PROVINCIAL MEDICAL & SURGICAL JOURNAL.

EDITED BY DR. HENNIS GREEN AND DR. STREETEN.

No. 20. Vol. I.] LONDON, SATURDAY, FEBRUARY 13, 1841.

PRICE SIXPENCE.
[STAMPED EDITION SEVENPENCE.]

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CLINICAL LECTURES,

IN COURSE OF DELIVERY DURING THE PRESENT SESSION
AT GUY'S HOSPITAL,

BY BRANSBY B. COOPER, ESQ. F.R.S.
(Published with Permission of the Lecturer.)

MONDAY, FEB. 1, 1841.

LECT. X.—On Stone in the Bladder, and Lithotomy.

GENTLEMEN,—As there is a man now in the house on whom I shall perform the operation of lithotomy in the course of a few days, I shall direct your attention this morning to the disease for the relief of which that operation is performed, and then demonstrate the successive steps of the operation on the subject you see before you. I do so in order that you may have the opportunity of comparing the account I give you of the symptoms and progress of the disease, with that which you may obtain at the bedside of this patient; and, secondly, that you may thoroughly understand what you will see in the operating theatre, and be enabled to judge if my precept and example vary.

The disease, then, is stone in the bladder, and the cause of the disease is commonly dependent on derangement of the organs of digestion and assimilation. We have lately gone over these organs in the anatomical lectures, and you will therefore readily understand how the integrity of the blood depends upon the perfect manner in which they perform their functions; and it then naturally follows, as all the secretions are derived from the blood, that if any of the usual constituents of this fluid be in excess, or if it contain substances which it does not in the healthy state, the secretions will also be altered in their physical condition and chemical composition. Thus, under certain states of the digestive organs, free acid is secreted by the kidneys, which decomposes the lithate of ammonia always found in healthy urine, uniting with the ammonia, and setting the insoluble crystalline lithic acid free, forming the well-known lateritious sediment. Sometimes the lithic acid is formed in such quantity that it is deposited in the vessel soon after the urine is voided, but more frequently it does not separate till the urine has cooled, it being soluble in moderate quantity in the warm urine. In this case no mischief may result, but in the former it is as liable to separate in the urinary passages, as in the earthen vessel, and then you have a nucleus formed, which, by the incrustation of successive deposits, is converted into a urinary calculus. You should always attend to the state of the urine in cases where there are any symptoms of derangement of the urinary organs, because, as you may readily understand, you may so modify it as to prevent the occurrence of deposition.

Now with regard to the symptoms denoting the formation of a calculus: it is very remarkable that in some cases there is no pain whatever, and sometimes the first notice the surgeon has of the case, is being called upon to relieve symptoms produced merely by the mechanical obstruction of the stone to the passage of the urine. I was reading the other day in Pepys's Diary, an account of an Alderman Adams, who had made no complaint, and had not suffered from a single symptom of urinary disease, till retention of urine came on, and he died; when, on examination of his body, a stone was found in his bladder which weighed twenty-five ounces. I was once called to a man, a patient of Mr. Harrison, of Hodsden, who had never been affected with the symptoms of stone, but was suffering from retention of urine. I passed a catheter, and found an obstruction in the membranous portion of the urethra, evidently caused by the presence of a calculus, which I removed by an incision through the perineum, but, on passing the instrument on into the bladder, we found that this cavity was nearly filled by a very large stone. The man afterwards came into this hospital, and died with his constitution completely broken up. After death we removed a stone from the bladder of immense size. However, these are exceptional cases, for, in most instances where urinary concretions have formed, their presence is soon denoted by a well-marked train of symptoms. Unless some foreign body has found its way into the bladder, and forms a nucleus, the kidney is the first seat of the morbid deposit, and then you have pain in the loins, sickness, numbness of the thigh, and retraction of the testicle. If the concretion does not pass on, inflammation is set up in the kidney, and you have acute inflammatory fever, with pain in the loins, and intolerance of pressure. In some cases abscess forms, which points in the loins, and, bursting, the stone finds an exit; and there are cases on record where stones have been removed from the kidney by surgical operation.

