INJURIES OF THE BLADDER AND URETHRA IN WAR.

BY

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WOUNDS of the bladder and urethra have received very little attention on the part of writers on military surgery during the present war. It has been assumed, perhaps too hastily, that there is nothing special to be said about the management of these injuries. During the last year I have seen most of those that have passed through my area, and, though the number has not been large compared with wounds in other regions of the body, some of the cases have been of great interest and importance, especially from the point of view of treatment.

I gather from what I have seen that there are practically only two lines of treatment adopted for these injuries at the casualty clearing stations—namely, (a) the tying in of a catheter, or (b) suprapubic cystostomy. Now, though each of these methods has a definite place as a surgical procedure under suitable conditions, there seems to be a want of appreciation in the mind of operators of the objects to be attained by these methods, and the dangers attending their indiscriminate use. A few remarks on the types of injury usually met with and the lines of treatment I have found most beneficial may not, therefore, be out of place.

WOUNDS OF THE BLADDER.

Wounds of the bladder may be produced by bullets, shrapnel, shell, bombs, etc., and have certain dangers distinct from those produced by these missiles in other parts of the body. The more ragged the edges and surfaces of the missile, the more likely is clothing and dirt to be carried in and produce the usual sepsis. The missile may reach the bladder laterally, antero-posteriorly, or from above or below, and the track is often long and tortuous. Complications may occur in the form of fractures of the femur, pelvic bones, or spinal column; injuries to large vessels or nerves, injuries to the intestine, or extravasation of urine. A troublesome complication is involvement of the rectum, with the discharge of faeces into the bladder, or of urine into the rectum, or of both through the wound in the soft parts. Wounds of the bladder may be intra- or extra-peritoneal, or both, and each variety has special dangers and requires special treatment. The intraperitoneal wounds are, as a rule, reached with comparative ease, whereas those outside the limits of the peritoneum may be quite inaccessible, especially those at the base and sides. The missile may stop short after wounding the bladder, it may enter and remain in the viscus, or it may pass through, leaving wounds of entry and exit. The wounds seen have been of all sizes and shapes, from small punctures to the most extensive laceration.

Signs and Symptoms.

The signs and symptoms of injury to the bladder will, of course, vary with the position and extent of the wound and the concomitant injuries to other organs and structures.

Intraperitoneal injury will probably be associated in many cases with injury to the intestine, and the usual signs of a ruptured viscus will be present. Urine may be discharged in such quantities into the peritoneal cavity that none passes by the urethra. A perforating wound of the abdomen in the bladder region will generally be explored, and it will not be necessary to adopt the ancient and clumsy method of pumping into the bladder a known quantity of fluid and measuring the amount returned. If the wound is small and a cystoscope is at hand, valuable information may be obtained as to the size and position of the opening or openings, and the presence or absence of a foreign body. If the patient can void urine at all haematuria will probably be present. Haematuria itself is not, however, evidence of a direct wound of the bladder, and I have seen two cases in which the latter showed splashes of haemorrhage into the mucous membrane though the missile had not directly involved the viscus. The first occurred in a case of injury to the spine in the lumbar

region, and the second in a case in which the missile had traversed the posterior wall of the rectum without touching the bladder. As previously stated, in most cases of intra-peritoneal injury the abdomen will be explored before reaching a base hospital, and, under present conditions, the same procedure should be carried out even in cases of doubtful injury.

In extraperitoneal wounds the chief signs and symptoms are—escape of urine from the wound, haematuria, and later, in many cases, the signs and symptoms of cystitis. The urine may not escape from the wound for several days after injury, or, in other words, until the sloughs have begun to disintegrate and separate. The patient may pass some urine by the urethra, but the fistula will leak more or less continuously in addition. If the fistula is narrow, the urine will be discharged more freely when the bladder has become to some extent distended and the patient makes efforts to micturate. In other cases the leak will be more uniform and continuous. Haematuria may be severe, and in some cases huge clots may form in the bladder. These complicate treatment, and are a serious source of trouble and danger, both from the mechanical difficulty they offer to normal micturition and to catheterization, and from the ease with which they become infected. When cystitis occurs, frequent attempts to micturate, scalding, straining, and penile pain add to the patient's discomfort.

