

## CHAPTER XIV

## DISEASES OF THE SEMINAL VESICLE

## ANATOMY

THE seminal vesicle (Fig. 174) is a reservoir connected with the vas deferens. Each vesicle lies to the outer side of its vas, its apex buried in the prostate, where it joins the vas at an acute angle to form the ejaculatory duct. The body of the vesicle is directed obliquely upward and outward, lying along the upper border of the prostate and projecting beyond it laterally. The fundus of the vesicle lies just external to the termination of the ureter in the bladder. Each vesicle is bound close to the bladder and prostate by a dense fascial envelope containing many unstriped muscular fibres. Within this fascia ramify numerous large branches of the prostatic plexus of veins. The relation of the vesicles to the peritoneum is variable. The recto-vesical pouch always dips sufficiently to touch the fundus of each vesicle, and when the bladder is full there is usually a small triangular space between the vesicles, just above the prostate, where a trocar may be passed from rectum to bladder without invading the peritoneum. But sometimes the peritoneal pouch fills even this triangle, a fact which adds weight to the obvious objections to recto-vesical puncture, and which explains the occasional extension of inflammation from the vesicle to the peritoneum.

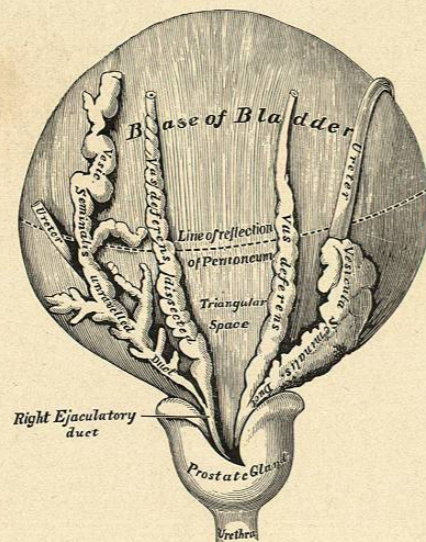


FIG. 174.—SEMINAL VESICLE (Gray).

The vesicle is elliptical in shape, flattened antero-posteriorly. Guelliot<sup>1</sup> gives 49, 18.5 and 10 mm. as its average length, breadth, and thickness. The lumpy surface of the vesicle has been compared to the convolutions of varicose veins or of the intestine. By a tedious and delicate dissection the vesicle may be unravelled. It is a single canal 10 to 15 cm. long. From this canal spring numerous small diverticula, one of which, originating near the orifice of the organ, may be almost as long as the vesicle itself. The blind end of the vesicular tube may be doubled back, so that the tube actually terminates near the orifice of the vesicle, and the fundus represents the middle part of the tube.

The tube is quite as irregular within as without. Here and there the orifices of diverticula loophole the tortuous wall, while the mucous membrane is thrown into folds extending in various directions.

The vesicle is made up of three coats: a thin outer fibrous coat, a thick middle layer of circular and longitudinal muscular fibres, and a mucous membrane. The latter contains many elastic fibres. Its epithelium is cylindrical in youth, cuboidal or flattened in old age. The epithelial cells often contain granules of brownish pigment, masses of which are occasionally found in the semen. Guelliot denies the existence of special glands in the vesicle, and affirms that the epithelium is identical throughout the organ. Rehfisch recognises vesicular glands.

The arteries of the vesicle are derived from the inferior vesicle and the middle hemorrhoidal. The veins join the prostatic and lateral vesical plexus. The lymphatics empty into the pelvic ganglia. The nerves are derived from the hypogastric plexus of the sympathetic.

The ejaculatory ducts begin at the junction of the vas deferens and seminal vesicle. Becoming smaller and of even calibre these ducts run obliquely forward and upward through the prostate, approaching each other until they nearly touch in the median line. Yet they are quite separate to their openings on the lips of the prostatic utricle. They are closely surrounded by a dense elastic tissue and contain a few straggling muscle fibres derived from the longitudinal muscle of the vesicle.

