

It has been alleged that post-operative insanity is especially common after double castration. If true, this is doubtless due to the mental shock upon an individual who attributes an exaggerated importance to this gland. I do not believe it due to the withdrawal of the internal secretion of the testicle.

## CHAPTER XII

## HYDROCELE AND HEMATOCELE

HYDROCELE is usually defined as an accumulation of serous fluid in the tunica vaginalis. This definition covers the ordinary cases; but hydrocele may also occur in the funicular process of the peritoneum (encysted hydrocele of the cord) or in the form of a number of cysts about the head of the epididymis or along the cord (encysted hydrocele). The fluid may be bloody (hematocele), milky (chylocele), or filled with spermatozoa (spermatocele). These varieties will be discussed in the next chapter. Serous hydrocele of the tunica vaginalis alone concerns us here.

**Varieties.**—Hydrocele may be idiopathic or symptomatic. It may be acute or chronic. While all idiopathic cases are chronic, not all symptomatic cases are acute, therefore the terms are not quite interchangeable.

## SYMPTOMATIC HYDROCELE

As its name suggests, symptomatic hydrocele occurs only as a symptom of disease in the testicle and epididymis. It is often acute, and is especially common with acute epididymitis, syphilis, and the more acute forms of tuberculosis. Indeed, according to certain French writers, the acute tuberculosis of the testicle often begins as a tuberculosis of the tunica vaginalis. Hydrocele also accompanies quite frequently all other diseases of the testicle and epididymis. A *fibrous vaginalitis* has been identified post mortem or after castration. It gives no clinical symptoms. The *serous vaginalitis*, as symptomatic hydrocele is sometimes called, rises and falls with the disease of which it is a complication. It is acute with acute disease, chronic with chronic disease. Injections into the vaginalis may cause an acute hydrocele (p. 761).

**Treatment.**—The treatment of symptomatic hydrocele is, in some degree, comparable to the treatment of serous pleurisy. If the primary disease is acute and the hydrocele insignificant, it may be dis-

regarded and allowed to be absorbed as the acute disease abates. If large and tense, or its absorption too slow, it may be aspirated one or several times, after which it will disappear in due course. But if the primary disease is chronic, while aspiration may hold the hydrocele in check some more radical procedure is often demanded. The treatment by injection, which is so habitually successful in idiopathic hydrocele (p. 761), may be tried, but it often fails. The need of a more radical procedure may prove the surgeon's opportunity to induce the patient to submit to an operation upon his testicle from which he otherwise would shrink.

#### IDIOPATHIC HYDROCELE

Most French writers maintain that there is no such thing as idiopathic hydrocele, that every *vaginalite séreuse* is symptomatic.

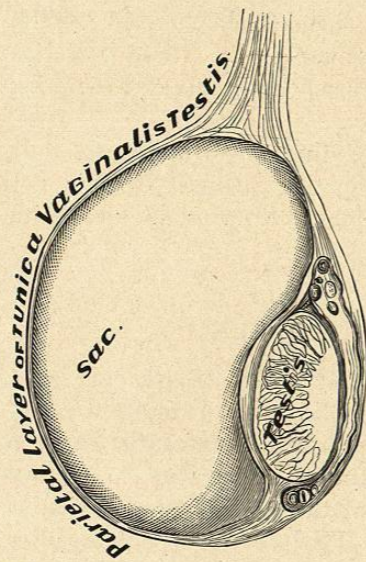


FIG. 167.—USUAL FORM OF HYDROCELE.

