Last, but not least, *no local treatment to the urethra* should be attempted during or after an attack of epididymitis. It will only harm the testicle without helping the canal. The length of time that must elapse before the urethra is again treated locally differs with every case. For some a few weeks suffice; others can never again take an instrument without more or less risk.

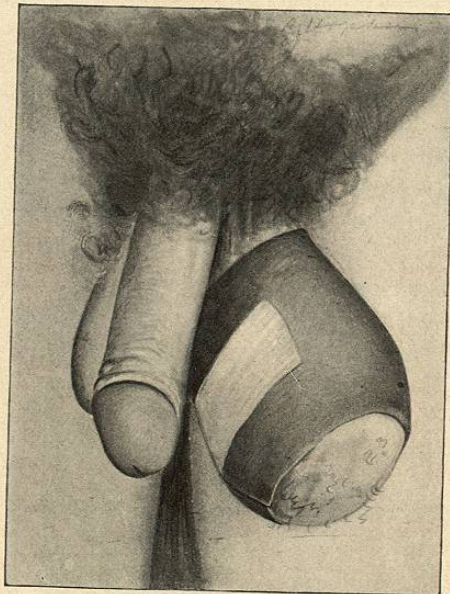

Fig. 166.—The Bandage Applied.

Leeches along the cord have been found useful, and puncture of the tunica vaginalis when it is extremely distended is sometimes followed by striking and immediate relief. Neither of these, however, should be employed as a routine measure.

Some patients refuse to go to bed, taking narcotics and wearing a poultice while they continue at their work. Such a course is certain to prolong the attack, and may result in chronic relapsing epididymitis. Then again, the impatience of restraint felt by a man lying on his back and suffering no pain, often induces him to leave his bed too soon, and sometimes a relapse is thus provoked. Patients anxious to be about should be advised from the start that they will save time and trouble, and perhaps avoid destroying the functional activity of the testicle, by yielding at once to the necessities of the case and going to bed. They may be assured that often four or five days are enough, and that not more than a week, or, in the worst cases, ten or twelve days in bed will be required, if they will lie absolutely quiet for that period.

A laxative and a light diet are in order while the patient is in bed. No internal medicine has any effect on the disease. I do not believe that iodid of potash aids resorption.

Recurrent Epididymitis.—Each attack of recurrent epididymitis may be treated by the measures detailed above; but between times preventive measures must be instituted to ward off future attacks. This prophylactic treatment may be directed towards the general health, the posterior urethra, and the testicle itself.

A strict hygiene, sexual and general, is essential in every case.

Aided by tonics, milk, fats, etc. (with perhaps a vacation and a change of climate), this alone may effect a cure.

The treatment of the posterior urethra depends upon its tolerance. If it will bear instrumentation, instillations, irrigations, and prostatic massage may well help; but in a certain proportion of cases such attempts only serve to stir up the testicle and make the patient worse. The hot rectal douche is here peculiarly applicable since it is absolutely harmless. Balsams, alkalies, and urinary antiseptics given by the mouth may be of service if not pushed to the point of straining the stomach.

The testicle itself should always be supported. I have known a man who could not for three months leave off a towel T-bandage which slung his testicles over his abdomen. No lesser support would prevent a recurrence of the attacks. Yet he is now permanently well. This case sufficiently exemplifies the principle involved.

If all these palliative measures fail, there is but one alternative. The patient must either get along with his testicle as well as he may, or submit to vasectomy. I hesitate to advocate this operation because it sacrifices the virility of a testicle which, from the very fact that recurrence of inflammation is possible, is probably able to produce spermatozoa, and because I confess it is hard to believe that this sacrifice will effect a cure in every case—and to sacrifice the testicle without curing the epididymitis would indeed be a grave error. But, on the other hand, in every one of 10 cases put to the test, the effect has been immediate, absolute, and permanent.[1] Not one died, not one relapsed, not one but was intensely gratified with the operation. I have watched one case for four years, others for a less time. Dr. Chetwood devised the operation, and the 10 cases mentioned are all his. This, at least, can be said of it: that the operation itself is quite insignificant, and that, like epididymitis, it never causes impotence, loss of desire, or atrophy of the testicle.

