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CLINICAL OBSERVATIONS
ON
MECHANICAL INJURIES OF THE URETHRA,

DELIVERED AT ST. GEORGE'S HOSPITAL.

By Sir Benjamin Brodie, Bart.

There is a species of contraction of the canal of the urethra, which is called a stricture, but which, in many of its symptoms, differs from ordinary stricture. You will find this subject mentioned in a general way in Sir Everard Home's Works, and in the writings of other surgical authors; but they are not described with care and accuracy in any surgical work with which I am acquainted. These obstructions of the canal of the urethra, from mechanical violence, may take place in various ways. A boy got a ring drawn over his penis so tight, that the parts were affected with severe inflammation, and it could only be removed by being sawn off. The part over which the ring pressed was between the scrotum and the pubis, and there was an ulcerated opening into the cana of the urethra; after a time he came into the hospital. The ulcerated opening had been hard and circular, and was now healed over with a cicatrix. At this part the canal of the urethra was much obstructed and narrowed, and a small probe could barely pass through it.

The most frequent cause of these obstructions is, from a severe blow on the anterior part of the perineum, behind the scrotum, as often occurs to persons who are riding unruly horses, and who, from that circumstance, are liable to be thrown forward on the pummel of the saddle, and by which means the urethra is pressed sharply against the bone of the pubis. Now such an injury as this may occasion an obstruction of the urethra without the complication of an external wound, or the formation of an abscess. I have seen several such cases, and have made notes of them. A man, aged 22, was riding a restive horse, was thrown forward, and received a blow from the pummel of the saddle. There was severe pain, and bleeding from the urethra, during the night, but which ceased in the morning; this was succeeded by severe pain in making water, which subsided also after a certain time. For a month he suffered no inconvenience, but the stream of water diminished in diameter, and divided into two smaller ones; the contraction of the urethra continued to increase, and great pain was felt on emptying the bladder. At last, however, complete retention of urine came on, which, after a time cured itself spontaneously. Seven months after this he came into this hospital, under my care, and his stream of urine was then no larger than a fine wire. On introducing a catheter, its progress into the bladder was stopped, between the bulbous portion of the urethra and the perineum; and when the instrument was pushed forward, it was felt to pass over a rough and gristly surface. The process of dilating the canal of the urethra was a very slow one, and caused great local and constitutional disturbance, which required the dilatation to be desisted from on many occasions. He was in the hospital for five months, and when he was discharged he could only bear a middle-sized catheter to be passed, and his stream of urine was very slender. Now, in this case, you see that the obstruction was much in the same situation in the urethra that a stricture would be, and yet how very different were the symptoms. In a comparatively short time retention of urine comes on, and there is great difficulty in dilating the strictured portion of the canal. In a common case of stricture, you know that the dilatation is accomplished very easily, whilst, in this case, a full-sized catheter never could be passed, and the urine never flowed but in a very moderate stream.

Sometimes you will meet with cases of this kind, in which there is a deep wound of the perineum, dividing the canal of the urethra as by an incision. If the division of the urethra be only partial, you have then a case somewhat similar to that of lithotomy; but if the urethra be cut quite across, the cicatrix contracts, and, when it heals, the anterior cut edge, if not properly treated, will contract entirely, and close up the urethra. A boy fell on a bottle, the sharp edge of which divided the urethra, behind the scrotum and pubis. Six months after the accident I saw him. The urethra was closed up, and the urine flowed through a fistulous opening in the perineum, by which the canal of the urethra was agglutinated to it. I performed an operation in this case, such as I shall describe to you hereafter. The boy died, however, soon afterwards, from effusion into the ventricles of the brain. On examining the parts after death, we found the canal of the urethra to be hard and gristly, and the cicatrix had fastened it to the pubis.

Again, there are cases occurring where there is no incised wound of the perineum, but where there is severe contusion and laceration of the urethra, and much bruising of the neighbouring parts, causing effusion and discharge of blood by the urethra, with some escape of urine into the cellular texture, causing inflammation, suppuration, and abscess. Sometimes sloughing, with all other degrees of mischief connected with it, occur in these cases. There may be a large quantity of pent-up matter, and you will have all the sad train of constitutional symptoms which obtain in these cases, or there may be no effusion of urine, or the abscess may burst externally. Sometimes you will meet with cases in which so much mischief has arisen from the accident, that the canal of the urethra may be completely obliterated and destroyed for the space of an inch. In these cases, if there be a urinary abscess, you will frequently have