The functions of the vesicle are three:

1. To store the secretion of the testis.
2. To dilute it.
3. To expel it into the prostatic sinus just before ejaculation.

1. Rehfisch,<sup>1</sup> in a detailed study of the comparative anatomy and physiology of the seminal vesicles, showed that in rats, guinea-

<sup>1</sup> Deutsche med. Wochenschr., 1896.

<sup>1</sup> Des vésicules séminales, Paris, 1883, p. 27.

pigs, and other mammals, the vesicles empty by a separate duct into the urogenital sinus and at no time contain spermatozoa. But he confirmed on man De Graaf's experiment of injecting the vas deferens, showing that the vesicle fills with fluid before the ejaculatory duct is forced open. Hence it is fair to assume that the vesicle, as well as the ampulla of the vas, is a place of storage for the spermatozoa.

2. The *secretion* of the seminal vesicle dilutes the semen and probably has some obscure function of stimulating the vitality of the spermatozoa. This secretion is albuminous, alkaline, and odourless. It contains a large proportion of mucin. Besides blood-cells, leukocytes, and epithelia, the fluid contains many little hyalin pellets rarely visible to the naked eye. These bodies (sympexions, globulin körner) appear under the microscope as hyalin spheroids showing radiating lines of cleavage. They may contain masses of spermatozoa or pigment granules, and may attain a size sufficient to obstruct the ejaculatory duct (p. 790).

3. The vesicle becomes distended with fluid by the accumulation of its own secretion and the influx of testicular fluid. Unless there is spermatorrhea (p. 103) little or none of this fluid escapes, except during the sexual orgasm. This act occurs as follows: after a period of sexual excitement, varying in duration according to the nervous calibre of the individual, the muscular coat of the vesicle and the ampulla of the vas contract peristaltically, driving the fluid into the ejaculatory duct, which, very probably, is relieved of the elastic pressure that usually occludes it by a simultaneous muscular contraction of the prostate. The semen is thus ejaculated into the prostatic sinus, where it mingles with the prostatic secretion. The congested verumontanum blocks the way into the bladder and the prostatic and urethral muscles project the fluid forward by jets. I think the function of the verumontanum in preventing regurgitation is overestimated, for it is a matter of daily experience that the few drops of fluid left in the prostatic urethra at the end of urination are ejaculated by the urethral muscles, though the verumontanum is not at all congested.

Science and experience agree that the seminal vesicles are not emptied by a single orgasm.

#### ANOMALIES

Anomalies of the seminal vesicles are usually part of some general genital malformation. Guelliot has analyzed and refused to accept the alleged cases of multiple seminal vesicles. When the

vesicle is absent the corresponding testicle may yet be present. Extreme dilatation of the vesicles is probably always acquired.

The ejaculatory ducts may empty into one of the ureters instead of on the edge of the prostatic utricle. In a few cases they have been found to continue forward alongside of the urethra the whole length of that canal to the meatus.

#### WOUNDS OF THE VESICLE

Guelliot recognises only one case of undoubted accidental wound of the vesicle. The patient had suffered a fracture of the ischium.

Operative wounds of the ejaculatory ducts are very frequent. The patency of the ducts is imperilled by all perineal cystotomies and prostatotomies, including lithotomy, Bottini's operation, and prostatectomy. Two results follow: inflammation (acute vesiculitis and epididymitis) possibly, obstruction probably. If the obstruction is partial, dyspermia results; if total on both sides, sterility. Therefore it is proper when operating upon a young adult, to whom the power to procreate is of some importance, to perform suprapubic, rather than perineal cystotomy, thus sacrificing the patency of one duct but not imperilling both.

Fistulae of the spermatic duct have resulted from the old-fashioned lateral lithotomy operations. The resultant spermatic fistula heals kindly unless the parts are cancerous or tubercular.

