CHAPTER VIII

INFLAMMATIONS OF THE TESTICLE AND EPIDIDYMIS

Inflammation of the testicle may be limited to the epididymis (epididymitis), or may attack the secreting structure only (orchitis). Sometimes both parts inflame simultaneously—as after injury. The secreting structure may become secondarily involved by a simple inflammation commencing in the epididymis, but the latter rarely suffers in connection with primary, true orchitis. The tunica vaginalis, lying close to the epididymis, becomes inflamed in most cases of epididymitis, constituting acute hydrocele. On the other hand, hydrocele is rare with orchitis, since the dense tunica albuginea prevents an inflammation originating on one side of it from being readily transmitted to the other.

Etiology.—Inflammations of the testicle may arise by—

1. Infection passing along the seminal canals from the urethra.
2. Infection from the blood or the lymph.
3. Trauma.

1. To the first class belong simple inflammatory and gonorrheal infections; they involve the epididymis primarily, the testicle only secondarily.

2. To the second class belong tubercular and syphilitic inflammations (the former usually beginning in the epididymis, the latter in the testicle) and the orchitis of infectious diseases.

3. Inflammations of the third class (traumatic) implicate both testis and epididymis, but chiefly the former.

Omitting tuberculosis and syphilis, which require separate consideration, it may be observed that, while the inflammations of testicle and epididymis begin usually in the one (orchitis of infectious disease, orchitis of trauma) or the other (epididymitis of gonorrhea, epididymitis of urethritis) portion of the organ, no one of these inflammations is necessarily confined to either part alone. It is therefore proper to classify them under the title "epididymo-orchitis"; but in order to insist on the distinction, clinical as well as etiological, that exists between them, it is convenient to group the infections of urethral origin as epididymitis, the other varieties as orchitis.

EPIDIDYMITIS

Epididymitis is the most common of all the diseases of the testicle. It occurs at any age, most frequently during early adult life and middle age, since its chief cause—urethral inflammation or irritation—exists most commonly during these periods of life. It has an acute form, but is very prone to run into the chronic state, and may be subacute from the first. It habitually terminates in resolution, rarely in abscess. One attack predisposes to another. It is often double, but the two testicles are very rarely simultaneously involved; the inflammation of one usually precedes that of the other by a number of days or weeks, after which the disease sometimes returns to the testicle first invaded, chiefly in badly managed cases. Fournier[1] has never seen double simultaneous epididymitis. It is uncommon but does occur. I have encountered it twice.

Etiology

The prime cause of epididymitis is inflammation of the *posterior* urethra. The inflammation travels from the urethra up the ejaculatory duct and along the vas deferens, not by a microbic migration, but by an actual extension of the inflammation along the mucous membrane of these canals. This explanation has long been disputed; but three facts may be laid down to prove it:

1. No matter what the condition of the anterior urethra, epididymitis never occurs except from inflammation or trauma of the posterior urethra.

2. The prodromal symptoms usually point to inflammation of the vas before there is inflammation of the epididymis.

3. Vasectomy[2] has, in my experience, always cured the most inveterate cases of relapsing epididymitis, in 2 cases even bringing an acute attack to an abrupt termination.

Nearly all the causes enumerated as capable of producing orchitis may also exceptionally give rise to epididymitis. Gout, trauma, cold, and prolonged sexual excitement may cause it, but urethral inflammation or irritation is by far the most active cause. The most common form of this irritation is gonorrhea or urethritis, then stricture, finally, any prostatic or urethral irritation; the passage of instruments, especially through a urethra already affected by mild chronic inflammation or stricture, but occasionally where no appreciable disease exists; the use of the lithotrite; cutting operations for

[1] Art. Blennorrhagie, Dict. de méd. et de chir. prat., p. 211.

[2] *Cf.* Chetwood, J. of Cut. and Gen.-Urin. Diseases, 1900, xviii, 445.

stone; retention of a small calculus or stone fragment in the prostatic urethra—in short, any inflammatory affection of the prostatic sinus around the orifices of the ejaculatory ducts. In general it may be laid down that epididymitis is to be looked for mainly from the third to the eighth week of gonorrhea. A number of cases are on record in which it is alleged that epididymitis has preceded the gonorrheal outbreak (Fourneaux-Jordan, Sturgis, Stansbury, Castelnau, Vidal). In my opinion these are not true cases of new gonorrheal infection, but instances of relapsing gonorrhea, in which a prostate already damaged is kindled by sexual exercise into acute irritation, which first shows itself by producing swelled testicle, and only later manifests itself as a discharge at the urethral orifice.

