side of the heart, and with clubbed fingers connected with the chronic obstruction in the pulmonary circulation. Roentgen-ray examination of the lungs likewise suggested the changes met with in cases of diffuse chronic pulmonary tuberculosis. But the absence of crepitation and all signs of active pulmonary tuberculosis was remarkable. There was very little expectoration and in the scanty mucous sputum obtainable no tubercle bacilli could be found. The Pirquet cuti-reaction for tuberculosis was weakly positive, as it is in most adults. On the other hand the patient's blood serum (April 5th) gave a strongly positive Wassermann reaction. During a prolonged attack of the "cardiac dyspnoea" type the patient died on April 6th. From April 3rd there had been occasional slight fever.

The necropsy (Dr. Lang and Dr. Welsch) showed diffuse fibrosis of both lungs, especially of the upper lobes, so that little pieces cut from the upper lobes sank in water. In the middle portions of the lungs the fibrosis was not so extreme as in the upper lobes, and pieces did not sink in water. Over the lower lobes there was old pleurisy. The cavernous breathing heard (as above mentioned) over the left back during life was obviously due to solid fibrosed lung over a bronchus. The heart was hypertrophied, especially on the right side, doubtless owing to the obstruction in the pulmonary circulation. The wall of the right ventricle was relatively so thick as almost to resemble that of a left ventricle. There was an old calcareous patch in the arch of the aorta, and the left coronary artery was considerably calcified. Elsewhere in the body there was nothing special to note, excepting what suggested a small infarct under the capsule of the liver; it might have been of local syphilitic origin. A careful search was made for old tuberculous lesions, but no caseous or calcareous foci were found in either lung and there was nothing in the lymphatic glands to suggest old tuberculosis.

A microscopic section from the upper lobe of the left lung shows extreme fibrosis, with irregularly distributed lymphocytic infiltration, but no characteristic tuberculous feature. Professor S. G. Shattock, who kindly examined it, writes: "I should think that the fibrosis is syphilitic, because of the positive Wassermann reaction, and because of the diffuseness of the change and the lymphocytic infiltration of the fibrous tissue and comparatively unaffected state of the alveolar epithelium."

Besides Dr. Schwarz, I have to thank the house-physicians, Dr. Lang and Dr. Welsch, for their kind help.

Since reading a paper on acquired syphilis of the lungs at the Medical Section of the Royal Society of Medicine in November, 1916,¹ I have become inclined to think that syphilitic changes in the lungs occur more frequently than is even yet commonly supposed. In patients with old tertiary syphilitic lesions elsewhere it is not very rare by Roentgen-ray examination of the lungs to find appearances suggesting tuberculous changes, though all other signs and symptoms of active tuberculosis are absent, notably in regard to examination of sputum. In some of these cases I think that there are minor degrees of syphilitic fibrosis of the lungs present. I believe, moreover, that in some cases diffuse syphilitic fibrosis of the lungs commences insidiously, and runs an insidious and progressive course, the patient being supposed to suffer from ordinary chronic bronchitis and pulmonary emphysema with or without acute exacerbations.

REFERENCE.

¹ F. Parkes Weber: *Proc. Roy. Soc. Med.*, Section of Medicine, 1916-17, vol. x, p. 23.

VOLVULUS OF THE LARGE INTESTINE.

BY

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ACUTE volvulus of the large intestine is one of the rarer and most fatal forms of intestinal obstruction. Out of 199 cases of acute colonic obstruction operated upon at the Manchester Royal Infirmary during the ten years 1913-22 there were only six cases of this nature; of these two died after operation. In the six cases the caecum and the sigmoid colon were each involved on three occasions. By the term "volvulus" is meant the twisting of the bowel upon its mesenteric axis, resulting in obstruction to the passage of the intestinal contents and arrest of the circulation in the involved loop when the torsion exceeds 180 degrees. A rare type of volvulus has also been described where the sigmoid colon is intertwined with a coil of small intestine.

ETIOLOGY.

Torsion can only occur in that part of the large intestine which possesses a mesentery and where its base of attachment is narrow; such conditions are found in the

sigmoid loop, which is said to be implicated in about 70 per cent. of cases. Torsion is less often met with at the ileo-caecal region and is possible only when the caecum or ascending colon has some degree of freedom of movement. This unfixed condition may be of congenital or acquired origin. The congenital form is seen when the caecum and ascending colon have a mesenteric attachment to the posterior abdominal wall—a result of failure of obliteration of the foetal mesentery, which normally fuses with the posterior parietal peritoneum in this region and leads to fixation of the gut. Perhaps more often the condition is acquired and is found associated with a long history of constipation, where the bowel is more or less constantly distended, and the retained contents drag upon and elongate the mesentery, thus bringing the ends of the loop close together, as may not unfrequently be seen in the sigmoid colon. In Hirschsprung's disease (idiopathic dilatation of the colon), a condition which is characterized by lengthening and dilatation of the colon, and in which the most marked clinical features are constipation and meteorism, all the conditions favourable to the occurrence of volvulus are found. This disease, though more commonly seen in children than adults, is not so rare as is generally supposed, and it is not unlikely that it may be an important predisposing factor in the etiology of volvulus, when the disease pursues a chronic course. Cases of so-called megacolon in the adult have been recorded from time to time, and these may be examples of Hirschsprung's disease dating from infancy which have reached mature age, or the dilatation of the colon may only commence when adult life is reached. The anatomical arrangement of the redundant sigmoid invites kinks and twists, and it is not difficult to see how such cases may result in a volvulus.

