and generally this is easily accomplished, as the ureter is dilated above the point of impaction of the stone, but if it is firmly fixed an incision should be made through the wall of the ureter, and after the calculus has been extracted the incision may be closed by sutures.

REFERENCES.

- ¹ Hunterian Lectures, 1898, p. 93. ² Loc. cit., p. 106. ³ Loc. cit., p. 109. ⁴ Cases II, III, and IV were brought before the Glasgow Pathological and Clinical Society meeting, December 11th, 1899. ⁵ Newman, *Lectures on Surgical Diseases of the Kidney*, 1888, p. 114.

LARGE SARCOMATOUS NEUROMA OF THE INTERNAL POPLITEAL NERVE.

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[With a Pathological Report by Dr. MUIR, Professor of Pathology.]

A LARGE sarcomatous tumour of the trunk of a main nerve is a very uncommon occurrence. The following is a short clinical account of the case:

R. G., aged 20, had received about nine months earlier a blow from a piece of wood on the front of the thigh just above the knee. It gave him no trouble and he forgot all about it. Three months after he discovered a little lump the size of a filbert in his popliteal space. There was no pain or annoyance, but it gradually increased in size. For the last six weeks it has been enlarging more rapidly till it attained its present size.

Condition on Admission to Professor G. Buchanan's Ward in Western Infirmary, November 14th, 1899. The popliteal space is completely filled up by an ovoid tumour, resistant and elastic, and quite movable from side to side. The opinion was that it was an adenoma or a sarcoma, probably of a lymphatic gland. The patient can walk quite well, while motion and sensation were perfect down to the toes, except some anaesthesia of the sole of the foot; so there was no indication that the popliteal nerve was unduly pressed upon. There was no oedema below the knee, so the probability seemed to be that the tumour could be removed without any injury to the nerve or vessels of the popliteal space. Accordingly, on November 21st, an incision 6 inches in length was made over the tumour, and the capsule was exposed. The soft parts were easily stripped from the capsule over the front and sides, but on the back it was firmly adhering to the popliteal nerve. It was now found that the capsule was simply the nerve sheath expanding into and forming the capsule, and that the nerve itself was lost in the tumour, either by the nerve strands separating and enveloping the capsule, or passing through the tumour. In these circumstances the only course was to amputate the thigh, but as that had not been contemplated the patient and his parents had not been asked for permission if the tumour proved to be malignant. Therefore a small slice of the tumour was excised for examination, the edges of the cut capsule brought together, and the wound united by continuous suture. The piece was subsequently examined by Professor Muir, who pronounced it a round-cell sarcoma. Next day the father arrived from the country, but refused to allow amputation. However, when the nature of the growth was explained to him, he went home and consulted his wife, and returned with full permission, which the patient himself quite frankly consented to. On November 28th amputation was performed and the patient has progressed well. Immediately after amputation the tumour was exposed by a longitudinal section extending from the trunk of the nerve above to that below. It presented a greyish appearance, in consistence of a soft and pulpy nature, in the superficial half, but in the deep half more tough and fibrous, where it seemed to be continuous with nerve strands attached to the capsule. But it was impossible by the naked eye to discover in what way the nerve above communicated with the nerve below, so the limb was sent to the pathologist, who will give the pathological report. The length of nerve involved in the tumour is about 5 inches.

PATHOLOGICAL REPORT BY DR. MUIR.

A large somewhat fusiform tumour occupied the popliteal space; its extreme length was nearly 5 inches, its greatest width being 2 inches, and it tapered off above and below. It was somewhat adherent to the vessels beneath it, but these were not incorporated with it. The upper limit of the growth was just below the division of the great sciatic into internal and external popliteal nerves. (The division of the main trunk appeared to be a little lower than usual.) The tumour is apparently in the interior of the internal popliteal nerve, the sheath of the nerve being stretched over it and forming its capsule. On section, strands of nerve fibres can be seen passing through the tumour growth, a considerable disassociation of fibres having taken place.

