sac continuous with the other, and suggesting that a higher unobliterated portion of the funiculo-vaginal process has become distended with fluid. Jacobson¹ says that in these cases the funiculo-vaginal process has probably become obliterated high up at the internal ring, and the rest of the process below has become distended with fluid which has ascended in the inguinal canal and formed an upper sac, and that the relative size of the upper and lower sacs depends upon the resistance met with from the surrounding parts. Macewen² admits the possibility of great distension of such a sac obliterated at the internal ring, causing some intrusion towards the peritoneum, though, owing to the abdominal pressure, this would be much resisted, but he does not consider the formation of such a hydrocele outside the internal ring sufficient to explain the formation of intrapelvic and scrotal hydroceles. He suggests that these latter are due to the funiculo-vaginal portion of the peritoneum existing as a sheath lying along the anterior aspect of the pelvic portion of the cord beyond the internal ring, and becoming shut off from the general peritoneal cavity at the deepest part of the pelvic portion of the cord, so that the process is continuous and patent from the testicle to the deepest part of the vas deferens. If such a tube became distended with fluid a bilocular hydrocele would form, with a constriction where it passed through the abdominal muscles.

Macewen further suggests, in order to explain the sudden appearance of the scrotal swelling in some of the cases, that a slight adhesion might have existed in the funicular process where it passed through the abdominal muscles, and that the pelvic cyst having formed first, a sudden strain has broken through the adhesions and allowed the fluid to pass down into the scrotum. In both the cases he reports the patients ascribed their trouble to the sudden strain of lifting a weight, and the scrotal swellings appeared shortly after the strain. On the other hand, the scrotal hydrocele might form slowly if it merely received the overflow from the pelvic sac.

The relation of the intra-abdominal cyst to the peritoneum is interesting, and the descriptions of it vary. Bazy believes that the abdominal sac, as it enlarges, passes backwards and downwards, following the constituents of the cord into the iliac fossa, and that it raises the peritoneum in front of it. If that is the case, an incision through the abdominal wall would have to divide the peritoneum twice before it exposed the sac of the hydrocele. Tillmanns is quoted by Jacobson as having expressly stated that in his case the cyst lay between the parietes and the peritoneum. It would appear that the abdominal cysts are not in exactly the same position in all cases—for example, in Macewen's cases they partly occupied the true pelvis, but in my case did not extend below the brim of the pelvis.

B. G. A. Moynihan,³ in his recent Arris and Gale Lectures, drew attention to the close relationship which seems to exist between properitoneal and interstitial herniæ on the one hand and bilocular hydroceles on the other. He suggests including these herniæ under the title of bilocular herniæ. The anatomical arrangement of the sacs in these herniæ and hydroceles appears to be practically the same in many cases, with the exception that communication with the peritoneal cavity is persistent in the herniæ, but has become shut off in the hydroceles. He points out that in properitoneal herniæ the upper of the two sacs may pass either (1) upwards and outwards or (2) directly backwards, occupying the inner part of the iliac fossa near the brim of the pelvis, or (3) downwards and inwards into the true pelvis, lying by the side of or near the bladder. If the upper sac of a bilocular hydrocele may also take any one of these positions, then the varying accounts of the relationship of the parietal peritoneum to the hydrocele sac in different cases may be explained.

Moynihan regards the congenital peritoneal pouches met with in the inguinal region near the internal abdominal ring, and described many years ago by Rokitansky, as an important cause of the development of properitoneal hernia, and suggests that these pouches may result from an aberrant attachment of the gubernaculum to the peritoneum. This suggestion is based upon Lockwood's explanation of the origin of infantile herniæ. In a similar way the gubernaculum may be concerned in the development of bilocular hydroceles.

The relative size of the two sacs in these hydroceles varies.

In Bazy's cases, for instance, the upper sac extended above the umbilicus and formed a conspicuous swelling when the abdomen was inspected, whereas in one of Kocher's two cases the upper sac was only the size of a nut. Similarly, the scrotal sac may vary in size, and probably in some cases will not reach so low as to communicate with the tunica vaginalis of the testicle, and will then constitute a bilocular hydrocele of the cord only.

