

## HYDROCELE IN THE FEMALE,<sup>1</sup>

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Mrs. R. H., colored, forty-two years of age, was admitted to St. Luke's Hospital, October 31, 1904.

The family history was negative. The patient, besides the ordinary diseases of childhood, had suffered an attack of malaria six years previous, and of appendicitis one year later.

Her menstrual periods, until recently, were regular and accompanied by some pain. Of late the patient has had many uterine hemorrhages, persisting from four days to a week, during which large clots of blood were passed. The patient has had three normal pregnancies.

The condition for which the patient sought admission to the hospital was a mass in the right inguinal region. This growth appeared eighteen years ago, subsequent to the birth of the second child. The patient stated that the mass had always been reducible, but that it would reappear in four or five days after reduction. Eight days previous to admission the mass would no longer disappear on pressure. The patient now became slightly constipated and nauseated. She had emesis twice. There were severe pain and marked tenderness in the region of the mass.

By physical examination, it was observed that the patient was well developed and fairly nourished. The expression was anxious and the tongue coated. The temperature was 99.6° F.; pulse, 88; and respiration, 28. The leucocyte count was 13,000. A few dry râles were heard over the entire chest. There was a faint systolic murmur over the apex of the heart. Vaginal examination revealed marked tenderness of the adnexæ; the uterus was enlarged and swollen, and there was a white vaginal secretion. The left tube was swollen, and there was a small hard nodule on the right side of the uterus.

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<sup>1</sup> Read before the Chicago Surgical Society, January 16, 1905.

Over the right inguinal region was a soft mass extending from the external abdominal ring into the right labium majus. It was slightly larger than an egg, was oblong in shape, being larger below than above, and was irreducible. It was tense, elastic, and very tender.

The patient was admitted on a diagnosis of strangulated hernia. That it was not a hernia was recognized after she was anaesthetized. An immediate operation was performed. An incision was made parallel to Poupart's ligament. The tumor was found to be separated from the skin by a tough, adherent fascia. This fascia was removed. The cystic tumor was opened and an ounce and a half of pale, straw-colored fluid removed. The sac was freed from the surrounding tissue, and from the round ligament with which it was intimately connected, ligated at its highest point, and removed. The layers of the abdominal wall were sutured as in a Bassini operation for inguinal hernia; the round ligament fastened in the inguinal canal by means of buried sutures. The skin incision was closed by silk-worm-gut sutures in the usual way.

On the day following the operation, the patient was in fair condition. The temperature reached 100.2° F. The leucocyte count was 28,000. During the next few days the temperature dropped to normal and the leucocyte count fell to 12,000.

The anatomical diagnosis was "hydrocele of the canal of Nuck."

The cyst was bilocular, being divided by the internal abdominal ring into an upper and lower sac. The upper sac lay entirely within the peritoneal cavity. The round ligament entered this sac and became attached to its inner smooth surface. At the point of entrance was a small opening which allowed a free communication between the cyst and the peritoneal cavity. The lower sac was much larger than the upper and contained many incomplete septa, giving the appearance of a lymphangioma cysticum. The lower and upper sacs communicated through a narrow constriction at the internal abdominal ring. Near this constriction was found a bean-shaped body which lay free in the lower sac.

Microscopically the cyst wall was found to be composed of dense fibrous tissue. An endothelial lining could not be demonstrated in any of the sections examined. The sac contained a

homogeneous substance which stained faintly with eosin. There were no cellular elements in the contents, and there was no evidence of inflammation in the cyst proper.

The bean-shaped body which was removed from the lower sac was composed for the most part of fibrous tissue with spindle-shaped nuclei. There was a preponderance of extra-cellular substance arranged in wavy bundles. In a few areas were found groups of young mesoblastic cells. One portion of the tissue was infiltrated with red blood-cells and leucocytes, and in this area were also found numerous engorged blood-vessels with newly formed walls. This tissue bore all the evidences of a recent acute inflammatory process. The presence of blood-vessels in this loose body indicates that it was at one time attached to the wall of the hydrocele.