Some individuals seem predisposed to epididymitis, so that notwithstanding the utmost care every attack of gonorrhea is invariably attended by swelled testicles; while others, regardless of all hygienic precautions, go around with a raging gonorrhea, employing perhaps no treatment, continuing sexual intercourse and the abuse of alcohol, not even supporting the testicles, and yet they escape. Indeed, the one patient who took more scrupulous care of himself than any other in my whole experience, who went to bed and stayed there, took no local treatment whatever, and lived on the lightest of diets, in due time developed a double epididymitis, which terminated in suppuration on both sides.

It may, however, be stated dogmatically, that while a gonorrhea of itself will sometimes, in spite of all precautions, occasion swelled testicle, yet this complication is not likely to ensue if the patient wear a suspensory bandage, abstain from violent or jolting exercise (horseback riding, dancing), and avoid bodily fatigue and efforts at lifting. Above all, sexual excitement or indulgence, and the use of alcohol in any shape, must be interdicted. The passage of instruments through a canal subject at the time to gonorrhea is a sufficient cause for epididymitis. The local, and especially the abortive methods of treatment are, therefore, peculiarly liable to occasion swelled testicle. Yet from an experience extending over several years, I am convinced that the modern, moderate local treatment, if promptly applied and properly administered, is the one way to prevent posterior urethritis, epididymitis, and all the other complications of gonorrhea.

The epididymitis of stricture and of prostatic hypertrophy is usually induced by instrumentation.

Morbid Anatomy

The inflammatory process is most acute at one or the other end of the *epididymis*, usually the globus minor. Here the inflamed

ducts are thickened by the inflammation and dilated in places by the accumulated secretions, desquamated epithelium, and pus. The connective tissue between the tubules is infiltrated and edematous. Actual abscess formation is rare. The *testicle* is, in acute cases, soon invaded by the inflammation from the epididymis. The *tunica vaginalis* is also inflamed, and acute hydrocele occurs in one third of all cases (Jacobson). The *vas* suffers only a slight catarrhal inflammation. Perideferentitis, abscess, and fatal peritonitis have been noted, but these are to the last degree exceptional.

As the inflammation declines, the associated lesions clear up and the edema is absorbed, leaving only one or more hard lumps in the epididymis to mark where the inflammation centred. In these lumps the epididymal canal is found permanently damaged; dilated and catarrhal in some places, perhaps occluded in others. Occlusion of the epididymis is not the constant result of inflammation, but when it does occur is probably permanent. Hence spermatozoa can never again issue from that testicle, and if both testicles are involved the patient is sterile. But the testicle does not atrophy on this account, nor is the patient's potency or sexual appetite at all impaired. (See Prognosis.)

Symptoms

Epididymitis may come on in an acute or a subacute form, the latter where the epididymis has previously suffered from a similar attack. First attacks, like first attacks of gonorrhea, are usually the most severe. Epididymitis is ushered in by premonitory symptoms which precede the swelling by some hours. Usually the gonorrheal or gleety discharge is not visibly modified until after the testicle begins to swell. Then it diminishes, perhaps stops, to return again as soon as the inflammation of the epididymis is fairly on the decline.

Prodromes.—A vague uneasiness is felt in the testicle and along the cord up into the back, as if the cord were being pulled upon. Attentive patients will frequently aver that the pain was noticeable in the groin for some hours before any uneasiness was experienced in the testicle. This forerunning inguinal pain is rarely absent where the epididymitis is of urethral origin, except in hospital patients, who are unintelligent observers. There is usually only a slight painful tension in the groin, but sometimes it is very severe, extending around to the lumbar region and up the back. Sometimes there is a sense of weight in the perineum and frequent desire to urinate, with pain and difficulty in the act. Occasionally a chill will usher in the affection, but this is far more constant with orchitis.

Onset.—1. Whether any of the foregoing symptoms have attracted attention or not, the attack begins with pain in the testicle,

attended by swelling. The amount of pain and swelling varies in different cases. In the *subacute*, non-gonorrheal form, the swelling is moderate, comes on rather slowly, and is confined almost exclusively to the epididymis, the testicle itself being unaffected as a rule. Periorchitis is absent usually. There is but little, if any, fluid in the tunica vaginalis. With such mild cases there are no constitutional symptoms and the pain is not excruciating. It is aggravated by the erect posture, but wholly disappears after the patient has been on his back for a few moments with the testicle elevated.