WOUNDS OF THE URETHRA.

For our present purpose it will be convenient to divide these injuries into two classes—those of the pendulous urethra and those of the fixed portion. The latter includes the bulbous urethra, the membranous urethra, and the prostatic urethra.

Wounds of the pendulous urethra have not been frequent in my experience, and they need not detain us here.

Wounds of the fixed urethra are comparatively frequent, and are produced by missiles which penetrate through the buttocks, the upper part of the thighs, or, more rarely, the front or back of the pelvis. Missiles passing transversely at the level of the lower part of the great trochanter may involve the prostatic portion. Those passing transversely at the level of the middle of the small trochanter may involve the bulbous portion. Between these levels the membranous urethra is liable to be injured. Concurrent injury of the rectum may occur in antero-posterior wounds. Any degree of injury to the urethra may be met with, varying from slight contusion to complete destruction of a segment. The signs and symptoms include possibly a wound in the perineum, ecchymosis of the perineum or scrotum, or both; haemorrhage from the urethra, independent of micturition; difficult micturition or complete retention; and, in some cases, extravasation of urine. If an open wound exists which communicates with the urethra, a urinary fistula is established, which leaks only when the patient passes water, provided the sphincteric apparatus of the bladder is intact.

TREATMENT OF WOUNDS OF THE BLADDER.

Intraperitoneal Wounds.

Intraperitoneal wounds of the bladder will usually be treated at the casualty clearing stations. These injuries may be complicated by wounds of the intestine, which will be dealt with in the usual way by infolding or excision. The wound in the bladder wall, if easily accessible and of moderate dimensions, may be excised so as to bring fresh healthy surfaces together, with a good prospect of prompt and sound healing. I have recently been advocating the use of the thermo-cautery to sterilize the edges of wounds which are to be excised in other parts of the body. The charred edges are removed, and the fresh surfaces are brought together. Foreign bodies will, of course, be removed from the cavity of the bladder, if present, and from other situations in the pelvis, if accessible. Catgut of good quality ought to be used to bring together the muscular walls rather than non-absorbable material, in order to avoid subsequent calculus formation. Fine silk or linen thread may be used for the peritoneal suture, though good catgut will answer the purpose. The sutures should be continuous in order to render the bladder watertight. If the wound is very extensive, and much laceration is present, it may be impossible to close the bladder, in which case an attempt must be made to render the wound in the latter extra-peritoneal. In most cases of intraperitoneal bladder

wounds operated on, at the front the viscus has been completely closed. The peritoneal cavity is now cleansed, and, if much soiling is present, it is wise to insert a drain into the recto-vesical pouch. The question now arises as to whether a catheter ought to be tied in. In transperitoneal operations in civil practice I have found it unnecessary; at the same time it is well to encourage the patient to avoid distension and, if necessary, to pass a catheter every four hours until it is judged that union is firm. If the peritoneal surfaces have been well turned in and a continuous suture employed, leakage into the peritoneal cavity is very unlikely to occur. The objections to the practice of tying in a catheter will be dealt with later. A case recently operated on by Captain D. C. Taylor at a casualty clearing station, which subsequently came under the care of Major West at a base hospital, will illustrate the correct method of dealing with cases of this sort. I am indebted to Captain Taylor for notes of this case, sent down with the patient, but I shall use only those that bear on the question under consideration, leaving Captain Taylor to publish later the full account with that of other abdominal cases operated on by him at his clearing station.

CASE I.

Pte. McK. was wounded with high explosive shell on June 5th, 1916, three hours before admission. The fragment entered on the left side in the mid-axillary line 1½ in. above the iliac crest, and was retained. The patient had a pulse of 140 on admission, vomited, and had blood in the urine withdrawn by catheter.

Laparotomy was performed, the pelvis was found full of blood, and the ileum perforated in many places. Four feet of intestine were removed. There was a small hole in the posterior wall of the bladder, and a piece of shell was removed from the latter. The bladder wall was sutured, a drain was placed in the recto-vesical pouch, and the abdomen was closed. A catheter was passed every four hours for three days.