Vasectomy.—Under local or general anesthesia, and with the usual aseptic technic, the spermatic cord of the affected side is picked up by the surgeon and its various structures allowed to slip several times through his fingers. When he has identified the thickest and most cord-like structure of the group—which he finds behind and to the inner side of the others, one of the first to slip from his grasp—he brings it by a little dextrous manipulation close to the skin and quite free from the surrounding veins. A single small incision suffices to expose the tube with white fibrous walls, the vas defer-

[1] Chetwood, *loc. cit.* I have performed vasectomy once for this purpose and with an equally happy result.

ens, in fact. This is hooked out through the little incision, divided, each end ligated, and dropped back. A single suture closes the skin incision, and the operation is completed.

Only two points require emphasis. The incision is made near the raphe in front, and the vas should be freed as high up as possible and as completely as possible. If neatly performed there is no danger of hemorrhage after the operation. If there is any doubt, however, the adhesive plaster dressings may be applied (p. 727). The patient should remain in bed five days.

If the testicle is swollen at the time, it may be more convenient to seek the vas in the groin (p. 782).

ORCHITIS

Secondary orchitis—orchitis complicating epididymitis—is common. Primary orchitis—orchitis due to traumatism or to systemic disease—is rare. Exceptionally orchitis occurs without discoverable cause. Very rarely, true orchitis without epididymitis results from posterior urethritis, the epididymis being skipped by the inflammation.

Varieties

Several types of orchitis may be distinguished:

1. Traumatic orchitis. Testis and epididymis are both involved, and the malady runs a course quite comparable to that of acute epididymitis.

2. A low grade of orchitis, little more than a neuralgia. This attacks gouty or rheumatic individuals, and may be caused by a slight strain or by sexual excess.

3. Orchitis due to acute inflammations elsewhere. We are chiefly concerned with this form of the disease. It is a common complication of mumps, and has occasionally been met with during typhoid fever,[1] influenza, small-pox, tonsillitis, and rheumatism.[2] (*Cf.* Curling, Kocher, Jacobson.) The orchitis of mumps is a type of all these.

Traumatic Orchitis.—Severe contusion, commonly a kick or a blow inflicted by a missile, causes an acute inflammation of the testis and epididymis, which, though usually short-lived, may terminate in atrophy of the testis, abscess, or gangrene. Lesser bruises or strains cause an inflammation which habitually terminates in resolution only. Yet atrophy may follow a slight injury.[3]

[1] *Cf.* Kinnicutt, Med. Record, 1901, lix, 801. [2] Guyon's Annales, 1894, xii, 306. [3] *Ibid.*, 1885, iii, 230.

Orchitis from strain has been attributed to spasm of the cremaster and to compression of the cord by the abdominal muscles (Velpeau).

Spontaneous Orchitis.—Delorme[1] cites cases of orchitis due to ungratified sexual excitement and excessive venery. A slight congestion with pain, tenderness, and a little swelling, is often met with from such causes.

The Orchitis of Mumps.—The orchitis of mumps is most frequent at about puberty. It is almost unknown in childhood. It comes on near the end of the first week of mumps, and is usually confined to a single testicle. The testicle may, however, become inflamed before the parotid, and the mumps may even be confined to the testicle. It occurs in at least 5% of cases of mumps in young adults. Indeed, Laveran[2] met with 156 cases of orchitis among 432 cases of mumps occurring in soldiers. The epididymis may or may not be involved. The affection runs a quick course of about a week or ten days, very rarely terminates in suppuration, may subside without leaving behind any impairment of the organ, but is often followed by atrophy. Thus atrophy occurred in 73 of Laveran's cases—an unusually large proportion. Abscess and gangrene are very rare terminations. This form of orchitis has been fancifully termed metastatic. It is, however, nothing more than an expression of the disease. The inflammation of the testicle is no more metastatic than is the inflammation of the parotid.

Symptoms

Local Symptoms.—In true orchitis the testis increases slowly in size, and seldom becomes very large until the affection has lasted several days. This is due to the unyielding nature of the albuginea, and to the fact that there is usually no effusion into the tunica vaginalis. The pain, which is often excruciating, and always out of proportion to the amount of swelling, is due to the tension of the albuginea. This pain has been compared to that of nephritic or hepatic colic. No position gives rest, and any handling of the organ may induce syncope. The irritated cremaster contracts upon the sensitive testis and draws it up towards the groin. The pain continues severe for several days, and then gradually becomes more bearable, or it may suddenly cease altogether. This last circumstance is gratifying to the patient only. The surgeon learns it with regret, for he knows that it may mean gangrene of the organ.