The tumour was composed of soft cellular tissue of a greyish colour, in parts however very vascular and showing hæmorrhages. There are also yellowish areas, apparently the result of degenerative changes. One of these was of the size of a small plum and situated in the part of the growth nearest the large vessels. The external popliteal nerve coursed over the surface of the tumour and was somewhat flattened, but was apparently free from infiltration.

Fresh sections microscopically examined showed the growth to be sarcomatous, most of the cells presenting a rounded form. In sections prepared after fixing the tissue in corrosive sublimate the cells have either an oval or pyramidal form with very little protoplasm. There is very little intracellular stroma. There are numerous hæmorrhages and necrosed patches. Strands of fibrous tissue with nerve fibres running through the growth at intervals are noted. The tumour tissue is nowhere observed to penetrate the fibrous tissue sheath externally.

A portion of the internal popliteal nerve was removed below the growth, and treated by Marchi's method. It showed marked degenera-

tion in one or two small fasciculi, and a few degenerated fibres scattered here and there in the larger bundles. The great majority of the fibres, however, showed no degenerative change.

The condition is interesting as illustrating the fact that nerves may be extensively infiltrated and disassociated with comparatively little degeneration resulting, both the clinical facts and the microscopic examination in this case showing that only a small proportion of the fibres had suffered.

A CASE OF ENTERECTOMY BY END-TO-END SUTURE IN A BOY AGED 7.

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THE case described below may be taken as a type of the condition which always occurs when the small intestine has to be opened and a fecal fistula formed. The fluid contents of the intestine are constantly oozing from the opening, and therefore the skin is constantly in contact with this fluid, which, having powerful digestive properties, promptly begins to digest the skin. The epidermis soon disappears, and around the opening is an area of raw papillæ, which bleed readily, and, as may be imagined, are most painful when touched. Such being the fact, any attempt to clean the surface or wash the part is immediately followed by strong contraction of the abdominal muscles; this contraction forces out the contents of the intestine, and so it goes on. The higher up the intestine the opening has been made the stronger will be the effect of the secretion be on the skin, and (which may be much more serious) the length of intestine left for digestive purposes may be so curtailed as to make the question of nutrition of the patient a matter of anxiety.

In this case it was obvious that the intestine had been opened high up, both from the condition of the skin, and also from the fact that food appeared at the opening 2½ hours after it had been swallowed. The boy was quite thin, but otherwise healthy. Since the operation (December 1st) he has increased half a stone in weight. This in itself is a matter of interest, because for over ten months the greater part of his intestine was "out of action," and a certain amount of general atrophy had taken place. I should judge that the functions of the intestine below the join were in good working order after the ninth day, as after that time the motions became formed and normal, and before that, that is between the third and the ninth day, they were loose and offensive. Custard was given on the eleventh day, fish on the thirteenth, and meat on the fourteenth day. I mention this to strengthen my statement as to the probable time at which the intestine resumed its functions. As soon as the motions were of a normal character I felt I could with impunity increase his diet and put him on solid food, and his rapid increase in weight shows how he responded to it.

G. H., aged 7, was admitted to St. Monica's Home, Kilburn, on August 5th, 1899, with a fecal fistula, a marked prolapse of the bowel through the opening, and with the skin acutely tender and inflamed for an area of about 1½ inch round the wound, this last condition being due to partial digestion of skin by the fecal discharge.

History.—The previous history of the boy was that in 1895 he had tuberculous peritonitis, for which he was admitted to St. Bartholomew's Hospital, where he remained thirteen weeks. After this he kept well for three years, but on January 20th, 1899, he developed acute intestinal obstruction, for which he was readmitted to St. Bartholomew's, and an operation for its relief was performed on that night, an incision being made in the mid-line below the umbilicus, and a coil of small intestine above the obstruction was opened and stitched to the skin. Some time before his discharge from the hospital (August 3rd, 1899) an unsuccessful attempt was made to close the fecal fistula. When admitted on August 5th his condition was as described above, and was a most pitiable one. Attempts were made to get the skin into a less septic condition and to endeavour to lessen the prolapse. At the same time, as it was doubtful what part of the small intestine had been opened, various foods were given by the mouth such as cooked and uncooked rice, and it was noticed how soon afterwards any appeared at the opening. Boiled rice appeared in three hours forty minutes; raw rice showed itself two and a-half hours after it had been swallowed. The boy's weight was 2 stone 8 lbs. On November 2nd, acting on a suggestion of the nurse in charge of the boy, the patient was turned on his face, a firm band was placed over the lower part of the wound, leaving the bowel free, and the discharge was received into a bedpan covered with a round air cushion. This was continued for a week with such a satisfactory result as far as the skin was concerned that I decided to operate on December 1st.