I saw the patient with Major West on June 14th, 1916, that is, nine days after injury. The wound in the abdominal wall had healed by first intention except for the track of the drainage tube, and the patient was passing normal urine and was in a highly satisfactory condition.

It will be observed that in this case no catheter was tied in, and although a piece of shell was removed from the bladder, it was not considered necessary to drain the latter. Captain Taylor is to be congratulated on the successful issue of this case.

Extraperitoneal Wounds.

Extraperitoneal wounds of the bladder are treated for the most part at the base, and offer problems for successful management not quite so simple as might at first sight appear.

In those cases in which the rectum is also wounded, and faeces are discharged into the bladder, a colostomy must be done to divert the flow. A transverse colostomy above the umbilicus is much better than an inguinal colostomy in these cases on account of the proximity of the latter to the suprapubic area should it be considered necessary to undertake any operation on the bladder in that region. Further advantages of transverse colostomy are as follows:

1. The stoma is far removed from the wounded area.
2. The opening is easily controlled.
3. Restoration of the continuity of the bowel is easily accomplished when the need for an artificial opening is past.
4. Should it become necessary later to remove any part of a damaged rectum, the pelvic colon can be mobilized and brought down to supply the deficiency, if it has not previously been interfered with by an inguinal colostomy.

A case which I saw in consultation with Captain Fitzmaurice Kelly at a base hospital will illustrate some points in the management of cases of this kind.

CASE II.

Pte. S. was wounded on August 2nd, 1915, by a bullet which entered 1 in. above the pubis and 1 in. to the right of the middle line in front. Passing from before back, it emerged through the third piece of the sacrum, also to the right of the middle line. The bladder is stated to have been full at the time of injury. The patient was admitted to a base hospital on August 8th.

On admission, there was found to be slight leakage of urine from the anterior wound; the bulk of the urine, however, and all the faeces were discharged from the large exit wound.

On August 9th Captain Kelly brought out the transverse colon, which he opened on August 10th. Irrigation of the bladder was carried out through the wound in the sacral region by means of a Carrel-Dakin tube and eusol. The wounds rapidly cleaned up, and normal micturition was restored early in September, when the cystoscope showed both bladder wounds healed and a disappearing cystitis. The patient was discharged to England on September 21st, 1915.

Captain Kelly recently received a letter from the medical officer in charge of the case in England, dated March 2nd, 1916, which stated that the patient was practically cured, and that the colostomy wound had been closed. There was now no discharge from the remains of the sinuses. It will be observed that in this case suprapubic cystostomy was not performed.

I am indebted to Captain Kelly for notes of this case. The opening at the base of the bladder was sufficiently large to allow of proper cleansing and drainage, and there was no point in making another, or rather enlarging the existing one, in the suprapubic region. Extraperitoneal injuries to the bladder are frequently produced by missiles which enter through the buttocks and upper part of the thighs. The track of the missile is frequently long and tortuous, being rarely less than two inches and frequently as much as six inches or more in length. Notwithstanding their tortuous character, many of these wounds with urine pouring from them come down from the front in a surprisingly healthy condition, and I have in these cases decided against any further operation on the bladder itself.

This treatment is not in accord with the usually accepted practice, which is to perform suprapubic cystostomy. The object of this appears to be to prevent urine from passing over the wounded surfaces, and to drain the bladder. Now most of the men in the fighting line have a most efficient saline antibacterial fluid in the sterile secretion which passes into their urinary bladder from their kidneys. If proper drainage be established in the wound leading down to the bladder, urine flows through the fistula, and the wound is kept continually irrigated. If the urine remains undecomposed there is no necessity to interfere with such an admirable arrangement. It is true that the bladder may become infected from the wound, and that instead of aseptic urine a highly irritating fluid may be forced through the fistula. It will be seen from what follows that this can be prevented to a large extent, and that even if the urine has been allowed to become foul, properly conducted irrigation of the bladder will in some cases at least restore the urine to its former sweetness. In addition to the surgical treatment, urinary antiseptics may be given internally, in the hope that they may have a beneficial effect on the urine and on the wound.

