

above-mentioned book and—*nocturna versate manu, versate diurna!*

The following will conclude my remarks: A special form of reduction is *reduction en bloc*. Any one may have the ill-luck to reduce the hernia with its sac, and the strangulation will then continue unrelieved within the peritoneal cavity. Many such cases have been diagnosed and operated upon. The diagnosis can be made from the fact that (1) an irreducible hernia with symptoms of strangulation was found; (2) taxis was difficult; (3) reduction was accomplished suddenly, perhaps accompanied by a tearing sound, and without gurgling; (4) symptoms of incarceration persisted; (5) careful inspection of the abdomen, in cases of inguinal hernia of the scrotum also, shows a retraction (in inguinal hernia the testicle is drawn up); (6) in the neighbourhood of the hernial ring the belly is full and tense. Occasionally coughing will cause the hernia to reappear. If not, incision of the abdomen will show the whole sac in the preperitoneal space. Draw it out, open it, and relieve the strangulation.

CHAPTER XXV

SCROTAL TUMOURS

MAKE it a rule to determine at the outset from which side a scrotal tumour takes its origin. In simple cases, inspection alone suffices; in doubtful cases, the sound side will enlighten. That side on which only the testicle and its adnexa are found is the healthy one. Whether this is the right or left, can be determined by following up the vas to the inguinal canal. This test may be necessary in some scrotal tumours—for instance, in eventrations—in which the raphe has been obliterated, and the testicle of the sound side pulled or crowded in any direction. This examination will also show whether both testicles are present or not.

The next manipulation is intended to test the limits of the tumour in relation to the external ring. Let us assume that the surgeon stands to the right of the recumbent patient. He should place the four fingers of his left hand beneath the scrotum, and, so to speak, load the tumour upon them; the thumb is placed on the anterior surface of the swelling, close to the external ring. By combined pressure, anteriorly with the thumb, posteriorly with the index-finger, the swelling can be palpated and allowed to glide between these two tactile surfaces. This will enable us to judge

whether we are dealing with the vas and its covering or with some other mass in addition, and also whether the vas is normal or abnormal. Let us assume that the manipulation shows that the tumour extends into the inguinal canal, or that it leaves us in doubt whether the spermatic cord alone, or cord and some other structure, are present. This uncertainty is apt to occur if the patient is stout. Two possibilities must then be considered. The swelling either ends somewhere within the inguinal canal or it extends into the abdominal cavity. A tumour which extends into the abdomen may be a hernia, a hydrocele in the open processus vaginalis peritonei, or the so-called bilocular hydrocele. These three swellings have certain points in common. They can be partially or completely reduced, lying down makes them smaller, and coughing imparts an impulse. Reduction, however, is characteristic of each variety. The hernia reduces suddenly, often accompanied by a gurgling sound if the contents is gut. The fluid in the open hydrocele runs out slowly in response to steady pressure, sometimes giving the impression of trickling fluid caused by the currents set up in the narrow neck of the sac. The bilocular hydrocele can be only partially emptied toward the abdominal cavity. It is, however, desirable to possess other clear and unambiguous signs by which the correct diagnosis can be made. The following will be of service: A tympanic note over the tumour points to hernia; translucency excludes hernia. A *hydrocele* of the open *tunica vaginalis* and a *bilocular hydrocele* must next be differentiated. The latter represents a collection of fluid in the *tunica vaginalis communis*; the contained fluid can spread only in the extraperitoneal pelvic space, and

must have a definite boundary within that area. Fluid in the *processus vaginalis peritonei* reduces into the general peritoneal cavity, and is lost in a relatively boundless space. The above-mentioned variety of bilocular hydrocele takes its origin from an effusion of blood. The true bilocular hydrocele originates from a vaginal process, which is originally shut off above, but which, after the hydrocele sac is overdistended by the accumulating fluid, gradually pushes a diverticulum upward. In this form the fluid is limited within the pelvis by a serous membrane, which is the diverticulum of the closed *processus vaginalis peritonæi*. The well-defined boundary within the pelvis is characteristic. Consequently, in each case of bilocular hydrocele (called by the French *hydrocèle en bissac*) a circumscribed fluctuating mass can be felt in the iliac fossa. Its contents can be partially emptied into the scrotal portion, and vice versa. Pressure upon the scrotal division increases the tension of the intra-abdominal part, and vice versa. This sign makes it impossible to confuse the bilocular hydrocele with either of the other two tumours. It holds true no matter what the contents prove to be—serum, blood, or even pus. This sign is especially valuable in reference to adherent herniæ which at the time of examination happen to contain no air, for they also are only partially reducible. The impulse on coughing, as has been mentioned before, is more direct and precise in herniæ, but the well-defined circumscription of the swelling within the abdomen excludes hernia beyond a shadow of doubt.