**Varieties.**—Hydrocele is usually confined to the tunica vaginalis (Fig. 167). In infants, however, it may occur before the funicular process has begun to close (*congenital hydrocele*), so that the cavity of the hydrocele communicates with the peritoneal cavity, yet by such a small opening that there is often no hernia and the fluid does not spontaneously drain off into the abdomen (Fig. 169). A more frequent variety is *infantile hydrocele*, occurring when the funicular process has quite closed at its upper end, so that the fluid distends

This theory I cannot accept, since it does not explain why idiopathic hydrocele is so common in the tropics; why idiopathic hydrocele does not follow acute epididymitis, a disease which leaves far greater changes in the epididymis than those alleged as cause of idiopathic hydrocele; why idiopathic hydrocele, is, in all its clinical features, marked out as a clinical entity, while symptomatic hydrocele is so manifestly dependent upon neighbouring inflammation. The clinic at least teaches that idiopathic hydrocele is a distinct malady, not a dropsy, but a definite disease of the tunica vaginalis, known only by its effects, and hence deserving the title of confessed ignorance—viz., idiopathic.

both vaginalis and funicular process (Fig. 170). Hydrocele occurring in a retained testis is termed *inguinal hydrocele*. These and other varieties mentioned above will be dealt with in the next chapter.

#### ETIOLOGY

Hydrocele does not occur as a dropsical phenomenon, and it has already been distinguished from inflammatory or symptomatic vaginalitis. It is possible that certain cases are due to the bursting of an epididymal cyst into the tunica vaginalis,<sup>1</sup> but beyond this we are quite in the dark as to its cause.

Hydrocele is most common in the middle-aged. In the tropics it is said to afflict one man in ten. It is far less common in temperate climes.

#### MORBID ANATOMY

**The Character of the Fluid.**—The fluid of hydrocele is viscid, odourless, straw-coloured, clear or opalescent. It looks like blood serum. Its specific gravity is about 1.024. It contains about 6% of organic matter, notably fibrinogen, to which it owes its property of coagulating blood serum. The alkaline carbonates and sodium chlorid are present in some quantity. The reaction is neutral. The presence of fibrinogen and inorganic salts distinguishes it from ascitic fluid. It may contain a few flakes and strings resembling urethral shreds. It is sometimes full of bacteria, sometimes brown from the admixture of blood. These bacteria and this blood are usually the result of previous punctures. The microscope reveals blood and epithelial cells and leukocytes. Cholesterol crystals are usually present, not often in any numbers. Suppuration is rare.

**The Quantity of Fluid.**—A good-sized hydrocele contains about a pint of fluid. Mr. Cline removed 6 quarts from the scrotum of Gibbon the historian. Breisson, after removing 16 litres on one occasion, drew 26 litres from the same patient ten months later. It takes from three months to a year for a good-sized hydrocele to refill after tapping. The largest hydrocele I have tapped held 2 quarts.

**The Tunica Vaginalis.**—The sac of a hydrocele may remain normal in structure even after the disease has existed for some time. Support to the testicle and systematic tapping may prolong this condition indefinitely. But if the scrotum is not supported, the slight bruising which the tumour continually suffers may produce a chronic thickening in the tunica vaginalis. In such instances the surface loses its gloss and becomes wrinkled and irregular, while the vaginalis becomes thick and leathery. Here and there warty growths may pro-

<sup>1</sup> Lancet, 1885, i, 748.

ject, and there may be cysts in the epididymis. Adhesions and masses of fibrin result from inflammation and are features of inflammatory, but rare in idiopathic, hydrocele. Obliteration of some part of the sac may subdivide it, causing the rare *multilocular hydrocele*. I have once met with *calcification of the vaginalis*, a very rare condition, which has been exhaustively described by Roswell Park.<sup>1</sup>

**The Testicle and Epididymis.**—Unless inverted or displaced by adhesions, the testicle lies below and behind the hydrocele. In mild cases the testicle remains normal, but after evacuation of the fluid one or more areas of induration may commonly be found in the epididymis. These are points of intertubular edema due to the interference with circulation. In old and inflamed cases of hydrocele, both testis and epididymis may be quite sclerosed and so atrophied as to be scarcely recognisable in the sac wall. Sometimes the tunica vaginalis forces its way between the testicle and epididymis, forming quite a pouch there.<sup>2</sup>

**Multilocular Hydrocele.**—Multilocular hydrocele is quite rare. It may be produced in one of three ways:

1. Several varieties of hydrocele exist simultaneously (e. g., hydrocele of the vaginalis and hydrocele of the cord).
2. The sac becomes subdivided by adhesions.
3. There is hernia of the sac between testis and epididymis.