If the bladder is severely lacerated and large sloughs are likely to separate into and foul its interior, there can be no question that the bladder must be drained. I shall be reminded, no doubt, of the disastrous results of urinary extravasation in cases of ruptured urethra in civil practice. In those cases in which the urethra gives way behind a stricture the urine is likely to be septic, and, both in these and in traumatic cases, the urine is forced under considerable pressure beneath resistant fasciae. Sloughing of skin and subcutaneous tissue is, however, not unknown when other fluids are introduced under the skin. I have in my mind at the moment a case of this type in which a huge slough occurred in the upper part of the thigh after a subcutaneous injection of saline. Further, the surprisingly rapid recovery of cases of perineal section demonstrates the innocuous effect of the urine which necessarily flows over such a wound.

Let us suppose that we have a case of a bullet wound in the buttock involving the bladder. Urine is continuously forced out through the fistula. The usual suprapubic cystostomy is performed. Let the urine which lies at the bottom of the bladder, no matter what method of drainage be employed, be taken and examined. Instead of clear urine, a turbid fluid containing pus and many varieties of micro-organisms will be found; in other words, a mixed infection has occurred. Suprapubic cystostomy does not necessarily prevent leakage from the fistula, and I have under observation at the present moment two cases in which, notwithstanding suprapubic cystostomy, urine still finds its way through wounds in the buttocks. If the urine in the bladder can be kept clean and the fistula well drained, I believe it will be well to allow the patient to continue to flush his own wound from within outwards with a highly cleansing fluid like fresh urine. If the bladder becomes foul and irrigation fails to control the sepsis, and especially if the patient

begins to lose ground, cystostomy must be performed at once.

With regard to the presence of foreign bodies in the bladder, Captain Taylor's case, previously mentioned, and other cases we have seen, show that the bladder can be completely closed after removal of the missile, if the wound has been intraperitoneal. With an extraperitoneal wound, say, near the base of the bladder, when a foreign body has been removed by suprapubic cystostomy, the indications are not so clear. Extraperitoneal suture is not so likely to be satisfactory as intraperitoneal. The treatment to be adopted will depend on the condition of the bladder. I should like to try closure of the suprapubic wound in the bladder, the insertion of a drain into the space of Retzius, and assiduous attention to the bladder. If the latter becomes septic and the sepsis cannot be controlled by irrigation it is easy to open up the cystostomy wound. I may mention here that in wounds of the loin involving the kidney or ureter the resulting urinary fistulae seldom give rise to serious trouble. Most of the cases I have seen have done well, though the wounds have been continually soaked with urine.

The following two cases will illustrate the type of wound involving the bladder in which I think less severe measures than suprapubic cystostomy will be sufficient.

CASE III.

Sapper F. was wounded on February 2nd, 1916, by a bullet which entered over the great trochanter on the right side and lodged, as was afterwards ascertained, in the left thigh, passing across the pelvis, and causing much comminution of the right great trochanter. X-ray examination showed, in addition, fracture of the ilium and ischium on the same side. There was severe sepsis with an area of cellulitis and dusky red discoloration of the skin nine inches in diameter round the wound.

Captain Simpson, who was doing temporary duty at a base hospital, enlarged the wound and counter-drained in the region of the tuber ischii. In addition to the wound there was ecchymosis of the scrotum, but there were no urinary symptoms. Eleven days after the injury urine began to flow from the thigh wounds, at first independent of micturition, but later only when attempts to pass water were made. I was asked by Captain Bryan, who was now in charge of the case, to see the patient with a view to deciding as to the advisability of cystostomy. The cystoscope showed a healthy bladder. From the direction of the wound we came to the conclusion that the viscus was damaged near the neck and out of sight, about six inches deep from the entry wound in the thigh. As the patient's condition was good and the wounds were cleaning up and granulating well we decided against suprapubic cystostomy. On March 19th (about seven weeks after injury) a note was made to the effect that normal micturition was becoming established and that the leak of urine from the wound was very slight. A fortnight later the leak had ceased altogether and the case became one of fracture of the upper third of the femur.