#### EXAMINATION AND INFLAMMATION

The simple inflammations of the seminal vesicle are so bound up with the subject of gonorrhoea that they have been described under that caption (p. 99).

The vesicle is examined by rectal touch. The methods of examination and of stripping are described elsewhere (p. 143).

#### TUBERCULOSIS

Tuberculosis of the vesicle is always at first unilateral. Before both vesicles are affected the prostate must become inflamed. Whether tuberculosis is usually primary in the prostate or in the vesicle is not clear (p. 244).

The lesions of localized tuberculosis—tuberculization, caseation, and suppuration terminating in fistula or atrophy—appear first near the mouth of the organ, where they may remain localized or whence they may be disseminated throughout its length.

**Symptoms.**—Commonly there are no symptoms directly referable to the vesicle. Hemospermia, abscess, fistula, increase or decrease

in the sexual appetite—all these are rare. In most cases there is simply evidence of a tuberculosis of the prostate or of the epididymis, and examination reveals the condition of the vesicle. Simmonds<sup>1</sup> examined 25 cases of tubercular vesiculitis post mortem and only 6 of these were found to be sterile.

**Diagnosis.**—When the prostate or epididymis is known to be tubercular and the vesicle is found dilated or tender it may be assumed to be tubercular as well.

On the other hand, when there is doubt as to the nature of the prostatic inflammation an examination of the vesicles may sometimes throw some light upon the subject. If typical hard nodular areas of tubercularization are encountered they at once establish a diagnosis. But more often the organ is merely dilated in a manner suggestive of simple inflammation. If, in such a case, the urinary and physical examinations fail to indicate the nature of the disease, the latter may declare itself in a characteristic but disagreeable fashion by an outburst of tubercular epididymitis directly referable to the examination of the vesicle. Hence the rule: *never massage or examine a suspected vesicle except with the lightest possible touch.*

**Treatment.**—All local treatment of a palliative sort must be studiously avoided. Massage and douching do not benefit the vesicle, but endanger the testicle. Here as elsewhere the general hygienic treatment of tuberculosis is of prime importance.

It is but recently that the vesicle has come fairly within the reach of the scalpel, and many vesicles are sacrificed to celebrate this new triumph of surgery. The circumscribed lesions of tuberculosis have proved especially tempting. Even those who believe that the disease is primary in the testicle or epididymis may feel justified in extirpating the vesicle, either when known to be diseased, or in all cases, as a routine precaution. I am not ready to accept either alternative. Of the large number of cases in which the vesicle is known to be tubercular, only the smallest percentage shows grave symptoms of this lesion. Whether the vesicular inflammation be primary or not it is usually amenable to hygienic treatment. Yet exceptional cases with extensive caseation, suppuration, or fistulization, demand operative relief, and to these it should be accorded, but to no others.

Three varieties of operations are performed upon the vesicle:

1. Puncture—perineal or rectal.
2. Incision—perineal or rectal.
3. Excision—perineal, sacral, or inguinal.

*Puncture* may be summarily dismissed. It is always dangerous, never permissible.

<sup>1</sup> Deutsch. Archiv f. klin. Med., 1898, lxi, 412.

*Incision* is appropriate to simple non-tubercular abscesses that may be expected to heal. Incision through the anterior rectal wall is allowable, and may be performed with a tenotomy knife guided and protected by the finger. Perineal incision—a more formidable operation requiring general anesthesia and considerable surgical skill—is a more safe and thorough procedure at the hands of an experienced operator (see Excision). In tubercular conditions, however, incision is never more than palliative. It changes an abscess into a permanent fistula and should therefore be performed by the perineal route.

*Perineal excision* is the operation of choice for a tubercular vesicle. The operation is performed through a curved incision extending in front of the anus from tuberosity to tuberosity and carried on the affected side around to the coccyx (Guelliot<sup>1</sup>), thus encircling the anus on three sides (*EFG*, Fig. 60, p. 204).