2. But the picture is a different one if the onset is *acute*. The swelling commences promptly and increases with rapidity. First it is localized posteriorly, but soon it spreads to the tunica vaginalis and to the testis: the former becomes filled with lymph, the latter first becomes congested and edematous, later inflamed. The scrotal tissues become edematous. Yet, even under all these disadvantageous surroundings, with an edematous scrotum and a tensely filled tunica vaginalis, careful examination will rarely fail to localize all the hardness and most of the pain in the epididymis. The inflamed mass rapidly reaches the size of the fist, but its shape is not so evenly oval as in orchitis. The cord becomes swollen and painful on pressure. Occasionally the cord becomes partly strangulated in the inguinal canal, since it is impossible for it to swell much there, surrounded as it is by firm fibrous structures. This gives rise to all the symptoms of strangulation (p. 714).

Pain.—Pain in acute epididymitis is great, increasing from the first proportionally to the swelling. The pain, however, is not so severe as in true orchitis. It is dragging, aching, and sickening, making the patient feel faint. Locomotion is almost impossible, the motions of the patient are very deliberate as he changes his position, and, if obliged to stand, he carefully supports and shields the swollen scrotum with his hand. While rest on the back with the testicle raised modifies, it does not allay, the pain, but in this position the torture is more bearable. If strangulation of the cord at the ring occurs, the pain is greatly intensified, resembling that of acute inflammatory true orchitis. If inflammation of the body of the testis exist, the pain will be proportionately heightened.

Course.—As the disease advances, pain increases in intensity for a day or two, remains stationary for several days after the organ has reached its full size, and finally begins to decrease, and, even in desperate cases, by the end of the second week has usually disappeared, or become reduced to the slight dragging uneasiness which constitutes the only pain of mild cases. This relief from pain is often experienced while the organ is yet large, the epididymis thickened, the scrotum edematous, and some fluid still left in the tunica vaginalis. For several days after the pain has ceased, a few moments in the erect posture, with the testicle hanging, will recall it.

The form and size of the swelling vary greatly. In the mildest cases the tail of the epididymis alone suffers. (Exceptionally the head alone is involved.) All the inflammation localizes itself there, forming a hard, sensitive lump, giving a little uneasiness unless supported. The head, together with the tail of the epididymis, may suffer, nothing else being involved; or the whole of the epididymis, while the testis proper may be felt normal in every respect in front of the inflamed mass. The vas deferens may also be involved even in mild chronic cases. In very acute attacks the whole cord is sensitive and hyperemic. The seminal vesicles are always inflamed (p. 100).

If the disease be at all acute, *the tunica vaginalis* is sure to be involved, the degree of its inflammation usually, but not invariably, coinciding with the intensity of the epididymitis. This hydrocele varies greatly. Fluid may be rapidly poured out, filling the sac to its utmost, giving rise to a tense swelling of considerable size, in which case it becomes impossible to distinguish the constituent parts of the testicle. This is often attended by excruciating pain which may be instantly relieved by puncture of the tunica vaginalis. Again, but little fluid may be effused. This, lying loosely in the sac, fluctuates freely, and does not in the least obscure the fact that the main disease is in the epididymis. The fluid may be absorbed speedily, permitting the plastic material effused with it to glue together the two surfaces of the vaginal tunic, or perhaps only to form numerous bridled adhesions. Some fluid may remain throughout—the nucleus of future hydrocele.

The constitutional symptoms, fever, loss of appetite, etc., are mild with epididymitis, do not occur at all in chronic and subacute cases, and, like the pain, vary in acute cases with the intensity of the inflammation. What fever there is disappears before the pain, and long before the swelling.

The gradual disappearance of the hardness from the epididymis may extend over many years, and in some cases is never entirely accomplished. The point first attacked is the last to resolve. The absorption starts rapidly, but progresses more and more slowly, until in some cases it seems to remain stationary. In such cases the little hard lump at the top or the bottom of the epididymis occasions the patient no uneasiness, is not sensitive to pressure, and is ignored. Suppuration is very rare in simple epididymitis; atrophy of the testis never occurs except from orchitis.

Chronic or Relapsing Epididymitis.—Epididymitis may be said to have a natural limit of about two weeks for its acute symptoms, but relapses are very common, and carelessness may prolong the trouble to as many months (p. 719). Relapses are habitually milder than first attacks. If the opposite testicle inflame before the first is well, the latter runs through its course more quickly.