Other scrotal tumours which extend toward the abdomen need not be considered from the standpoint of differential diagnosis in connection with the above-

mentioned three forms of scrotal swellings, because their nature can be recognised by other signs. A malignant neoplasm of the testicle, which extends along the vas into the inguinal canal, is recognised by other symptoms. The nature of a *varicocele* is also apparent from both its appearance and its peculiar consistency. At the worst, a varicocele might be confounded with an epiplocele, because both have a cordlike arrangement. But error is avoided by noticing the ready compressibility of the distended veins in varicocele, their increase in size when the proximal end is compressed, the bluish colour of the veins which give the impression of angle-worms, and, finally, the coincident varicose condition of the skin of the scrotum.

If we have demonstrated that the tumour does not extend through the inguinal canal into the abdomen—as can be done by proving inability of reduction, either total or partial failure to empty the fluid, and absence of impulse on coughing—other possibilities must be taken into consideration. The tumour may end within the confines of the inguinal canal. Hydroceles are met with which first distend the scrotum and then end high up in the inguinal canal. If the swelling is more cylindrical, and the circumference of the testicle can be felt free at its lower end, or at least distinctly separated from it, the plainly fluctuating and translucent tumour is a hydrocele of the funicular process. If the swelling is pear-shaped, with its narrower end above, and the testicle hidden, the tumour is an ordinary hydrocele of the tunica vaginalis. In these cases it may be possible to draw the tumour downward away from the inguinal canal, and thus more plainly define its upper boundary.

The typical *funicular hydrocele*—serum in the unob-

literated remains of the processus vaginalis—forms a *small* tumour, which not infrequently assumes the shape and consistency of the testicle. The inexperienced may mistake it for a third testicle; but as such an occur-

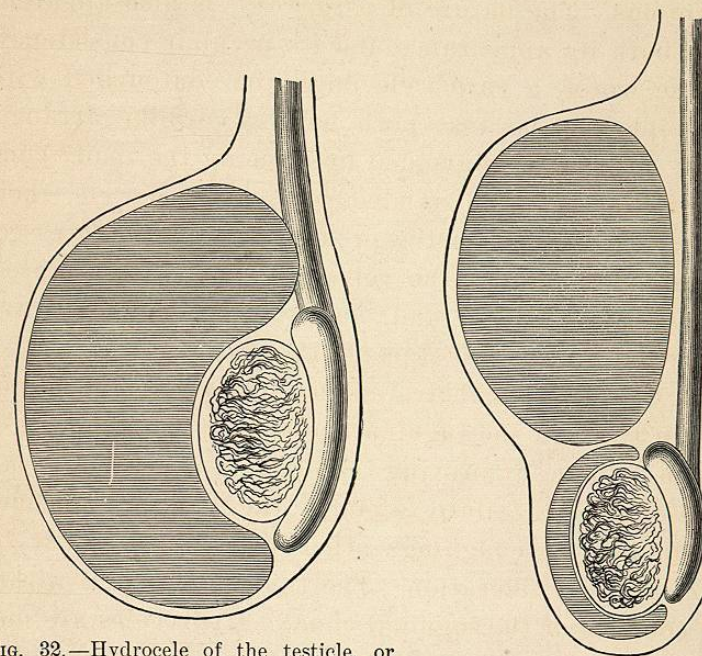


FIG. 32.—Hydrocele of the testicle, or tunica vaginalis (ordinary hydrocele).

FIG. 33.—Funicular hydrocele.

rence is unknown, this suspicion may at once be dismissed. The hydrocele of the funicular process is also more translucent and usually more tense than the testicle.

It is not always possible to demonstrate translucency in a hydrocele, for the sac may be greatly thickened, and in some cases contain plates of bone. Translucency is characteristic of a purely serous effusion. Thickening of the walls points to a plastic inflammation of the tunica, to which the hydrocele owes its ex-

istence. Taking all other signs for granted, we then only remain in doubt as to whether the contents is purely serous or hemorrhagic; but a collection of fluid in the tunica always exists under these circumstances. A *hematocele of the tunica* can arise only if a hydrocele has preceded it. The other variety of hematocele—*hematocele of the funicular process*—consists of an effusion of blood into the connective tissue around the cord, which extends into the subserous tissues of the pelvis. This hematocele might be called a hematocele of the tunica vaginalis communis. In order to comprehend its nature, it is only necessary to recall the previously mentioned bilocular hydrocele. After a direct trauma, a hemorrhagic effusion rapidly collects in the scrotal tissues, and from there extends into the cavity of the pelvis, where it is sharply defined. With this effusion as a starting-point, the one variety of bilocular hydrocele can originate by encapsulation. If of recent origin (at times increasing in size under our eyes), the tumour can not be confused with a hydrocele, as the bloody infiltration of the outer layers is characteristic. The final outcome of encapsulation is, as has just been stated, the one form of bilocular hydrocele.

In addition to the simple funicular hydrocele a *multilocular* is also found. The name merely indicates that the hydrocele of the cord, instead of being single, with smooth surface (either cylindrical, pear-shaped, or rounded in form), is composed of several knobby masses, but otherwise possesses all the attributes of an ordinary hydrocele.