putrid matter, with foul tongue, and typhoid fever. When the abscess bursts, the local and constitutional symptoms become relieved, and the urine flows through the opening in the perineum. Gradually, however, you find this opening contracts, yet still allowing a sufficient orifice for the urine to flow through it. This communicates with the posterior part of the urethra, and nothing flows through the natural passage along the penis. If you are called in to a case like this, at this peculiar stage of its progress, you may be very apt to consider it as not of greater consequence than a fistula in perineo; and I have known many very good surgeons, not acquainted with these cases, to be deceived by them. Now the two cases, you will at once perceive, are very different—the fistulous orifice in the perineum is not caused by a stricture, but by a cicatrix; and the latter is very different to the former. If a man has a sore leg, it heals, and the parts become sound; when he is recovered, and begins to move the leg, the muscles act freely and fully, and the cicatrix of the ulcer stretches and cracks, and a fresh ulcer is again formed, and the very same thing happens after a burn. The moment you attempt to dilate the cicatrix, it ulcerates, and the patient becomes again liable to retention of urine, from the occurrence of inflammation. Fresh abscesses may and often do occur. If you are called in to these cases soon after their first occurrence, a little attention will prevent much future mischief to the patient. If there should be much hæmorrhage from the urethra when you are called in, direct your patient not to make water, but introduce an elastic gum catheter, and draw the urine off. Whether there be effusion of urine into the cellular texture of the surrounding parts or not, you will generally find some ecchymosis, to a greater or less extent; but this latter symptom is not always to be considered as a sure diagnostic mark that effusion of urine does exist. If ecchymosis, without any other symptom, be present, do not cut down upon the perineum. If there be much extravasation of blood, it is bad practice to lay it open, and expose it to the air, as the extravasated matter may thereby become putrid, and cause extensive suppuration and burrowing abscesses, whereas, if it is kept covered up, it may become absorbed. If, however, you have to make an incision, make it down to the membranous part of the urethra, and introduce a catheter into the bladder, and keep it there; and this is what you should do in the first instance. But if you are not called in until a month has elapsed from the date of the accident, you must first see if you can introduce a catheter in the ordinary manner; in nine cases out of ten, however, you will fail. But if you are fortunate enough to succeed in this one case, you must proceed in the following manner:—Introduce a staff along the urethra, into the bladder, and place your patient in the same position as for the operation of lithotomy. Cut down, through the cicatrix, on to the staff, and then introduce a gum catheter into the bladder, and then treat the case as it ought to have been treated in the first instance. But, in spite of all your treatment, you will find the parts contract, and the obstruction return again; but you must persevere, and, in order to keep the parts open, you must teach your patient to pass a bougie for himself every day.

You will sometimes meet with cases of this kind in which no instrument will pass into the bladder, and where the contraction has been so great that a portion of the urethra has been entirely obliterated. I have had two such cases under my care. A gentleman, who was out riding, in endeavouring to make a leap, received a severe blow on the perineum from the pummel of the saddle; there was some hæmorrhage from the urethra, with extravasation of urine, and consequent sloughing. The catheter was introduced into the bladder, and then removed, for what reason I do not know. Sloughing ensued, and there was a fistulous orifice behind the scrotum. I first saw him seven months after the original accident, and I endeavoured to introduce an instrument into the bladder, but it would not pass. After making several attempts which were all unsuccessful, I had him laid down and placed in the same position as for lithotomy. A staff was passed down to the obstructed portion of the urethra, and I cut down through the cicatrix in the perineum, but for some portion of its length there was no urethra to be detected, but a cicatrix in its place. I made a long incision in the cicatrix, and I was fortunate enough to cut down into the posterior part of the urethra, and I then passed the staff on to this part through the obstructed portion of the urethra; I further introduced the staff on into the bladder, and kept it there for some days, occasionally withdrawing it for a short time, and again re-introducing it. After being in for some time it was taken out, and again replaced occasionally, according to circumstances. I have not seen this patient for some time, but when last I saw him, the orifice in the perineum was only as large as a pea, and when pressure was made upon it, the urine flowed entirely along the urethra, and by this time I suppose the wound is entirely cicatrised over. Now in this case I made the patient as well as I could, but bad was the best; for as, the new urethra formed, a great disposition to contract would manifest itself, and, although a lining mucous membrane would again form, it would retain all the contractile properties of the original cicatrix. The second case of this kind that occurred to me, was that of a young gentleman who received a blow on the perineum. There was extravasation of urine and consequent sloughing; and when I saw him, there was a fistulous orifice in the perineum, through which the greater part of the urine flowed. I endeavoured to pass a catheter, but failed in the attempt. I think in this case, from what I observed, that the urine got into some cavity in the cellular texture of the perineum, out of which it flowed through the external fistulous orifice communicating with it. Finding all other modes fail, I adopted the same plan as in the former case. I found a large abscess in the perineum, but I could detect no trace of the urethra; I agreed in consultation with Mr. Guthrie, who attended the case with me, to do nothing more to this patient on that day, but to leave him quiet for a short time. Suppuration ensued, and on the next occasion of examining the parts, I found the posterior portion of the urethra, and that for the space of one inch the canal, was entirely obliterated. In this case, I introduced an instrument into the bladder, from the perineum, through the orifice by which the urethra communicated with the abscess, whilst I also introduced a straight silver tube armed with a stilette and lancet, and projecting the stilette very cautiously forwards, I cut through the cicatrix, and then introduced a *gum catheter* into the bladder.