**Fibrous Bodies.**—The so-called fibrous bodies occasionally met with upon opening a hydrocele are concretions of earthy phosphates or carbonates covered with fibrin. Probably they are for the most part due to a deposition of the hydrocele salts upon some warty growth, followed by atrophy of the little nucleus, after which the concretion breaks free. Wendlung met with concretions 6 times in 109 operations (Péaire<sup>3</sup>). They do not exceed the size of a pea—though Chassaignac met with one 2 cm. long and 12 mm. wide—and are usually single.

#### SYMPTOMS

Idiopathic hydrocele is always chronic. The effusion takes place slowly and painlessly, and the swelling is only discovered after it has attained some size, for which reason the patient fancies it has appeared suddenly. The accumulation of fluid is slow and interrupted, but continues indefinitely. After tapping, the reaccumulation is at first rapid and then slow until the tumour reaches its original size, usually several months after tapping. Thus I have a patient who, refusing any radical measures, has returned once or twice a year since

<sup>1</sup> J. of Cut. and Gen.-Urin. Diseases, 1895, xiii, 361. <sup>2</sup> Cf. Jacobson, *op. cit.*, p. 134.  
<sup>3</sup> Bull. de la soc. anat., 1899.

1895 to be tapped, having, for a number of years previous to that date, visited other surgeons for the same purpose.

There are no subjective symptoms attached to hydrocele, except the sensation of dragging felt in the loin and groin from the weight of the tumour.

**Signs.**—Hydrocele is usually pear-shaped, larger below than above; or it may be oval, and, if very large, almost spherical. It cannot be reduced by pressure. Fluctuation can usually be made out. The tumour is generally very tense, the scrotum often stretched and shining. The cord, of natural size and feel, can be grasped above the tumour. The testicle is usually situated behind, a little below the centre (Fig. 167), and pressure on this point gives rise to the peculiar sensation experienced when the testicle is squeezed. Occasionally the testicle is found below and in front, more rarely in the centre, in front, from plastic adhesion. Its position should always be ascertained before operating on a hydrocele. Dupuytren mentions several cases where this precaution was overlooked, the testicle wounded, and the diagnosis unconfirmed. As a rule no serious inflammation results if the testicle be punctured. Pressure on a hydrocele does not produce pain; there is no heat or redness of the skin unless the tumour be large enough to keep it constantly on the stretch. There is flatness on percussion. There is no impulse on coughing. Exceptionally a large hydrocele extends into the inguinal canal and so exhibits a slight cough impulse.

The weight of the tumour is a criterion that has been much depended upon to distinguish solid from fluid tumours. It is absolutely unreliable.

Varicocele and hernia may complicate hydrocele, and the pressure on the testicle may render it sterile. But if the hydrocele is cured the testicle will resume its functions unless it has become atrophied.

Suppuration and transformation into hematocele (p. 770) are rare. Spontaneous cures have been recorded after an infectious disease (Monod and Terrillon), sloughing of the scrotum (Cooper), rupture, and epididymitis. Such spontaneous cures are most unusual, except in the young. Curling cites the case of a Spaniard who had ruptured his hydrocele 30 times by horseback riding and other violent exercises; yet the swelling always returned after a few months. Infants often get well spontaneously, and expectant treatment is therefore most suitable for them.

#### TREATMENT

**Palliative Treatment.**—This is appropriate to symptomatic hydrocele, for children—for whom it is often curative—and for

patients refusing radical measures. Before undertaking any operation for hydrocele the testicle must be accurately located by the testicular sensation or the light test.