Diagnosis

Nothing is easier than the diagnosis of an acute epididymitis occurring during a gonorrhea or provoked by urethral instrumentation. But chronic or subacute cases may be mistaken for tuberculosis. (See Diagnostic Table, p. 752.)

Acute orchitis is distinguished by its etiology, the more marked general symptoms, and the fact that the testis proper, and not the epididymis, is chiefly involved.

Prognosis

The prognosis may be summed up thus: there is no danger to life, to sexual potency, or to desire. Neuralgia or tuberculosis may follow acute epididymitis in subjects predisposed to these ills. Sterility (of the affected organ) and relapse are both possible results, but, contradictory as it may seem, the more liable the patient to relapses, the less likely is he to be sterile. This does not mean that the greater the number of attacks the less damage done. On the contrary, each attack doubtless leaves its mark and may obstruct an epididymis which previous attacks have left patent. Yet this very patency of the canal constitutes at once a liability to reinfection and an assurance of fertility; whence the apparent contradiction has evolved itself that persons who have had but one attack of epididymitis in both testicles are less likely to be fertile than those who have had several.

Yet even when a man is thus sterile, affairs are not so desperate. The patient is by no means impotent, his sexual power and appetite are unimpaired. He ejaculates semen resembling the healthy fluid in quantity, smell, and colour, but containing no spermatozoa, and consequently sterile.

Benzler's[1] investigations are interesting in this regard. By looking up the subsequent history of old soldiers who had had gonorrhea while in the German army, he found that among those who had been married three or more years 10.5% of those who had suffered gonorrhea without epididymitis were childless, against

[1] Archiv f. Derm. u. Syph., 1898, xlv, 33.

23.4% of those who had had single epididymitis and 41.7% of those who had had both organs inflamed.

On the other hand, traumatic epididymitis is far less likely than urethral epididymitis to lead to sterility, since the traumatic inflammation concerns the testicle and the surrounding tissue rather than the lumen of the canals. Thus Liégeois (Jacobson) found spermatozoa in the semen of only 7 out of 28 patients who had had double epididymitis, and of these, 5 cases were due to "local causes." Orchitis does not cause sterility unless the testicles atrophy. When in epididymitis the primary focus is in the globus major, it is conceivable that obstruction of one or more tubes would not entail sterility, since the excretory ducts in this region are numerous; but in the body and tail there is but one duct, the obstruction of which means the shutting off of the whole testicle.

Suppuration rarely occurs in the course of a gonorrheal epididymitis; but when recurrent swelled testicle complicates prostatic hypertrophy an abscess often forms, and this may give rise to a fatal pyemia.

Treatment

The prophylactic treatment of epididymitis is the use of a suspensory bandage during the existence of urethral disease, together with a strict observance of the hygiene of the urethra (p. 10). When, late in gonorrhea, or during treatment of stricture, complaint is made of a dragging, uneasy sensation in the groin or testicle, the patient should be immediately placed upon his back, with the testicle elevated and painted with guaiacol and thus the threatened attack may often be averted.

Elevation.—In mild cases, where rest on the back with elevation of the testicle is sufficient to quiet pain, these means alone will effect a cure, though it is always safe to apply guaiacol, followed by a poultice and a laxative. In a few days the patient can stand and, by supporting his testicle, walk without pain.

In acute cases the treatment must be more active. Rest on the back and elevation of the testicle over the abdomen are indispensable. A suspensory bandage does not suffice, since it permits the testicle to hang down; nor is it well to trust to pillows and compresses under the testicle, since they permit the patient no motion. Curling's method is an excellent one. It consists simply in a handkerchief or piece of bandage around the waist, and a large (preferably silk) handkerchief, folded in triangle. The base of the triangle is placed under the scrotum; one (acute) angle on each side is tied to the waistband, the other (right) angle is brought up over the testicles and penis, serving to retain dressings, and is pinned or tied to the

waistband. If the swelling is slight or the patient restless the sling tends to slip up. This may be easily obviated by sewing a tape to that portion of the sling immediately under the scrotum, carrying it between the nates and attaching it at the back to the waistband. Some patients prefer a T-bandage, using for the perineal band a wide strip of cloth, or a towel folded lengthwise. A less efficient elevation may be obtained by resting the scrotum on a shelf of adhesive plaster passing from thigh to thigh.