It is much more common, however, for the stone to pass from the kidney into the ureter, and then the symptoms I have just enumerated become greatly aggravated. You have violent pains in the groin and loins, with spasmodic retractions of the testicle, nausea and vomiting, with faintings, sometimes approaching to a state of collapse. The stone either passes on into the bladder, or stops in the ureter. In the latter case, inflammation is excited, adhesions of the peritoneum unite the ureter to the loins, the calculus ulcerates through the ureter, suppuration is set up in the soft parts, and the stone is discharged. I once saw a case of this kind with Sir Astley Cooper. He took me over to Limehouse, to see a gentleman who had an abscess, which was supposed to depend on disease of the hip

joint; and, on opening this abscess, he put his finger to the bottom of the wound, and, feeling something hard and rough, thought it was a piece of exfoliating bone, but, when he had removed it by the forceps, it proved to be a urinary calculus. Well, after this, by a patient investigation of the symptoms, he was enabled to trace their cause from its formation in the kidney to its passage along the ureter, and then, as it had not reached the bladder, it had evidently passed through the ureter by ulceration, and excited suppuration in the gluteal region. A somewhat similar case to this fell under the notice of Boyer, a French surgeon. His patient had suffered from a train of symptoms clearly referable to the passage of a calculus along the ureter, but they were not followed by the relief commonly experienced when the stone passes into the bladder. The suffering continued, the pain in the loins was acute, and much increased after any quantity of fluid had been taken. On sounding, Boyer could detect no stone in the bladder, but, on passing his finger into the rectum, he found a tumor behind the prostate, and discovered that a stone was impacted in the ureter, just where the latter enters the bladder. He therefore performed what is called the recto-vesical operation, cutting into the bladder through the rectum, and then withdrew the stone with a pair of forceps. This I believe to be a unique case, at least where the operation was successful. You may, then, have to operate for the removal of a stone when it is detained in the ureter, but, generally, all that is required of you is to adopt means to lessen the suffering of the patient during its passage into the bladder, and, by counteracting spasm, to facilitate its transit. For this purpose general bleeding is sometimes, though not very often, necessary; cupping on the loins, with a full opiate, a warm bath, and a cathartic enema being generally sufficient for your purpose.

When the stone has entered the bladder, the symptoms in the early stage, and, indeed, in all stages, vary very considerably in their severity; and this, not from any apparent connexion with the physical or chemical properties of the stone, for we often see very little suffering caused by the oxalate of lime, or mulberry calculus, the surface of which is very uneven, while the most excruciating agony often accompanies the phosphate of lime, a much less weighty and far smoother stone. It also often happens that where there has been a good deal of pain when the stone is small, it becomes considerably diminished when the stone has become very large; and this may probably be accounted for, from the circumstance that when the stone is very large, the urine dribbles off from the bladder, over the surface of the stone, into the urethra, without there being any contractions of the bladder; while when the stone was small, the bladder contracted strongly upon it, and caused acute suffering. Of all the varieties of calculi, that which is called the triple phosphate, being formed of phosphate of ammonia and magnesia, is accompanied by the most suffering; and if from the presence of the phosphates in the urine, you can decide that a stone is of this nature, your prognosis will always be more unfavourable. It may be questioned, perhaps, whether there is some peculiarity of constitution which renders a patient acutely sensitive to the pain produced by a calculus, and determines the formation of the triple phosphate, or whether this stone, once having been formed, necessarily injures the general health of the party in so marked a manner. However this may be, making allowance for the variation in the symptoms depending on the composition and size of the stone, and the constitution of the patient, soon after it has entered the bladder this organ becomes irritable, there is a frequent desire to pass water, and uneasiness after it has passed. The patients never complain of pain during the act of micturition, but afterwards; and the pain is not under the pubes in the region of the bladder, but at the under part of the glans penis, just in the situation of the frænum. This uneasiness is relieved by bending the body forwards, and by pulling the