Keeping a full  $\frac{1}{2}$  inch away from the bowel, and with the finger in that viscus and a sound in the urethra as guides, the perineal muscles are divided. The levator ani is thus revealed. Its anterior fibres (levator prostatae) are severed, and the prostate, with the vesicles above it, is thus brought into the field. The wound is deep and the hemorrhage profuse, but efficient retraction, hemostasis, and a well-directed artificial light render the operation methodical and comparatively simple. With the prostate once well exposed and hooked gently but firmly downward by volsella, the distended vesicle is brought well into view. The surgeon first endeavours to hook his finger above the vesicle and thus to free its anterior surface and fundus from the peritoneum. This is the delicate part of the operation, and during this procedure the peritoneum must be respected. Happily, however, the vesicle, inflamed as it is, usually shells out readily. If the fundus is adherent the dense fascial envelope of the testicle may be divided close above the prostate and an intracapsular enucleation attempted. When enucleation succeeds, the vesicle alone or the vesicle with part of the vas may be removed. If the testicle has already been cut away the remainder of the vas may be drawn down and out through the perineal wound. When enucleation does not succeed, the best that can be done is to incise and scrape the abscess cavity and pack it tightly with iodoform gauze. In any case plentiful drainage must be provided for.

*Sacral excision* is preferred by many. A Kraske or Rydygier resection of the sacrum is performed upon the affected side. The rectum is drawn away and the vesicle exposed. A sound in the blad-

<sup>1</sup> Presse méd., 1898, i, 193.

der is of assistance as a guide. This operation exposes one vesicle much better than does the perineal route; but the opposite organ can not be reached. My preference remains for the perineal route, because the greater shock and the prolonged convalescence unavoidable after a sacral operation are handicaps to which no tubercular patient should be required to submit.

*Inguinal excision* was suggested by Villeneuve as a fitting complement to castration. It has led to disastrous failure even at the hands of competent surgeons, but has recently been performed successfully by Young.<sup>1</sup>

#### CYSTS

Prolonged inflammation sometimes causes gradual dilatation of the vesicles until they become two or three times their normal size and even overlap in the median line. Such cysts have only a pathological significance. Occlusion of the ejaculatory duct does not cause the vesicle to dilate.

Several examples of echinococcus cysts occurring between rectum and bladder have been attributed, without convincing proof, to the vesicle.

#### CONCRETIONS AND CALCULI

While it is not unusual to find a number of concretions or small calculi in the vesicles of the aged, they have, as a rule, no clinical symptoms. It is only very rarely that they give rise to spermatic colic.

**Symptoms.**—Spermatic colic was first described, in 1879, by R  liquet. The colic occurs at the moment of ejaculation, during coitus, or during a nocturnal emission. The pain is very sharp, colicky in fact, and nauseating. It is centralized about an inch up the rectum, or at the neck of the bladder, and thence radiates up the posterior wall of the pelvis or to the testicles. The pain is caused by the impaction of a concretion or a mass of inspissated semen in the duct. The obstruction may be forced, and a painful and deficient emission ensue after a few moments of colic, or, if the occlusion is complete, emission may fail and the pain continue from fifteen to thirty minutes.

**Treatment.**—The treatment is palliative and curative. I have found the hot rectal douche (p. 131) an excellent remedy to relieve the pain and to shorten the attack. Many persons who are subject to mild attacks of spermatic colic obtain relief by introducing a finger into the rectum and pressing upon the offending organ.

<sup>1</sup> Annals of Surgery, 1900, xxxii, 557 and *ibid.*, 1901, xxxiv, 601.

If the attack has been severe, after it has passed off massage of the prostate and vesicle against a full-sized sound in the urethra should be employed. The concretion may thus be either disintegrated or expelled. This failing, incision of the vesicle might be employed.

#### MALIGNANT GROWTHS

Guelliot recorded but one authentic case of primary carcinoma of the seminal vesicle. Secondary involvement occurs from the prostate, bladder, or rectum.