The chief signs and symptoms of bilocular hydrocele have been sufficiently indicated in the notes of the case. In some cases the abdominal cyst has pressed upon the bladder and caused frequency of micturition, but this symptom was not present in my case. Whether or not the upper sac will produce a swelling of the abdomen visible on examination will naturally depend upon the size and tension of the cyst, and the thickness of the abdominal wall. In my case the only visible sign of the presence of an abdominal cyst was the wave-like movement of the parietes over the cyst produced when pressure on the scrotal swelling was suddenly made. Reference to the literature of the subject shows that 18 cases were collected by Villeneuve in 1890, all of them foreign, and that additional cases have been described by Lister, Syme, Humphry, Macewen (2 cases), and 1 reported by F. von Winiwarter is mentioned by Moynihan, making, with my example, a total of 25 cases. Doubtless others have been observed, and it appears likely that many have been mistaken for ordinary hydroceles. In the following case a hydrocele of the cord was of the bilocular type.

CASE II.—W. E., aged 11, was admitted to the Bristol General Hospital complaining of a swelling in the left groin, which had been present seven or eight months, and which a truss had failed to keep back. The swelling was situated over and just below the external abdominal ring, and was not larger than a medium-sized plum. It was very readily and completely reducible, but as easily came down again. It was a soft and ill-defined swelling. At an operation this swelling was exposed by an incision over the external abdominal ring. It was found that it could be forced down so as to present in the wound by dipping the fingers deeply into the iliac fossa, close above Poupart's ligament. On opening the sac clear fluid escaped. The finger was easily passed through the wall of the sac into the iliac fossa, and was momentarily thought to have passed into the peritoneal cavity because the intestines in front, and the brim of the pelvis and the iliac vessels behind were felt with such extreme distinctness. In reality the finger had passed into an intra-abdominal sac continuous with that of the hydrocele which had been exposed externally, where it lay in front of the spermatic cord. The ready reducibility of the swelling before operation was obviously due to the fact that the fluid could be displaced from the external portion of the sac into the internal portion. Both portions of the sac were easily removed without incising the external ring or inguinal canal. Lower in the cord a second small encysted hydrocele was found and removed. The pillars of the external ring were approximated with sutures. Primary union followed and complete cure.

The analogy between this case and the last and the bearing of anomalies in the mode of closure of the funicular process are obvious.

REFERENCES.

- ¹ Jacobson, *Diseases of the Genital Organs*, p. 112. ² *Practitioner*, August, 1896, p. 132. ³ *Lancet*, February, 1900, p. 515.

A CASE OF EXCISION OF THE VESICULÆ SEMINALES FOR PRIMARY TUBERCULOUS DISEASE.

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THE following case is of some interest on account of the rarity of primary tuberculous disease of the vesiculæ seminales, and also because the operation of excision for that condition has not, as far as I can make out, been recorded before.

Ullmann, of Vienna, extirpated the seminal vesicle and the vas deferens on the right side of a boy, aged 19. Some weeks before he had removed the right testicle for tuberculous disease. In this case the operation was performed to prevent the infection of the healthy genital organs on the left side. His patient made a good recovery.¹ His method of operating was similar to that followed in this case.

The patient (H. H.) was admitted into the Oldham Infirmary on January 13th, 1901, under the care of Dr. Robertson, to whom I am indebted for permission to publish these notes. He was aged 32, married, and by occupation a painter. He sought relief for frequent and painful micturition.

History.

As near as the patient can remember, his troubles commenced three years before. Up to that time he had ailed nothing of any consequence. His first and most prominent symptom was a frequent desire to micturate

On an average, he micturated at half-hourly intervals, day and night. Just previous to his admission here this interval was reduced to five minutes. This act was always productive of a varying amount of pain and straining. The pain always preceded micturition, and increased in intensity as his desire to micturate increased. This pain, which was cutting in character, always shot from his perineum to the end of his penis. He had had retention of urine several times. There was no history of gonorrhœa, or evidence of tuberculosis in any other organ, or in his relatives.