The patient was evacuated to England on June 14th, 1916, with exact alignment of his femur and $\frac{1}{4}$ in. of shortening. A small sinus led down to a piece of necrosed bone, which will probably need removal.

It is quite possible that this was really a case of wound of the urethra near the neck of the bladder and not of that organ itself, but it is suitably introduced at this stage as an illustration of the policy of non-interference. The nursing of a case of compound fracture of the thigh in the upper third is difficult enough of itself, but if, in addition, the patient has a suprapubic wound leaking urine, the difficulties are much increased. Captain Bryan's hammock bed proved invaluable in the management of the case. The second case, which I saw in consultation with Major West at a base hospital, may be described as a test case.

CASE IV.

Pte. H. was wounded on May 26th, 1916, by two fragments of shell, which entered the pelvis through the right buttock. X-ray examination showed two fragments of shell in the pelvic cavity. The one which was judged to have wounded the bladder was situated on the left side, seven inches from the plate which was placed on the patient's back. To reach its final destination the missile probably passed through the following structures: Skin, gluteus maximus, great sacro-sciatic foramen close to the gluteal vessels, obturator internus, levator ani, vesiculae seminales, and bladder wall (twice). The missile probably passed just inside the great sciatic nerve. There was no sign of fracture of the bony pelvis in the X-ray photograph.

There was no leakage of urine until four days after injury, when a little began to trickle through the wound, independent of micturition. On June 1st the patient was unable to pass water himself and complained of urgency. Up to this he had been able to pass some by the natural passage. A catheter withdrew 6 oz. of turbid urine.

The patient was examined with the cystoscope on June 1st. While on the operating table he passed some foul-smelling urine loaded with pus. The cystoscope showed general cystitis.

On the left wall of the bladder was an area covered with dead white membrane, in the vicinity of which were some ecchymosed spots (point of exit of missile from bladder?). On the posterior wall was a punched-out circular aperture, rather less than the size of a threepenny-piece. Inside this circular area, which looked dark in colour, were some flecks of muco-pus and some small sloughs. On examination by the rectum no foreign body and no thickening could be felt. The patient had a slight evening rise of temperature, but was otherwise in good condition.

Major West was at first strongly in favour of suprapubic cystostomy. After consultation, however, we decided to begin with the less severe measure of washing out the bladder frequently and thoroughly, first with boiled water to get rid of the mucus and pus, and then with a weak solution of silver nitrate (2 to 10 grains to the pint). This alternate washing with water and nitrate solution was carried out at first twice and then once a day. Three days' treatment produced a great improvement, so that even at this early period the urine was almost clear. The patient continued to improve, and was discharged to England on June 13th, less than a fortnight after the commencement of his treatment, with his wound dry and his urine normal. His temperature had been normal for a week.

In this case foul-smelling urine was rendered sweet after a few days' irrigation. The patient will probably be fit to rejoin his regiment in a few weeks, whereas if suprapubic cystostomy had been performed his convalescence would have been much more prolonged. The foreign bodies were left, as it was thought that more damage might be done by delving in the pelvis than by leaving them alone, especially as the patient apparently suffered no inconvenience from their presence.

To sum up, I am of opinion that suprapubic cystostomy is not necessary in many cases of wounds of the bladder, provided that the latter can be kept clean and the external wound adequately drained. If there is likely to be much sloughing of the bladder walls, if there be severe and continuous primary or secondary haemorrhage, or if there be uncontrollable sepsis of the bladder, cystostomy will be the correct treatment. Cystostomy is performed not so much for any beneficial effect it may have upon the original wound, which must be dealt with on ordinary surgical principles, but in order to drain a badly infected bladder and to prevent the spread of infection to the kidneys. Extravasation of urine in concealed situations must be prevented by suitable incisions.

TREATMENT OF WOUNDS OF THE URETHRA.

The usual method of treatment in cases of wounds of the urethra seems to be that an attempt is first made to pass a catheter; if this succeeds, the instrument is tied in and the patient is sent to the base. Should catheterization fail, suprapubic cystostomy is performed.