Abscesses in Connection with Stricture.—The most common place in which you find abscesses in these cases is in the perineum. The continued pressure of a body of urine behind a stricture may soon cause a portion of the urethra to ulcerate, and the next time afterwards, when retention of urine occurs, the urine is pressed with the whole force of the bladder against the surface of the ulcerated cellular membrane of the urethra. If the surface which is ulcerated be but small, and a few drops only of urine become infiltrated into the cellular texture, you may very likely have the usual consequences of inflammation, suppuration, and abscess following. You will sometimes find the abscess situated behind the triangular fascia, and sometimes between its laminæ. Sooner or later it bursts, but its period of coming forward varies; if it lies behind the triangular fascia, it may be longer than if it is in front of it. If the inflammation and consequent suppuration be slow, there will be less

constitutional disturbance. If the symptoms run high you will have a severe form of inflammation, and a more extensive sloughing, and the putrid matter will poison the system, and you will have the concomitant constitutional symptoms of low fever, black tongue, and muttering delirium; or you may have retention of urine in combination with this, in which the patient's life will be in extreme jeopardy, and if you attempt to pass the catheter you may fail; but if there be matter pent up, and you let it out, the patient will obtain relief immediately. The contents of the abscess may be confined to the perineum, but it may also come forward and present itself before the scrotum, or there may be sloughing of the scrotum itself in connection with it. I examined a body after death, in which I found that such an abscess as I am now speaking of, had burrowed down the thigh and into the groin and across to the other side of the foramen ovale of the ischium, where there was a portion of dead bone to be felt, and from this point it had pointed upwards and forwards over the pubis, by the ligament of the corpus cavernosum of the penis. I knew a case of this kind in which the abscess burrowed up on each side of the bladder into the pelvis, and the patient died. In old persons I have known abscesses form in connection with the bladder, and present in the lower part of it; I knew a case of this kind in which such an abscess ran up by what is called the urachus up to the navel, between the peritoneum and abdominal muscles. These abscesses generally produce great mischief. There is a great analogy between these abscesses and those of the rectum, which terminate in fistula, and these latter have always an internal and external opening, though the latter may be in some cases wanting. Abscesses in perineo sometimes become fistulous and will not heal spontaneously; the sides become hard and callous, and there will be a button-like projection around the orifice of the urinary fistula.