There is also a *diffuse* hydrocele of the cord, by which is meant an œdema of the cellular tissues about the vas. Only one undoubted case, however, is on rec-

ord. The accounts given by older authors may most reasonably be explained by assuming that they were dealing with bilocular or multilocular hydroceles.

It ought not to prove difficult to diagnose complicated conditions unless the cases are very extraordinary.

The simplest complication is a hernia. A hydrocele of the tunica exists, and above it a hernia may develop. The signs then consist of a reducible or tympanitic tumour above, or, if the hernia is adherent and contains no gas, at least an opaque tumour which gives an impulse on coughing. Below a translucent tumour, fluctuating and not affected by coughing, is found. The testicle is hidden or the testicle appears below; above it is a circumscribed, translucent, fluctuating tumour, and still farther up the hernia. This combination is formed by the funicular hydrocele complicated by a hernia. Very remarkable are the cases in which the hernial sac invaginates the hydrocele sac. This may take place either in a hydrocele of the tunica or of the cord. The hydrocele surrounds the hernia just as the tunica vaginalis surrounds the testicle. This is the *encysted hernia* of Astley Cooper. (As a rule, the hernia descends *behind* the hydrocele.)

The name of *hernial hydrocele* is applied to hernial sacs which contain a considerable quantity of fluid. The sac may fail to contain intestine; it then forms a translucent, fluctuating swelling, which can not be emptied if the neck is shut off from the general peritoneal cavity. The swelling can, in other cases, be emptied, but the fluid slowly flows back when the patient gets up and walks about. If intestine also descends, we find a hernial tumour, of which the depend-

ent portion is translucent and fluctuating. When this happens in a child, we have a vaginal hydrocele, opening into the peritoneal cavity, through which a hernia has come down; the sac is composed of the processus vaginalis peritonæi. In an older subject, the anamnesis must show whether an exudative inflammation has not given rise to a serous effusion into the hernial sac.

To return to our first point of departure. Let us assume that the inguinal canal and the vas deferens are uninvolved, but that we are dealing with a swelling of the testicle. Such swellings are, for practical purposes, best divided into those of acute inflammatory, chronic inflammatory, and non-inflammatory origin.

ACUTE INFLAMMATION OF THE TESTICLE—acute orchitis—is marked by reddening and œdema of the skin, severe pain on pressure, also spontaneous pain, and swelling of the testicle. The most common errors in diagnosis are the result of confusing an acute epididymitis or an acute effusion into the tunica with orchitis. It is not difficult to make a correct diagnosis if the following points are kept in mind: The inflamed epididymis forms a hard, painful swelling, which is concave in front, and attains about the size of a thumb. The testicle rests in its concavity. We therefore find a round, soft, and slightly less tender mass, which corresponds in size to the normal testicle, embedded in the tense tumour formed by the inflamed epididymis. This mass is the testicle proper.

In acute hydrocele of the tunica distinct fluctuation can be obtained around the testicle. It is characteristic that if the testicle is fixed by skilful manipulation, its outline can be plainly felt through the surrounding layer of fluid. If the stringlike structure of the epi-

didymis can be made out posteriorly, the inflammation is confined to the tunica. More often the epididymis is also involved, in which case fluctuation is felt only in front and somewhat laterally.

Simple orchitis is uncommon. It is characterized by the absence of all signs of epididymitis and acute hydrocele. Fluctuation is wanting in front, and posteriorly the normal or sometimes harder epididymis can be felt. Frequently all three conditions coexist,

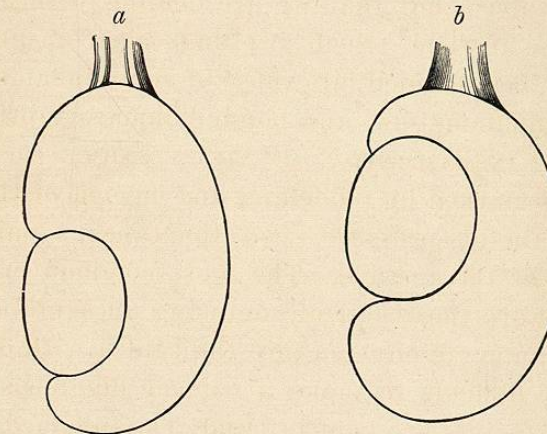


FIG. 34.—Diagram representing the conditions in epididymitis. In *a* the head, in *b* the tail, of the epididymis is more enlarged.

orchitis being followed by epididymitis, and these further complicated by an effusion into the tunica. The orchitis may be diagnosed by the very severe pains, both spontaneous and on pressure, by the swelling of the whole cord upward as far as it can be palpated, and by the violent pain in the loins. Usually the inflamed organ itself feels enlarged.

Formerly, it was accepted that orchitis could not occur without the most violent pain, and that the swelling of the testicle could never attain an appreciable size, because that organ is inclosed by its firm