Dr. Robertson has seen him at odd times during this period; he never discovered anything that would lead him to suspect tuberculous disease of the testicles.

The patient has been married seven years, and his only child was born five years ago. Sexual excitement or coitus made no difference as regards his pain. Up to a year ago he had a more than usual number of erections. His urine used to be "thick and gravelly," but for the last twelve months—up to his admission here—it has been "clear." He has never seen any blood-stained semen, but on three occasions his urine has been blood stained.

Exposure to cold has, so the patient thinks, brought on these attacks. It has certainly aggravated them.

Condition on Admission.

The patient looked neurotic: at any rate he took a morbid delight in detailing his symptoms. He complained chiefly of pains in the perineum. At times these were constant, and lasted for two or three days; again they might be mere shooting pains. The pain was aggravated by micturition, and sometimes by defæcation, when violent rectal tenesmus followed. If the pain lasted long it was dull and boring, with shooting pains at intervals. He was obliged to micturate every half-hour. He had pain in the lumbar region, shooting down the outer side of the right leg. The right testicle was very slightly larger than the left; the enlargement was general. This, the patient said, had its origin in a kick on the testicle when a boy. The patient was very tender to a rectal examination. By this means an irregular nodular mass, firm to the touch, and hardly the size of the little finger, could be detected on the right side of the base of the bladder. The swelling commenced immediately above the prostate and extended upwards, backwards, and slightly outwards, keeping close to the bladder. The prostate was normal in size. The passage of a sound produced great spasm, and free bleeding after its use. The urine was blood-stained for three days. No evidence of stone in the bladder or kidneys could be detected. On microscopical examination the urine revealed pus cells, crystals of triple phosphates, and tubercle bacilli. The lungs were healthy. The patient was kept under observation for some time. There was no improvement in his condition, and as far as could be ascertained the disease had not infected any other part of the genital apparatus. It was then decided to excise the seminal vesicles.

Operation.

On March 21st, 1901, the patient was chloroformed and fixed in the lithotomy position. A sound was introduced into the bladder and the sphincter of the anus stretched. A semilunar incision, 3 inches in length, with its concavity forwards, was made across the perineum, an inch in front of the anus. The soft parts were retracted, and the dissection down to the vesiculæ seminales was mainly done with a blunt dissector and scissors. All the bleeding points were twisted. Both vesiculæ seminales were seen to be enlarged. The soft tissues around them receded so readily that some difficulty was experienced in getting a firm hold of them, in spite of the help given by the sound in the bladder and two fingers in the rectum. Ligatures were placed and both vesiculæ removed in their capsule. There was some oozing deep down in the wound; this was stopped by plugging with iodoform gauze. The edges of the skin incision were brought together with silkworm sutures, one being omitted to allow of a piece of the iodoform gauze to come through and act as a drain. A rubber tube was placed in the rectum to prevent any tension there, due to the accumulation of flatus.

March 22nd. The patient had passed a good night. The urine came naturally, and was deeply blood-stained. He complained of slight pain in the region of his bladder. A portion of the gauze was pulled out and the rectal tube removed.

March 23rd. The patient is quite easy. More of the packing was removed. The urine contains abundant stringy mucus, and a slight amount of pus.

March 24th. He has still a little hypogastric pain. On removing a further portion of the packing about 2 drachms of serous fluid escaped. The wound is healthy. He now retains his urine for from two to three hours.

March 25th. The patient is very well. The whole of the packing was removed, 2 ounces of serous fluid escaping. A small rubber drainage tube was inserted.

March 26th. The drainage tube was removed. There is scarcely any discharge. A probe cannot be passed into the wound. Some of the outer stitches were removed. A simple enema was given which cleared the bowels.

March 28th. The remaining stitches were causing slight irritation, so they were removed. Urine is passed every three or four hours. He is not inconvenienced any way, and has no pain.

April 2nd. A rectal examination was made; it was not painful. The vesiculæ seminales could not be detected.