Treatment.—It is of very great importance that you should know how to treat these abscesses correctly, for prompt and decided conduct on your part in the management of these cases, will make all the difference to the patient between recovery and death. When the abscess presents in the perineum, and can be felt, no one would hesitate for one moment to let it out, whether the symptoms be urgent or not. But you will meet with cases in which the symptoms may be very urgent, and yet you may not be able to distinguish any sense of pointing or fluctuation in the perineum. The abscess may point up behind the triangular fascia, and all you can feel is a hardness and a lump pointing out where the matter is lodged; and in conjunction with these local symptoms, you may have the constitutional ones of difficulty of passing water, and a typhoid state of tongue. If there be matter, you must of course let it out, and in order to do this effectually, you should have a new lancet, rather longer than usual, as the matter sometimes lies very deep in the perineum, especially in fat people. You must plunge your lancet in at the spot where you feel the hardness and the tenderness, but be careful not to injure the bulb of the urethra, or the artery of the bulb; and in order to avoid these, you should bear in mind the anatomical relations of the parts you have to cut through, and you will have to plunge your lancet in up to the handle. When you find a drop of matter oozes out, withdraw your lancet and introduce a director; along this you may pass a probe-pointed bistoury, and dilate the opening you made originally with the lancet. You will in this manner frequently be able to open a very deep seated abscess, which you were only able to detect externally by its hardness and tenderness in the perineum. In these cases you will sometimes find the constitutional symptoms to be a more correct guide for you than the local ones. You must make a very free opening into the abscess, or some matter will lodge behind, and from exposure to the air it will become putrid. When you open such abscesses as these, you will frequently find them to let out putrid matter, according to the quantity of the infiltrated urine. But one great reason why you should make a free opening in the abscess to let all the matter escape, is to prevent the abscess coming forward into the scrotum at the angle between it and the penis. The cellular texture of the scrotum consists of empty cells, which contain no fat. Where an abscess occurs in cellular texture, filled with fat, it is not of so much importance; but where the cells are empty, the swelling and inflammation are apt to increase in an extraordinary manner, and may torment the patient for many weeks if a few drops of urine become infiltrated into the cellular texture of the scrotum; in injecting a hydrocele, the same results may accrue as from the presence of an abscess. You may meet with cases in which an abscess may press on the urethra and cause retention of urine, and thus you may have an over distended bladder, and an abscess in the perineum at one and the same time. You try to introduce a bougie or catheter, but it will not enter the bladder, because the urethra is squeezed up impermeably by the abscess; you must in these cases open the abscess, and then introduce a small catheter and draw off the water.

When an abscess is opened, or bursts of its own accord, the sides of the aperture become hard and callous; some urine comes by the urethra, and some by the abscess, and prevent it from healing. Now, such a state of things as this is called a fistula in perineo, and you may have the same thing occur if the abscess opens on the pubes or in the groin. In a fistula in ano you have the rectum bearing the analogy that the urethra does in fistula in perineo. But it does not follow, that because they occur much in the same manner, that the same treatment will do for each case. The name of fistula has misled many persons. Urinary fistulæ are not to be cured by simply laying them open; the only cases of the kind in which it is right to open them, are those in which the matter does not discharge freely. It is an important practical rule, that in order that an abscess should heal, it is highly necessary that its contents discharge freely, and do not lodge any where; and if it does not flow out readily, you must enlarge the original opening, or make a counter opening. The late Sir Everard Home was the first surgeon who really understood how to cure these cases; he used to say, that as long as the urine flowed through the fistula it would never heal; and he used to leave the fistula alone, and merely dilate the stricture; this is the mode of treatment I recommend you to adopt; and in nine cases out of ten you will be successful, and cure your patient. But there are cases in which, owing to the inflammation, suppuration, and sloughing having been in the first instance very extensive, the opening in the perineum is very large, and will not readily heal. In these cases you must pass a full-sized instrument into the bladder every day, and in time the fistulous orifice will heal; there are very few cases indeed that do not get quite well under this plan of treatment; you must teach the patient to do this for himself. The time it will take to cure a patient by these means will vary; it may be for one month only, or for six, or for twelve months.

I do not think that I can recal a single case that has not been cured by these means, when properly persevered in. But I have seen other methods tried by other surgeons; I have known some who introduce the catheter very often, to prevent the urine passing through the fistula at all, but the frequent irritation caused by these means has been productive of great harm, and future mischief. In some of these cases I have known a gum catheter introduced into the bladder, and retained there, and let the water run off through it; occasionally, it has been taken out for a short time, and again introduced. Occa-

sionally, I have known an oiled silk tube attached to the gum catheter, and passed thence into the chamber pot. But I never knew a patient get better sooner by these means than by those I have just spoken to you of; for some of the urine is sure to flow out by the side of the catheter, and by keeping it constantly retained it acts as a sort of seton in the urethra, and in time the lining mucous membrane secretes pus, which escapes by the fistulous orifice, and prevents its healing. Where you find this to be the case, your best plan is to melt some nitrate of silver in a spoon, and dip a silver probe into it so as to get a knob of it on the end of the probe, and pass this down to the bottom of the fistula; you may do this once every three or four days, or you may use the caustic potash to it once a week. It is quite necessary that you should apply these remedies to the bottom of the wound, for if you apply them to the orifice only, at first that will heal up, and the parts below remain open as before; this rule of treatment you will find applicable to other fistulæ, as well as to the particular one now more immediately under our consideration; and I am induced to mention this circumstance, because, in after life, you will find it to be a valuable one. I would not advise you to apply any lint in these cases, to keep the parts open; you will generally find it to be of more plague than profit to you.