Operation.—When the boy was anaesthetised, the skin was washed with soap and water, then ether, and finally with 1 in 500 perchloride solution. An incision was made through the skin about half an inch away from the opening of the bowel, and continued above and below so as to form an ellipse. All the tissues were cut through until the peritoneum was reached. Before this was opened the sides of the fecal fistula (into the opening of which a small sponge had been inserted) were closed by one or

two sutures. The bowel was now freed, with the margin of skin around it, and dragged out of the wound, the skin of the abdomen being covered with sterilised butter cloth; $\frac{3}{8}$ inches of intestine were resected, and an attempt was made to unite the ends over one of Bailey's decalcified bone tubes, but the intestine was of too small calibre to admit this, and at the upper end an enlarged gland on the mesenteric border still further hampered matters, and it was necessary to resect another $\frac{1}{2}$ inch of intestine. The two cut ends were then united by a series of interrupted sutures. This was followed by another ring of sutures surrounding the bowel, and taking up the serous and muscular coats. A few additional sutures were put in at the mesenteric border, and the mesentery itself was tied up in a bunch. The gut was washed with boracic, and then returned into the abdomen. The edges of the incision were brought together by silkworm gut sutures passing through all the structures. The skin was drenched with iodoform powder, and the dressings consisted of dry cyanide and white wool.

Fig. 1.

At the end of the operation the boy was somewhat faint, but not in any alarming condition. After coming round from the anæsthetic he was very sick, and this sickness, accompanied with hiccough, continued intermittently until the seventh day, when it ceased.

He was fed entirely by the rectum for nearly forty-eight hours, after this he was allowed fluids by the mouth in gradually increasing quantities, and on the seventh day he took 25 ounces by the mouth and 12 ounces by enemata. The enemata were stopped on the ninth day.

The bowels acted on the third day, and acted daily from that date. The action was at first loose and offensive in character; but after an attack of diarrhoea on the ninth day the motions became formed and normal, and have remained so ever since.

The wound was dressed on the eighth day, and two stitches removed. I was afraid to remove more, because the boy strained and cried to such an extent that it was felt that the whole wound might give way. The remaining stitches were taken out a few days later, when the wound was quite healed. On the sixteenth day a small area broke down over the site of the fecal fistula, and a drachm of dark-stained serum escaped, but this disappeared in the evening of the next day. With this slight exception the boy made an excellent recovery, and is now in the best of health.

The photographs show fairly well the condition of the prolapsed bowel, and also that of the skin, which, as I have already said, was exquisitely painful, even to the lightest touch. The one anxiety about the case was that, owing to the old tuberculous peritonitis shutting off the peritoneum in various places, a proper investigation of the condition of the rest of the bowel could not be made. It was, therefore, quite possible, that I had merely united the cut ends into a *cul-de-sac*. However, our suspense was soon relieved, as the bowels acted on the third day, and on this point caused no further anxiety.

All surgeons who are in the habit of operating upon the intestines will, I think, agree that however well the operation may have been done, and however able the assistance (and I was helped most materially by Dr. Owen Lankester), yet the main issue of the case depends upon the way in which the after-nursing is done. I cannot speak too highly of the nursing in this instance. It was admirably and intelligently carried out, and was the main factor of success in a somewhat unusual case.

Having regard to the great discomfort of the condition just described, it occurs to one that it would be extremely desirable to adopt some other procedure than that of forming a fecal fistula in cases in which acute intestinal obstruction occurs, and no doubt there are certain cases and certain conditions which admit of other means being tried at the time when the relief operation is being carried out.