One of the predisposing causes of torsion is a laxity of the attachments of the colon. In children, however, torsion is a rare occurrence, and at this period of life want of fixation of the bowel tends to predispose rather to intussusception. In elderly persons, on the other hand, intussusception is seldom met with, and with advancing age the liability of the bowel to become twisted appears to be greater.

The sex incidence is remarkable in relation to these affections of the colon; all of them occur more frequently in males—intussusception 70 per cent., volvulus 80 per cent., and Hirschsprung's disease 85 per cent.¹ This fact is difficult to explain. It appears not unlikely that the actual onset of volvulus is dependent on some disorder of the neuro-muscular mechanism of the bowel. Keith² has demonstrated the presence of special neuro-muscular junctions, situated at certain points in the intestine, which he considers control its movements. It may be that, owing to some abnormal cause of irritation, this specialized tissue is thrown into a state of spasm and a temporary obstruction is set up. Acute distension of the bowel is thereby produced and a kink or twist may follow, when the bowel is freely mobile, as the result of irregular peristaltic action.

SYMPTOMS.

The onset of the condition is generally acute, as both obstruction and strangulation will be produced. The sudden onset in a patient usually over 40 years of age, with abdominal pain, absolute constipation, and meteorism, is the combination which should suggest a volvulus. Abdominal distension is the most marked clinical feature of the condition, and in no other variety of intestinal obstruction is the distension produced so rapidly and to such a marked degree.

A tumour may sometimes be palpated, or the outline of the distended loop seen through the abdominal wall. Vomiting is not as a rule marked, as the obstruction is situated low down. Collapse appears later, and, where operation is delayed, death usually follows within a week.

MORTALITY.

The prognosis depends on the time when operation is carried out, and recent figures show a marked improvement with earlier diagnosis and more prompt surgical intervention. Barnard³ records a mortality of 93 per cent. out of

27 cases in thirteen years at the London Hospital. In a series of 9 cases at the Massachusetts General Hospital from 1893 to 1907 the mortality was 100 per cent. Richardson⁴ records 16 cases (8 affecting the large intestine) operated on at the same hospital between 1908 and 1917, with a mortality of only 25 per cent.

TREATMENT.

The treatment is necessarily surgical. On opening the abdomen the volvulus presents as an enormously distended coil of gut, which appears almost to fill the abdominal cavity. The loop is delivered through the incision, and if healthy is untwisted, and a Paul's tube is then fixed in the summit and brought out through an abdominal incision. This allows the contents of the intestine to be evacuated and the easy reposition of the bowel. Further, the fixation of the bowel to the anterior abdominal wall by the Paul's tube prevents a recurrence of the twist, a complication otherwise liable to occur. Should the intestine prove to be gangrenous or impossible to untwist, the affected segment is resected and Paul's tubes fixed in the divided ends. Later, if the patient recovers, an anastomosis can be carried out.

The following three cases have come under my care:

CASE I.

The patient, a female aged 63 years, was admitted to the Manchester Royal Infirmary on January 23rd, 1921. She had been seized with abdominal pain three days previously, and the bowels had not been moved in spite of repeated enemata. On examination the abdomen was considerably distended, but no definite tumour could be detected on abdominal or rectal examination. The abdomen was opened by a right paramedian incision, and the sigmoid loop was found very dilated. It was seen to have undergone two complete twists on its mesenteric axis. These were untwisted without difficulty and a Paul's tube tied in the summit and fixed to the abdominal wall. The wound was closed, and the bowels moved subsequently each day. She was discharged from hospital seven weeks later with the colostomy practically closed.

CASE II.

A male, aged 50 years, was admitted to hospital on July 28th, 1920. He had been ill for five days with abdominal pain, constipation, and vomiting. His general condition was poor. The abdomen appeared very distended and a tumour was detected in the right side. Laparotomy showed this to be a greatly ballooned caecum which had a gangrenous patch on its anterior wall. The bowel had undergone one and a half twists. After detorsion a Paul's tube was fixed in the caecum through the gangrenous area and the wound closed. The patient failed to rally after the operation and died the following day.

CASE III.

I was asked, a short time ago, to see a gentleman, aged 67 years, whose illness had commenced with abdominal pain three days previously. He had suffered from chronic constipation, which had now become absolute, for many years. The abdomen appeared considerably distended, and on laparotomy an enormously ballooned sigmoid was found which had undergone rather more than one complete twist, whilst the remainder of the colon appeared both dilated and hypertrophied. The volvulus was untwisted, a Paul's tube tied in the apex, and the abdomen closed. He made satisfactory progress for six weeks, but subsequently succumbed to a sudden attack of heart failure.