April 7th. The patient was discharged. Wound soundly healed. There was perfect relief of all his symptoms. From the operation onwards his temperature has been normal.

Microscopical Examination.

The specimen was sent to the Pathological Department, Owens College. The following is the microscopical report: "The lesion is tuberculous. The following changes are to be seen in sections. The mucosa is in a condition of catarrhal inflammation, the submucosa is the seat of scattered early tubercles, the wall is much thickened, and in the lymphatics there are scattered tubercles, even in the peripheral part—that is, the subserous connective tissue."

The patient has reported himself on several occasions since his discharge. He says he never enjoyed better health. He looks well, and

has put on flesh. He passes urine every four or six hours during the daytime, and has not to get up at night.

On June 26th the right epididymis was found to be slightly enlarged. This would seem to be further proof that the lesion was primarily one of the vesiculæ seminales, for certainly this has only developed after the operation.

REFERENCES.

¹ *Lancet*, vol. ii, 1889, p. 1151; *BRITISH MEDICAL JOURNAL*, vol. i, 1890, p. 1509.

THE USE OF A BAG PERVIOUS TO AIR IN ETHER ANÆSTHESIA.

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THE apparatus invented by Clover, and variously modified since, for the administration of ether is such an admirable one, that I do not know that one need ask for a better as a medium for ether giving save in one particular, and that a most important one, namely, the rubber bag. Although obviously possessed of some objectionable features, the rubber bag has been accepted as part and parcel of the necessity of things, and remains as an unclean but indispensable adjunct to the administration of ether in this country. Without doubt the open method of giving ether on a mask or cone is too slow in its effect to be of real practical use, and it is this slowness which has necessitated the use of the bag in question. The argument is, that to produce and maintain ether anæsthesia you must have the asphyxial element present; to this end you must exclude air and hence the rubber bag. I believe this to be a wrong and mistaken conclusion, as I shall afterwards show.

The objections I would make to the rubber bag are, first, that it is apt to produce more of the asphyxial element than is desirable—namely, cyanosis; and, secondly, that it is unclean. As regards the first, considering that the object of the rubber bag is to introduce the asphyxial element, it is not quite fair to charge it with producing a lividity which is so far intended; but it often does more. Even in the best of hands it occasionally produces cyanosis to a degree that cannot be otherwise than a strain on the right ventricle, and certainly begets a frothy condition, which is undesirable even if it do not lead to further trouble. If it were possible to remove this reproach of cyanosis and its consequent troubles from ether anæsthesia, nearly all the objections to it would be groundless, and this can be done by using, instead of the rubber bag, one made of linen, or other pervious fabric, such as I have devised and describe below. The second objection, that of uncleanness, has doubtless presented itself to every anesthetist who ever thought of the condition of his rubber bag, and yet I know of no way of avoiding it. It is no mere sentimental objection that the last patient who breathed into the bag was the subject of intestinal obstruction and had a foul fecal odour in his breath, or was a sufferer from carcinoma of the œsophagus or tonsils.

For the last two or three years I have been in the habit of meeting these objections by rinsing out the bag well with water, some antiseptic occasionally being added, after each operation, thus ensuring as much cleanliness as possible, and, so far as the avoiding of cyanosis is concerned, I have dispensed with the bag when I could, allowing the patient to breathe through the open inhaler, resorting only to it when this proved insufficient. On the whole, these means met the case fairly well, but, while modifying the objections, they did not entirely remove them.

In America, where ether is the anæsthetic mostly in use, a towel folded cone-shaped, and covered or not by a thin waterproof, is employed, and apparently does well, although it finds little favour in this country. This method has not, however, appealed to me, as it has seemed lacking in precision after having been used to measuring the ether given through a Clover apparatus. It occurred to me, however, to substitute a linen bag for the rubber one, and this has proved itself to be so well adapted for the purpose, and so completely meets the objections to the ordinary rubber bag that I should like to call the attention of the profession to it. I have tried it now in a sufficient number and variety of cases to enable me to pronounce it a success.

The bag is made of a fine linen known as "holland" and is