficial contusions of the penis is often excessive, on account of the laxity of the connective tissue and the large size of the superficial veins. Deeper contusions give rise to localized swelling from circumscribed effusion of blood. This swelling fluctuates and deforms the penis more or less, sometimes causing it to deviate when erect. If the contusion be severe enough, inflammation of the corpora cavernosa results, ending in suppuration or gangrene. Severe contusions involving the urethra may lead to infiltration of urine and urethral fistula with loss of substance.

The introduction of the penis into a ring is a classical accident. The penis swells, the patient is ashamed to seek relief, and serious

¹ Revue Medico-Chir. de Paris, 1850, p. 52.

² Bull. de la Soc. de Chir., vii, p. 451.

inflammatory mischief—even gangrene, urinary fistula—may ensue. Guillot in such a case conceived the happy idea of dissolving the ring, which was of gold, in a bath of mercury. Demarquay¹ narrates many curious instances of a similar character.

Excessive subcutaneous hemorrhage may be controlled by the application of cold and pressure, with due regard for the possibility of sloughing if the treatment is overdone. Later, simple pressure to promote absorption will suffice, or the clots may be evacuated through an incision made under local anesthesia with the usual aseptic precautions. If gangrene occur, the penis should be kept absolutely dry and clean by applying a mildly antiseptic powder and a gauze dressing. The gangrenous tissue may be removed piecemeal, until it has all been cleared away, after which the gaps may be filled in by skin-grafting or by a plastic operation.

(For injuries involving the urethra, refer to diseases of that canal.)

FRACTURE OF THE PENIS

When the fibrous sheaths of the corpora cavernosa are ruptured by sudden forcible flexion of the erect penis, a sort of fracture of the member is produced, with extensive extravasation of blood, sometimes amounting to traumatic aneurysm. Pain, generally present, is sometimes replaced by a sensation of heat, distention, and weight. Valentine Mott² reported 2 interesting cases of this accident, where the only treatment employed was rest and cold locally applied. Both recovered with a useful organ and no deformity. Demarquay has cited many others.

Treatment.—A stout woven catheter, strong enough to resist lateral compression, is passed into the bladder to insure the patulousness of the urethra. Upon this the penis may be bandaged and cold applied. If the pressure proves unbearable or if gangrene, extravasation or cellulitis threaten, the clots must be evacuated and the bleeding checked through an incision made with all aseptic precautions.

After recovery an indurated spot may remain permanently to mark the site of the injury, perhaps making erection imperfect or painful and interfering with sexual intercourse.

Fracture of the Corpus Spongiosum.—Fracture of the corpus spongiosum is generally occasioned by "breaking the chordee" in gonorrhoea (p. 63). The inflamed tissue gives way, yielding urethral hemorrhage as an immediate and traumatic stricture as a remote result.

¹ Maladies chir. du pénis, Paris, 1877.

² Trans. of the N. Y. Acad. of Med., vol. i, Part I, 1851, p. 99.

The healthy corpus spongiosum may be fractured during erection. Dittel¹ gives one such case. I have seen another.²

DISLOCATION OF THE PENIS

When the integument of the penis is violently dragged upon, as, for instance, when the clothes are caught and torn away upon a revolving wheel, the entire penis may be shot out of its investing cutaneous sheath and lodged in the scrotum, the perineum, the groin, or under the integument of the abdomen. In such cases, the semi-mucous membrane of the prepuce gives way either at the preputial orifice or just behind the corona. A number of instances of this curious luxation have been recorded.³ The penile injury is usually not discovered until retention of urine or the passage of urine by some opening at a distance from the preputial orifice directs attention to the contused genitals, when the penis is found to be only a sheath of integument containing clotted blood. Sometimes it has been difficult to find the penis at all; but an intelligent search will always reveal it, and then the surgeon's obvious duty is to replace it in its sheath, incising the integument about the root of the sheath as far as may be necessary to attain the desired result.

In dislocation, the urethra is often ruptured low down, and, after the organ has been replaced in its sheath, external perineal section without a guide may be called for (p. 35). In this way the continuity of the canal is restored.

In one case, a six-year-old child, Nélaton reduced a dislocated penis through the preputial orifice by means of Cooper's aneurysm needle, assisting its hook action by external manipulation.

CUTANEOUS AND MUCO-CUTANEOUS AFFECTIONS OF THE PENIS

Many common skin diseases involve the skin of the penis as well as other integumentary parts. As a rule, they present no special characteristics and require no comment here. *Venereal sores*, true chancre and chancroid, are common, as also are soft venereal warts. These receive mention later. A rare disease is *scabies*, which, causing ulcerated spots and enlarged inguinal glands, may be mistaken for chancroid, from which it may be differentiated by the "burrows" and the accompanying interdigital lesions. Jacobson reports a case

¹ Wien. med. Blätter, 1885, Nr. 2.

² Van Buren and Keyes, 1st Ed., p. 7.

³ Cf. Goldsmith, Lancet, 1898, ii, 387.

of epitheliomatous degeneration occurring in a patch of *eczema* which covered the root of the penis and the inner third of the groin. Hutchinson¹ circumcised a boy for *lupus* of the prepuce and obtained a perfect result. Rake, of Trinidad,² has performed circumcision on 16 *lepers*, and, even though the incision actually traversed a leprous patch, it always healed kindly.

Herpes Progenitalis.—This affection consists in the development of clusters of vesicles upon reddened patches on the mucous covering of the glans, or on either layer of the prepuce, or on other portions of the neighbouring skin, attended by a slight sensation of heat and tingling. When occurring on the cuticular layer, herpes runs its course as it does elsewhere on the body, but when vesicles develop within the preputial orifice the eruption is modified. Under these circumstances the epithelium of the vesicles is soaked off, little exulcerations result, more or less general inflammation is likely to arise from retention of the secretions, and balanitis, with posthitis, vegetations, and inflammatory phimosis, may be the ultimate result. In exceptional cases the ulcerations perhaps become deep and angry, and the diagnosis with chancroid difficult, while the glands in one groin or both may inflame and suppurate. These extreme results are rare.

When the affection has once occurred, it shows a marked tendency to recur. There is often a periodicity about the attacks. Tight prepuce and contact of irritating discharges act as predisposing causes.

Diagnosis.—Vesicles, usually in groups, always precede the ulcerations, while the latter are irregular in shape, superficial, and very rarely complicated by suppurating bubo. The pus is not auto-inoculable. Attention to these points will generally render diagnosis with chancroid easy; where grave doubts exist, auto-inoculation is the proper test.

Treatment.—The treatment is the same as for balanitis. Touching the tingling, congested patch before, or even just after, the commencement of vesiculation several times a day with eucalyptol, while it does not abort the attack seems to shorten it. As soon as the vesicles break a dry antiseptic powder is suitable (nosophen, bismuth). In relapsing cases circumcision or a long course of iron and arsenic internally often effects a permanent cure.

Herpes Zoster.—Zoster may occur upon the penis as elsewhere.

¹ Arch. of Surg., 1890, ii, 17.

² St. Louis Med. and Surg. J., 1893, lxiv, 221.