The shape of the testicle is rarely altered in orchitis; it is smooth-

[1] Thèse de Paris, 1877. [2] Med. Times and Gazette, vi, July 20, 1878.

ly, regularly ovoid. The epididymis is not distinguishable from the rest of the tumour. The organ feels peculiarly indurated, the natural elastic feel having entirely disappeared. The scrotal tissues are often red, swollen, edematous, inflamed.

General Symptoms.—*The general symptoms* in true orchitis are marked, often severe: chills, high fever, anorexia, nausea, vomiting, hiccough, constipation, sleeplessness, anxiety, and great nervous irritation. The general symptoms have been compared to those of strangulated hernia, and, indeed, there is more or less strangulation of the testicle within its tight, fibrous sheath.

Termination.—The disease usually terminates by resolution. The testicle may then remain normal or it may go on to *atrophy*, this process requiring several weeks, at the end of which time nothing is left of the testicle but a small, insensitive mass. *Abscess* is a rare termination and gangrene still more rare. The former is often announced by the occurrence of chill. After the chill the testicle commences to enlarge more rapidly, the scrotal tissues adhere to its surface, and, after a longer or shorter period, according to the depth at which the pus forms, a soft, fluctuating spot surrounded by indurated borders clearly indicates the position of the purulent collection. After the pus has escaped, the severity of the symptoms abates, unless a second purulent collection exists in some other part of the gland. The flow of pus gradually diminishes. As it decreases the swelling subsides and partial or total atrophy of the testicle ensues. The resulting fistula may remain open for years. Sometimes exuberant granulations grow up out of the opening, forming a cauliflower excrescence (hernia testis), which may reach considerable size. Such a tumour growing from an enlarged, hardened testicle and accompanied by enlarged glands in the groin may well give rise to a suspicion of cancer, a suspicion which the history does not justify.

Sometimes in true orchitis an abscess forms centrally, and never comes to the surface. In such a case the symptoms run a despairingly slow course, but the hard and tender organ gradually diminishes in size and undergoes chronic inflammatory induration, while the purulent collection gradually becomes solidified and surrounded by a tough capsule. Such a condition may persist indefinitely, the function of the testicle being destroyed, unless the purulent collections have been very small. A somewhat similar state of affairs may succeed deep abscess which has discharged and remained fistulous for a considerable time. These testicles long remain the seat of chronic pain, and are liable to repeated outbreaks of inflammation.

The onset of *gangrene* is announced by a sudden cessation of the pain. Then, after adhesion to the scrotum, the slough makes its way through the skin, and is found not black, or brown and fetid, but yellowish, dry, and soft. It is a dry gangrene, a necrosis, and may be pulled away in long filaments.

Treatment

Treatment.—It is stated that the orchitis of mumps does not occur if the patient is kept in bed for eight days. Such a precaution is therefore a wise one for all young adults, though they cannot always be made to comply with it. The testicles should also be kept supported.

After the attack has once begun but little can be done beyond ameliorating the symptoms and endeavouring to prevent abscess or gangrene. The subsequent atrophy cannot be averted. The patient needs no urging to keep him in bed. Isham[1] refers to several reported cases which did well under jaborandi. I have used the drug and think well of it. Guaiacol and poultices may be employed to relieve pain. Early employment of these means gives the testicle its best chance. If in spite of them the symptoms fail to abate, on the slightest suspicion of impending gangrene, or in any case where the symptoms run very high, it is wise to resort without delay to subcutaneous section of the tunica albuginea in order to take off tension from the strangulated parts within. This simple operation is readily performed with a sharp tenotomy knife introduced through the skin, and then made to cut the tense fibrous capsule, while the testicle is steadied in the other hand. The incisions should be carried fairly through the tunica albuginea, three to six short cuts 5 to 10 cm. long being made at different points on the surface of the testicle. The pain will usually cease after the tension has been relieved. If abscess form, puncture should be made on the first appearance of fluctuation. For gangrene castration should be performed.

Nature and time are the chief agents in closing fistula of the testicle. All that art can do is to make the opening dependent, slit up sinuses, keep the parts clean, apply some stimulating lotion or injection to the sinus, and build up and maintain the patient's general health.

Benign fungus (hernia testis) may be cauterized, cut or tied off, subjected to pressure by adhesive straps, or, preferably, after other diseased conditions have been subdued, the edges of the wound may be incised, freshened, and united by suture after the fungus

[1] Am. J. of Med. Sci., 1878, lxxvi, 369.