Neither of these methods is, in my opinion, the best that can be done for the patient. Take the case with a catheter tied in first. An instrument cannot for long be retained in the urethra without causing urethritis. In a short time pus is seen oozing by the side of the catheter, and a dirty caked mass is found surrounding it at the meatus. The wound in the urethra, which may have been caused by a clean bullet, is now infected, and a slight injury perhaps is turned into a suppurating wound. But this is not the worst that may happen. The infection may extend back to the bladder and cystitis occur, or it may extend further still so as to involve the ureters and kidneys. I have seen all these things happen. The infection or additional infection of the wound of the urethra produces much greater infiltration than would have occurred otherwise, and the foundation of a severe stricture is thus laid. In addition to this, the catheter frequently becomes blocked, and it is not uncommon to find a full bladder with a blocked catheter effectually preventing micturition. Again, even in a few days, if the catheter is not removed, phosphatic deposit forms on the intravesical portion, the withdrawal of which excoriates an already inflamed urethra. The performance of suprapubic cystostomy is quite unnecessary, except perhaps in those rare cases in which blood finding its way back into the bladder forms large clots incapable of being evacuated. The treatment I suggest, and which is carried out in all cases referred to me, is as follows:

If the urethra is so damaged that either the patient is unable to void urine or is likely to have extravasation in attempting to do so, perineal section is performed. In all cases of doubt the same procedure is adopted. A dilator, a catheter, or any suitable instrument is passed down to the seat of injury, and, keeping strictly to the middle line,

the point of the instrument is cut down upon in the perineum.

Blood clot, irreparably damaged tissue, and foreign matter are removed, haemorrhage is arrested, and free drainage is established after thorough cleansing of the wound. The patient is now encouraged to pass his urine through the wound, hot compresses being used to relax his sphincter if necessary. If at first failure to pass urine should occur, it is better, in my opinion, to aspirate the bladder through healthy tissues above the pubes than to poke about in the perineal wound in the hope of finding the proximal end of the urethra or infect the healthy bladder by an instrument passed through a septic wound. When the sepsis has been controlled, dilatation, if necessary, can be carried out, and, later, plastic operations can be successfully attempted.

Here again the normal urine of the patient acts as an efficient cleansing lotion, and he flushed his wound from the depths outward every time he micturates. Treated on these lines cases of this sort heal with the greatest rapidity. The following two cases will illustrate some of the points I have tried to make.

CASE V.

Pte. J. W. H. was wounded on September 28th, 1915. A bullet entered the right groin in the region of the external abdominal ring and, passing obliquely across the pelvis, lodged in the left ischio-rectal fossa. A catheter was tied in at the front and the patient was passed on.

He was admitted to a base hospital on September 30th under the care of Captain Wolfenden. He was then in a toxic condition, though the temperature was only 99° and the pulse 100. He complained of pain and tenderness in the suprapubic region. No urine was passing through the catheter though the bladder was full. There was ecchymosis of the perineum but no extravasation of urine.

On October 1st the patient had a rigor, and Captain Wolfenden asked me to see him. We decided on perineal section. Captain Wolfenden accordingly explored the perineum, and found the bulbous urethra lacerated and a portion of the corpus spongiosum torn away. Unable to find the proximal end of the urethra, he opened the bladder above the pubis and drained it. The bullet, which had not injured the bony pelvis, was removed at the same sitting. The patient died from shock and toxæmia the same evening.

For a similar case in future I should suggest the following treatment: After injury, a perineal section should be done, so as to inspect the injured part, remove clots and tags, arrest haemorrhage, provide free vent for the urine so as to avoid extravasation, and thoroughly cleanse the wound, which should be left widely open. The patient should be encouraged to pass urine, and, if unable to do so, aseptic puncture of the bladder in the suprapubic region should be resorted to till micturition has been established through the perineum.

CASE VI.