**Tapping.**—This is best performed with the aspirator (using needle No. 2, Dieulafoy). The skin is made tense, and the needle

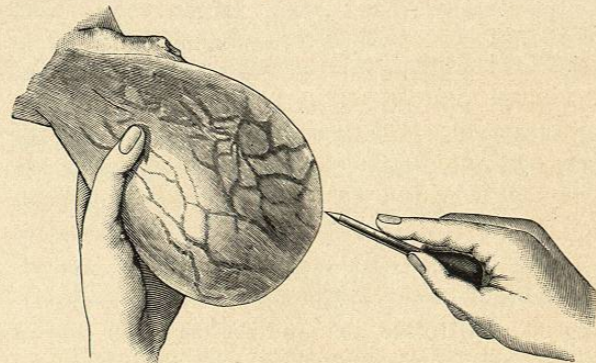


FIG. 168.—THE TAPPING OF A HYDROCELE OF TUNICA VAGINALIS. Showing finger resting on instrument and tumour compressed by hand.

plunged into the anterior part of the tumour, a little above the centre. The testicle should be carefully avoided (Fig. 168).

This simple operation will always efface the tumour at once, but in the majority of instances the sac will begin

to refill in a few days, and after some weeks, or at most months, will have regained its previous size. Sometimes the tumour never refills, and the palliative operation thus becomes radical. This rarely occurs, except in children.

Sir Astley Cooper mentions 2 cases of inflammation with sloughing, followed by death, in old men who took a long walk immediately after the operation. If the collection of fluid is very large, especially if the patient is old, it is well not to draw it all off at one sitting.

If the testicle has been wounded, the patient will complain of some pain, and blood will flow after the serum has been evacuated. To prevent the further effusion of blood into the sac it is advisable to strap the testicle immediately after the operation. Collodion is recommended by some authors to compress the testicle in this and other conditions, but its application to the thin and sensitive integument of the scrotum sometimes gives rise to exquisite and prolonged torture.

**Acupuncture.**—This consists in making the skin tense over the tumour, and penetrating the sac rapidly a number of times with a needle, which should be rotated as it is withdrawn. The serum, in cases so operated upon, gradually escapes into the scrotum (in twenty-four to forty-eight hours), where it does no harm, and whence it is absorbed.

Hydrocele in the adult will usually fill up after this operation, as

it will after tapping, but in children acupuncture often suffices, especially if the internal surface of the sac be scratched. If the cyst wall be thick and the tumour not translucent, neither tapping nor acupuncture will ever effect a cure. Healthy young patients can put on a suspensory bandage and resume work at once after tapping or acupuncture.

Galvano-puncture is useless.

**Radical Treatment.**—Of the many methods of treating hydrocele only two need be detailed—namely, injection and incision—including excision of the tunica vaginalis.

**Injection.**—All simple hydroceles which are translucent, no matter what their age or how great their size, are amenable to treatment and cure by injection. Injection is not applicable to cases where the contents of the tumour are sero-purulent or sero-sanguinolent, or where the tunica vaginalis is extensively thickened, with or without calcareous deposit. In such cases incision or excision should be resorted to. Hydrocele complicating syphilitic or tubercular testis should be let alone or treated by palliative tapping, as it is but rarely curable by carbolic injection. Generally the hydrocele accompanying syphilitic testicle disappears spontaneously as the testicle improves under internal medication.

Celsus alluded to the injection method of treating hydrocele, but Munro, of Scotland, Sir James Earle, and Sir James Ranald Martin, of England, are the names most prominently connected with it. Inflation with air has been employed, and the most varied substances used in injections, from distilled water to the strongest acids. Many substances have been employed successfully, such as spirits of wine, port wine, solutions of alum or sulphate of zinc, air, chlorin gas, lime-water (Curling), chlorid of zinc, bichlorid of mercury, tincture of iodine (Martin), and last and best carbolic acid. When the tumour is very large, it is best first to reduce its size by one or more tapplings, and finally to inject when the surface has become contracted by being relieved from prolonged tension.

If the hydrocele is found to contain more or less blood, injection should be postponed until some future tapping yields a comparatively limpid fluid. I have used many substances in injection for the radical cure of hydrocele, and have finally come to rely wholly upon pure carbolic acid. It is more certain, more speedy, less painful, and less dangerous than any substance I have ever used. To R. J. Levis,<sup>1</sup> of Philadelphia, belongs the credit of having introduced this substance to the profession as a proper injection in cases of simple hydrocele. I have adopted the suggestion with thanks, but think I have improved

<sup>1</sup> Trans. of the Med. Soc. of the State of Pennsylvania, 1881