The relation between the history and the anatomical findings seems fairly clear. The ease of reduction previous to the last week was due to the fact that the fluid could be forced from the lower into the upper sac and into the peritoneal cavity. The reappearance of the tumor after a few days was due to the gradual return of the fluid into the lower sac. The sudden irreducibility was probably due to obstruction of the point of communication between the upper and lower sacs by the bean-shaped body found in the lower sac. It is difficult to explain the origin of this small body, but it would appear from its histological appearance to be of recent inflammatory origin. This view is supported by the clinical findings of acute pain and tenderness in the region of the hydrocele.

The terms Hydrocele in the female, Hydrocele of the canal of Nuck, Hydrocele Muliebris have been applied in a general way to all cysts in the inguinal region in the female.

The classification of these cysts as given by Rignoli seems to most completely describe the various anatomical conditions that may there exist. He divides all cases of Hydrocele Muliebris into five groups:

(1) Diffuse hydrocele or hydrocele of the cellular tissue about the round ligament.

(2) An accumulation of fluid in the canal of Nuck, communicating with the free peritoneal cavity.

(3) An accumulation of fluid in the vaginal process without a communication with the general peritoneal cavity, an encysted hydrocele.

(4) An encysted hydrocele in the connective tissue about the round ligament. A condition similar to group 1.

(5) An accumulation of fluid into the remains of an old hernial sac.

The existence of a true hydrocele of the canal of Nuck has been frequently disputed. French writers in general deny the existence of a true vaginal process of the peritoneum, and therefore do not admit of the possibility of a hydrocele in the female. The researches of Zuckerkandl, Niemann, Bergmann, and Sachs establish the existence of a vaginal process of peritoneum in the female.

Bergmann examined 158 female cadavers between the age of one month and three years, and found the canal patulous throughout in five and partially open in twelve. Sachs found it in thirty-seven out of 150, and Niemann in twenty-eight of forty-six that were examined.

Those who claim that it does not exist, base their opinions mostly upon the researches of Velpeau and Duplay. The latter examined twenty-one female embryos after the fifth month, and was unable to demonstrate a patulous canal in any.

Hydrocele in the female is of clinical importance because of its resemblance to an inguinal hernia. In most of the reported cases the true nature of the condition was recognized only when an operation was undertaken for the cure of the supposed hernia. In a few, as in our case, the symptoms of incarceration or of strangulation added to the objective signs of hernia and made the difficulty in diagnosis still greater. Thierhaber reported a case very like ours.

A woman aged forty-two years slowly developed a tumor in the inguinal region, which suddenly increased in size and became painful to touch. The tumor, the size of a goose-egg, filled the inguinal canal and projected below the external ring into the labium. It was dull on percussion, tense, and elastic on palpation. With the pain came obstipation, vomiting, and abdominal distress. The symptoms led to the diagnosis of an inflamed, partially obstructed hernia with excessive fluid in

the heruial sac. Operation revealed a bilocular hydrocele, one part within the abdominal cavity. The two chambers communicated, but did not open into the free peritoneal cavity. The contents of the sac was a turbid floeculent fluid. The sac showed evidences of an acute inflammatory process.

Three similar cases are reported by Chiari. In these infection with inflammation of the sac gave rise to symptoms of intestinal obstruction,—vomiting, abdominal distention, and obstipation. Operation revealed the nature of the condition. In these cases unsuccessful attempts had been made to reduce the supposed hernia. The danger of this procedure is apparent. Although the diagnosis of hernia has generally been made in the cases reported, yet, when the possibility of a hydrocele is kept in mind, the true character of the condition may be determined without operation. The presence of a tense, elastic, fluctuating swelling in the inguinal canal, or extending below the external ring that has developed slowly without any known cause, and that gives no impulse on coughing, will suggest hydrocele. Operation gives the only indubitable evidence of the presence of fluid in the sac. That a hydrocele and a hernia may coexist must also be borne in mind. In our opinion the safest diagnostic procedure is incision. This is also the most rational therapeutic measure to employ.

#### REFERENCES.

- <sup>1</sup> Coley. *ANNALS OF SURGERY*, Vol. xvi.
- <sup>2</sup> Duplay. *Thèse de Paris*, 1835.
- <sup>3</sup> Rignoli. *Archiv. Générale*, Tome v, 1834.
- <sup>4</sup> Sachs. *Archiv für klinische Chirurgie*, Band xxxv.
- <sup>5</sup> Wachselman. *Archiv für klinische Chirurgie*, Band xl.
- <sup>6</sup> Zuekerkandl. *Archiv für klinische Chirurgie*, Band xx.