I do not believe that any royal road can be laid down for these cases; each one will have to be dealt with on its own merits; and although a few main principles may hold good in all cases, it would be futile, possibly worse, to lay down any fixed rules.

Fig. 2.

Treves, in his work on *Intestinal Obstruction*, gives, in the chapter on the Anomalous Forms of Obstruction due to Isolated Bands and Adhesions, the following classification:

1. Strangulation over a band.
2. Occlusion brought about by acute kinking due to traction upon an isolated band or adherent diverticulum.
3. Obstruction effected by adhesions which retain the bowel in a bent position.
4. Obstruction by means of adhesion which compress the gut.
5. Obstruction by matting together of coils of intestine.
6. Narrowing of the bowel from shrinkage of the mesentery after inflammation.

In the first three the onset of the obstruction would be quite sudden and acute; indeed in the first five this would generally be so. The case under discussion was probably caused by either 4 or 5 in the list.

Three methods of treatment are available in the acute stage in these cases:

I.—To Remedy the Obstruction and Return the Intestine.

This method is only occasionally available because in the first place the case is not, as a rule, seen early enough; and again, the apparent well-being of the bowel is often deceptive, as the sequel unfortunately too often shows. The following is an example of this:

A woman, aged 53, was admitted under my care to the Metropolitan Hospital with acute intestinal obstruction of three days' duration. Laparotomy was performed, and a band was found binding together a loop of intestine about a foot long, and another coil had slipped through the loop, but this was not strangulated.

The band was divided and the intestine carefully examined; it seemed in such good condition that there was no thought of doing anything but returning it. The woman died three days after with symptoms of perforation, and *post mortem* it was found that not only had the gut perforated, but that the whole loop was gangrenous.

No doubt in the light of events it would have been better to have opened the intestine and brought out the whole loop,

or else there and then to have resected, yet I believe that anyone else who had examined the gut at the time of the operation would have thought that it was in sufficiently good order to return.

II.—To Resect the Bowel.

This can be done in only a few cases at the time of the relief operation. The main reason against it is the time which it takes. Yet I remember two cases of strangulated hernia in the two extremes of life, in which gangrenous bowel was resected with the happiest results. One was a boy under the care of Mr. Lockwood at St. Bartholomew's; the bowel was resected and sutured end to end. The other was a woman over 70 years of age, under Mr. Bloxam's care at Charing Cross Hospital. In this case the bowel was resected and the ends brought together by a Murphy's button. Both these cases have been published. But such cases are exceptional, especially the second, having regard to the age of the patient.

The main points to be taken into consideration in a proposed primary resection of the intestine are, first, the condition of the patient; and, secondly, the rapidity with which the operator can work; and of these the first is of paramount importance.

III.—To Remedy the Obstruction by Opening the Bowel.

This method is probably the safest in most cases of acute intestinal obstruction, when there is any doubt as to the condition of the gut, and when the patient's condition is such that any prolonged operation would greatly add to the danger to life.

The operation, whether the obstruction has been found or not, takes only a few minutes; the relief is complete, and the question of intestinal paralysis need not be considered. Finally, if for any reason it is not thought desirable to give a general anæsthetic, the whole operation can be performed under eucaïne.

The case recorded above was treated originally by this method, and, although the final operation of resection was for one reason and another somewhat unduly postponed, yet it was eventually undertaken at a time when the general health was very good, and the patient, therefore, in the best condition to undergo what proved a long and rather difficult operation.

ON DOUBLE CASTRATION FOR TUBERCULOSIS OF THE TESTES.

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As tuberculosis of the testis is frequently bilateral and in many cases leads to complete disorganisation of both glands, the question of removing the disease by double castration must often arise. It is a somewhat strange fact that though most works on surgery recommend the removal of the affected testis when the disease is unilateral, little or no reference is made to the propriety or otherwise of removing the remaining gland when it becomes similarly involved by an extension of the tuberculous process.