It is still a debatable question among surgeons whether, in cases of acute intestinal obstruction, a general exploration of the abdomen should be carried out or a simple caecostomy performed. In sudden obstruction it may be impossible to exclude cases of volvulus, and caecostomy under such conditions would certainly be liable to end in disaster. Though cases of this nature are not common, yet it is under such conditions, where the pre-operative diagnosis may be uncertain, that the blind caecostomy is open to objection.

REFERENCES.

¹ Barnard: *Contributions to Abdominal Surgery*, 1910. ² *Lancet*, 1915, ii, p. 371. ³ Barnard: *Contributions to Abdominal Surgery*, 1910. ⁴ *Boston Medical and Surgical Journal*, 1920, vol. 183, p. 288.

AUTOPLASTIC OVARIAN TRANSPLANTATION.

BY

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THE following case is of interest because the patient has been under observation for thirteen years after an operation for transplantation of the ovaries, and because it was possible to make macroscopic and microscopic examinations nine years and seven months after the transplantation was performed. The clinical and histological evidence combine to show that the organs are still in a healthy condition.

On March 5th, 1911, a married woman, aged 17, was admitted for her confinement to the obstetrical department of the Women's Hospital, Melbourne. She had suffered from tuberculous disease of the hip, had gone on crutches since the age of 7, and presented a discharging tuberculous sinus over the right trochanter. Scars of healed sinuses were seen over the lower lumbar vertebrae and right buttock. Caesarean section was performed and a full-time female child, weighing 6 lb., delivered. In order to prevent further conception I transplanted the ovaries into the anterior abdominal wall. Three and a half years later I reported the case, with observations to date, in the *Medical Journal of Australia* of January 16th, 1915, vol. 1, No. 3. Since then the patient has been under continual observation; owing to the strenuous use of crutches a ventral hernia developed in the upper part of the scar.

The patient's health has been generally good. During the last five years she has gradually put on weight; her skin is fresh and her eyes are clear; the tuberculous lesions in the bones of the right lower extremity have practically healed, there being a little discharge only occasionally. The menstrual flow occurs every 28 days, with slight variations of two or three days on either side. She cannot remember ever missing a period. The duration is four days. There is no pain whatever in the region of the uterus, but some tenderness usually indicates which ovary is providing the Graafian follicle, it may be each ovary alternately, or either ovary two or three times successively. The pain has not been more than what would be called tenderness at any time, and is usually more marked in the subcutaneous graft than in the one more deeply placed in the rectus sheath. Sometimes slight swelling accompanies the tenderness. The sexual appetite is not decreased.

The right ovary, which was placed on the aponeurosis of the external oblique abdominal muscle, is easily felt; it feels a little larger than normal. The left ovary, more deeply placed in the rectus sheath, is more difficult to feel, but it can be located as a slight thickening, and each of them on pressure produces a sickening sensation. The uterus is normal in size. There is no leucorrhoea. There is no evidence of atrophy. Bartholin's glands are observed to function.

On October 15th, 1920, the patient complained that two days previously, during a fit of coughing, she suddenly felt a severe pain, with some swelling in the hernial sac. An irreducible strangulated hernia was at once diagnosed, and the patient was hurried to the Women's Hospital for immediate operation. After the hernia had been dealt with, and the peritoneal cavity closed, opportunity was taken to examine the graft in the rectus sheath. As its situation was so well known, a few touches with the knife were sufficient to reveal it, snugly contained in the sheath, and firmly adherent to the surrounding tissues. It had been placed in this situation roughly nine years and seven months before (March 5th, 1911). It was about 1½ inches in length, 1/2 to 3/4 of an inch in breadth, reddish in colour like the tissue around it, firm in consistence. Several Graafian follicles could be felt, varying in size, the largest being about the size of a small pea. Some follicles could be seen, greyish in colour, projecting slightly, and when pricked with a knife exuded liquor folliculi. A small piece was removed for microscopical examination. Sections of the graft showed its histology to be quite consistent with the clinical history of the patient. Perfectly formed Graafian follicles and corpora lutea in normal ovarian stroma can be demonstrated, whilst the abundant arteries, veins, capillaries, and nerves indicate how completely the graft has been adapted by its new environment.

April 28th, 1923: The patient, now in the thirteenth year of observation, is still menstruating regularly, and her sexual life is apparently normal.

This case is interesting, for the following reasons:

(1) The length of time during which the patient has been under careful observation—that is, nine years and seven months. (It is also thought that this is the only case on record where a human ovarian graft has been microscopically examined after being transplanted so long.)

(2) The sexual life of the patient has been quite normal. The grafted ovaries have apparently discharged their functions quite as well as if they had not been grafted. Opinions have been expressed by some¹ that a graft would not continue to function longer than a few months, or perhaps a year or two; but the information obtained from this case clearly shows that