Guaiacol.—Of no less importance than rest and suspension are the local measures used to lessen the pain and, if possible, to shorten the attack. The most efficacious application I know is guaiacol. I have employed it pure and in 50% and 10% solutions with glycerin. If seen before the testicle is much swollen, although there is considerable pain portending a sharp attack, a single application of pure guaiacol, laid on with a camel's-hair brush all over one half of the scrotum, may abort the attack. But this application is quite painful and cannot be renewed more than once or twice. I therefore prefer 50% guaiacol, which, if not so likely to abort the attack, can be used with more comfort and will, in almost every case seen before the swelling reaches its maximum, control the pain within three days and check the progress of the inflammation. Indeed, when the inflammation is at its height and any touch is agony, almost instantaneous relief may sometimes be obtained by this application. The weaker solutions I reserve for milder cases. The mixture may be applied once or twice a day. It dries almost immediately. The strong applications cause acute desquamation—a minor discomfort.

Nitrate of silver (10%) is preferred to guaiacol by some. It is usually applied but once. It often fails to relieve.

I have not tried Bettmann's salicylate of methyl (1 part, olive-oil, 2 parts). He employs it on cotton covered with gutta-percha tissue.

Heat.—Next in value to guaiacol stand the various poultices. As long as the patient remains in bed these may be advantageously employed with the guaiacol. In fact it sometimes seems as though after the first sharp attack had passed, the remaining inflammation resolves more quickly under poultices than under anything else. The old-fashioned tobacco poultice[1] still enjoys great vogue as a pain-killer,

[1] The poultice is made by mixing a paper of any fine-cut tobacco (1 ounce) in about 10 ounces of hot water, bringing the whole to a boil while stirring it briskly, and then adding ground flaxseed, with or without ground elm-bark, until the proper consistence of a poultice is obtained, stirring the tobacco well in with the meal. A poultice of this mass is made about a quarter of an inch thick, and large enough to envelop the whole testicle. A piece of fine muslin is put on the surface of the poultice, which is perhaps sprinkled with laudanum, and placed upon the testicle as hot as can be borne, the whole covered with a piece of oil-silk—for cleanliness' sake as well as to retain the heat—and supported in the handkerchief sling above described.

but in this it is excelled by the guaiacol, and, in the later stages, any poultice is equally efficient. Cold applications are not so good as hot ones. I have tried ice and abandoned it.

Strapping.—The patient is kept in bed and this treatment maintained until the pain has become bearable and the swelling remains at a standstill or begins to subside. This is the signal for strapping, at first lightly, then each day more tightly, until the edema is driven from the testicle. The strapping should be done so as to produce the maximum of pressure with the minimum of discomfort, and at no time should the testicle, which remains tender, be squeezed tightly enough to produce any lasting uneasiness. The method of strapping the testicle which I now employ is as far superior to the old way with overlying strips of adhesive plaster as guaiacol is to a tobacco poultice. A strip of light rubber (Martin) bandage, 15 or 20 cm. long and 10 cm. wide, and a piece of adhesive plaster, 1 cm. wide and 10 cm. long, constitute the apparatus. This adhesive strip for fastening is a most valuable addition and is due to the suggestion of Dr. Chetwood. It is stuck to one end of the bandage (Fig. 165) and all is ready. The scrotum is gently lifted and the uninflamed testicle pushed up out of the way.[1] The inflamed organ is then encircled with the rubber bandage as tightly as the patient can bear it (this is a matter of experience), and as the bandage is wrapped in place the adhesive plaster is brought around, and holds it fast (Fig. 166). Absolutely the only precaution necessary is to get the line of greatest pressure above the line of greatest swelling—i. e., to make the adhesive plaster encircle the organ above its equator, for otherwise it will promptly slip off. The advantages of this bandage need not be enumerated, but the chief one is that it may be removed daily or every other day to be put on more tightly. This it is expedient to do. Also it sweats the scrotum, acting like a poultice.

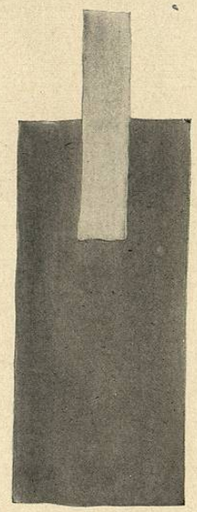

Fig. 165.—Rubber Bandage for Strapping.

[1] To hold the testicle in place until the rubber can be snugly adjusted, it is occasionally necessary, as a preliminary step, to encircle the scrotum rather tightly above the testicle with a strip of gauze bandage.