Morris, in his treatise on *Injuries and Diseases of the Genital and Urinary Organs*, does not refer to the question of double castration under these circumstances. Jacobson, in his work on *The Diseases of the Male Organs of Generation*, briefly discusses it, and approves of its adoption when multiple caseating deposits are present in both testes. Senn is apparently not in favour of this procedure, for in his recent monograph on *Tuberculosis of the Genito-urinary Organs*, he expresses the following opinion: "It seems to me that the cases are exceptional in which double castration is justifiable" (p. 77); and he mentions tuberculosis of both testes as one of the positive contra-indications to castration (p. 74).

The question has recently been discussed at some length by Watson Cheyne¹ in his Harveian Lectures on The Surgical Treatment of Tuberculosis, and it is interesting to note that he is opposed to double castration for this condition, on the ground that the loss of both testes exercises a very deleterious effect on the patients; for afterwards they often lose interest in their affairs, becoming lazy, irritable, morose, and in some

cases demented or maniacal; "a very considerable proportion have ultimately committed suicide."

These mental disturbances are attributed to the psychical effect of the loss of the testicles and the fear of consequent sterility, and also to the loss of their internal secretion, which is believed to exert a great influence upon the well-being of the patients.

Having during the last few years performed double castration for bilateral tuberculosis of the testes in four patients, a brief mention of the cases may perhaps be of interest, for so far they do not present any of those mental symptoms of which Watson Cheyne forewarns us. Two of the patients (Cases I, III) are following their occupation with their usual interest and energy; one (Case II) is wintering abroad, and was in good health and spirits when last seen shortly before his departure; the fourth (Case IV) is at present in hospital, as mentioned below, suffering from tuberculous disease of the ankle-joint. It is perhaps too early to say what their future will be, but so far the removal of the local disease has had a beneficial effect on their comfort and general health, and as yet there is no evidence of the tuberculous process having extended further onwards since the operation to other parts of the genito-urinary tract. Brief details of the cases are given in the following table, the body of the testis as well as the epididymis being in each instance more or less disorganised, and therefore necessitating removal.

Case of Double Castration for Tuberculosis.

No.	Age.	Family History of Tubercle.	Date.	Operation.	Other Evidences of Tubercle.	Present Condition.
128		Yes	Sept., 1896 Jan., 1899	Left testis Right testis	Both vesiculæ seminales enlarged and indurated at second operation; traces of pus in urine	Good; works as a weaver; no bladder or other symptoms, though vesiculæ seminales are still indurated, and a trace of pus is still present in urine.
235		Yes	April, 1898 June, 1899	Right testis Left testis	History of recent pulmonary phthisis; and evidence of disease of right medio-tarsal joint at time of first operation	Pulmonary disease quiescent; medio-tarsal joint quite recovered; no bladder or other fresh symptoms; general condition good when last seen.
324		No	July, 1898 Oct., 1898	Left testis Right testis	Vesiculæ seminales and prostate slightly enlarged and indurated at time of first operation	Good; has gained weight; worked on railway since last operation; free from any bladder or other symptoms
442		No	Sept., 1899	Both testes	Right ankle-joint affected at time of operation on testes; excision of joint performed on Jan. 6th, 1900	Good; no bladder symptoms; ankle-joint healed without suppuration.

Cheyne, in the lecture referred to, expresses his opinion that the operation of epididymectomy, which Bardenheuer was the first to advocate, is worthy of more consideration than it has yet received in this country; and in suitable cases, that is, when the tuberculous disease is confined to the epididymis, recommends its adoption in preference to castration.

I have recently had an opportunity of carrying out this plan of treatment, as a patient, aged 36, whose left testis I removed in July, 1899, for tuberculosis, has again come under my care with a recurrence of the disease in the right epididymis. On January 18th I removed the epididymis and $\frac{1}{2}$ inches of the vas deferens, leaving intact the body of the testis, which was unaffected. The wound healed readily, and though only a short interval has as yet elapsed since the operation, the result up to the present time is most satisfactory.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL December 30th, 1899, p. 1721.