In some of these abscesses in the perineum you will find no matter pointing below, and no hardness or swelling to indicate where it is; but the matter flows out entirely by the urethra. Now this case very closely resembles a blind fistula of the rectum, and you must, in such a case, make a very careful examination of the perineum to discover the exact locality which the matter occupies, and there you must make a counter opening. I have sometimes had patients come to me, complaining of long-continued gleet, and on examination I have found a small kernel-like knob in the perineum, about as large as a hazel-nut; such patients will most frequently have had stricture, without much attendant retention of urine; a patient may continue in this state for many years, Now, the little hardness in the perineum arises from a deposition of lymph, and in the centre of this hardness there is the small cavity of an abscess, which communicates by a narrow opening with the urethra behind the stricture; and whenever the patient makes water, there may, perhaps, be one drop of urine forced into this little abscess. In such a case as this you must, of course, dilate the stricture, but that is not all which you must do. Place your patient in the same position as for lithotomy, and plunge a long lancet obliquely into the centre of the little knob, to make an opening into the cavity, which you will be more likely to do by giving the lancet an oblique than a straight direction. Introduce a piece of lint into the wound, in order to keep the edges apart; in a few days suppuration will be established, and you will find that a drop or two of urine will come through the orifice that you have made, and then you will find that by this plan you have converted a blind fistula into an open one. If, when you plunge in your lancet you should not be fortunate enough to find the cavity, introduce a piece of caustic potass into the bottom of the wound, and make a slough; and when this slough comes away it will, in all probability, open the abscess, and the case is then converted into one of simple urinary fistula. In practice you will sometimes find that something of this kind will frequently occur in treating fistula, situated in the neighbourhood of the rectum. Ere I conclude this subject, let me again remind you that these cases are important ones; important to the patient as regards his future life and comfort; important to the surgeon as regards his future name and reputation, as a skilful member of his profession.

CASES
FROM THE EARLY NOTE BOOKS
OF THE LATE
SIR ASTLEY COOPER, Bart.

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APOPLEXY.

A man was admitted into St. Thomas's Hospital for a venereal complaint. He was aged 40. It was observed at the time of his admission that there was an appearance of wildness in his manner, and incoherency in his conversation. His urine passed off involuntarily.

Dec. 11. He was obliged to be confined in bed, as he was wild and unmanageable.

12. He continued the same, until the evening, when he became insensible, and seemed to have lost the use of his left side.

13. He was sometimes comatose, at others raving. In other respects he remained the same.

14. He died easily.

Dissection.—On examining the brain, it appeared sound till I came to the lateral ventricles, which contained each a coagulum of the same form as the plexus choroides, and lying on them.

The third ventricle was full of blood.

The fourth ventricle was also fully distended with blood, and from the lower part of this cavity it had escaped by rupture to the basis of the cerebellum, where there was a considerable accumulation between the tunica arachnoides and pia mater.

Some pus was found in the fourth ventricle, mixed with blood.

The anterior lobes of the brain were concealed by an effusion of lymph, and in some parts by a purulent fluid.

WOUND OF THE KNEE JOINT.

I saw a case of a young man, who twenty-one days ago made a small wound into the knee-joint with an axe. Sticking plaster was applied and kept on for five days, when, as he complained of pain, it was thought right to dress him again. On the following day some discharge took place, and on the seventh day he began to complain of excessive pain, his cheeks became flushed, and he had all the symptoms of constitutional irritation. An immense discharge took place both from the joint and the bursa above it. These symptoms continued until the nineteenth day, when the discharge from the joint suddenly ceased, and he was attacked with shivering. A poultice had been applied, leeches had been used, and the body kept open.

I ordered the leeches to be continued; the aq. ammon. acet. to be applied; the limb to be kept perfectly at rest; and the saline draught to be given internally.

This person's knee should have been sewn up.

Remarks.—Symptoms of Irritation.—As symptoms of irritation are the effects of injury, and the means which nature takes to restore action, they should not be altogether checked, but only kept within those bounds which are necessary to prevent their being destructive. In all wounds, therefore, they are not to be entirely suppressed.

In disease it is different, for in disease the symptoms of irritation are leading to great mischief. For instance, suppose a man has inflammation in his testicle, this rouses the heart to action; if this is left to itself, it produces suppuration; but if moderated, matter is prevented from being formed.

But in a compound fracture, inflammation, suppuration, and ulceration must happen, and the symptoms which these produce are rather signs of a healthy state of body than injurious in their tendency.