Riflesman R. was wounded by a machine-gun bullet on February 17th, 1916. Blood flowed from the urethra after injury. There was a small, clear, circular entrance wound 1½ in. below and to the outer side of the left ischial tuberosity. The exit wound was on Nélaton's line, half-way between the great trochanter and the ischial tuberosity. The bullet had in its passage also made a figure-of-8-shaped wound in the perineum, close to the bulb. There was considerable ecchymosis of the perineum. The bullet had been extracted at the field ambulance. A No. 10 rubber catheter had been passed and tied in at the casualty clearing station.

On arrival at the base on February 18th, 1916, the catheter was found to be blocked, and no urine was passing through it. There was pus at the urethral orifice.

The catheter was removed, and I was asked to see the case with Captain Simpson. Perineal section, with treatment on the lines already indicated, was advised. Captain Simpson operated on February 19th and found the urethra divided as to three-quarters of its circumference, about one inch from the commencement of the bulb. He thought the case favourable for an attempt at suture of the divided urethra. The attempt failed, however, urine leaking freely on the third day. On February 25th, nine days after receipt of the injury, leakage from the perineum had ceased; on February 29th the perineal wound was almost healed; and on March 1st the patient was evacuated to England with his wound quite healed.

In this case an attempt was made by Captain Simpson to re-form the urethra round a catheter. This will rarely be desirable or feasible with gunshot wounds under war conditions. In case such an attempt were made I should suggest suture of the roof, leaving the floor of the urethra quite free for drainage, and the avoidance of a catheter.*

I do not know if the views expressed in this paper will meet with general acceptance. They are only put forward

* An operation on these lines was suggested for stricture by a writer in the *British Journal of Surgery* more than a year ago.

to stimulate those who are dealing with cases such as I have described to consider each on its merits rather than adopt any hard-and-fast rule for all.

A CASE OF CYST OF THE INTESTINE.

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Cysts connected with the intestine are rare, and, though usually found by chance at *post-mortem* examinations, may nevertheless be of occasional clinical interest and importance. They are found in newborn children and in the early years of life, but are quite likely to be met with in adults over thirty years of age.

Clinical History.

The subject of this communication was a baby 3 months old. It was admitted to University College Hospital under one of us (C. B.) on December 16th, 1915. The child was born at full term, when it weighed 8 lb., and was breast-fed till the age of 5 weeks. From birth it vomited a little after its feeds, the milk being returned unchanged. At the end of five weeks, this symptom becoming worse, the child was weaned and various kinds of foods administered without any relief to the vomiting. Wasting supervened after the first week. The bowels were from birth very constipated, being opened about once in four days until the end of the fourth week, when eight days elapsed on one occasion without an action occurring. The stools were otherwise normal. The vomiting, constipation, and wasting continued, and for a week previous to admission the bowels had not acted.

On admission the patient was a wasted female infant weighing 7 lb. 12 oz., and looked as if it would not live long. There was no general or local distension, neither could visible peristalsis be seen in the stomach or intestines. The liver could be easily felt. There was no tumour in the epigastric region, but a mass was palpable at the pelvic brim, which could be indented with the finger. The rectum was quite full of scybalous masses. The temperature was normal and the pulse varied from 108 to 135 beats per minute. There were no signs of disease in the heart or lungs. The child was not very hungry. It was put on feeds of cow's milk and water, and was given hyd. & cret. Olive oil enemata were administered.

Under this treatment the bowels acted from three to four times daily. The stools were green and very constipated. For the first five days the child vomited once a day, and for the next four days vomiting ceased, and the child appeared better. At the end of this time, however, the vomiting returned, the infant refused its feeds and died on January 1st, 1916.

Post-mortem Examination.

The body was emaciated and the abdomen considerably distended. The thoracic viscera showed no noteworthy changes.

FIG. 1.—Diagram to show the relation of the cyst to the ileo-caecal valve.

The peritoneum was normal. The stomach and small intestine were considerably distended with gas, and the large intestine was empty and contracted.

Adhering to the terminal part of the ileum was a cyst, measuring 3 cm. by 2.5 cm., ovoidal in shape, with its long axis parallel with that of the bowel. (Fig. 1.) The cyst lay on the