prepuce, and thus you find the prepuce much elongated, especially in children. Then another marked and very constant symptom is, that during the flow of the urine the stream will be suddenly stopped, but will flow again on some change of position. This is evidently owing to the stone coming to the vesical orifice of the urethra, and closing the passage, and then falling away again on the position being altered. Then you always find these persons walk very cautiously; they go down stairs especially in a very careful manner, to avoid any jolting; and if by any accident they get a sudden jolt, their urine becomes bloody. It is a common question in hospitals to ask them if they came in a tax-cart, and they reply, no, for if they ever did their urine would certainly be bloody. The urine also contains a large quantity of mucus, though it may pass clear, for mucus is soluble at 98°, the temperature of urine in the body; but when this fluid cools it deposits the mucus in considerable quantity. This is owing to a healthy action of the mucous membrane, the increased secretion being calculated to defend the delicate structure from the irritation of the stone. After a time these symptoms increase in severity, the pain becomes more violent, the desire to pass water more frequent, and the urine contains more blood and mucus. The rectum also sympathises with the bladder, and tenesmus is very constant; and it is not unfrequently the case that the patient cannot pass his water without at the same time evacuating the contents of his rectum. The amount of agony often suffered in this stage is almost beyond conception. I remember once going to Lambeth with Mr. Cline to see a patient; and this man had tied a cord across two of his bed posts, over which he threw his legs, and thus suspended himself by his hams. There was no doubt some ulceration of the bladder, and by this posture he made the stone gravitate from the ulcerated part. You may be inclined to say, when you consider what an excessively painful posture it must be to hang by hours together on a cord by the hams, that the remedy must be worse than the disease; but you must remember that pain is a comparative state; and it shows you what intense agony a man must suffer to lose the sense of pain, which must follow such a position, in the relief it affords him. This man had refused an operation till it was too late,—until, indeed, it was plain the bladder was so ulcerated, that no surgeon would operate. Mr. Cline was talking over various remedies, proposing first one and then another, all of which, it appeared, had been tried, till at last he said he had seen great relief follow leek tea. Well, this was given him, and afforded the most astonishing relief, so much so, that he was enabled to resume a recumbent posture. However, it soon lost its effect, and the poor fellow died, completely worn out. I have seen it tried several times since, sometimes with and sometimes without effect; and I would advise you to bear it in mind, as worthy of trial, though you cannot foretell in what cases it will afford relief and when it will not.

The most satisfactory evidence of the presence of a stone in the bladder is obtained by sounding, that is, the passage of the instrument I hold in my hand into the bladder, when, on moving it about, you will feel it grate upon the stone; and the sound it produces by striking upon the stone is very audible. However, this means is open to mistakes; for there may be a stone in the bladder you cannot strike, and there may be a roughness of the bladder you might mistake for a stone. I am sure I have met with at least fifty cases where there were symptoms resembling those of stone in the bladder, and on passing the sound a roughness could be felt about the upper and fore part of the bladder, which a careless person might readily mistake for a stone; and, what is very singular, I never saw a single case where this roughness existed, that a stone was in the bladder. A little care will distinguish the cases, as in the former no sound is elicited by striking the rough part. In these cases I generally prescribe very strict attention to diet, with blue pill and rhubarb at bed time, and liquor potassæ, with tincture of hyoscyamus, and camphor mixture three times

a day. You will, of course, regulate this by the state of the urine; but even if the urine be alkaline, I give this at first, in order to relieve the urgent symptoms, which it does, and then you can follow up the treatment by muriatic acid. I would lay it down as an axiom, that you should never perform an operation for the removal of stone from the bladder, unless you can hear the sound of the steel against the stone at the time of the operation. Do not be satisfied with the sense of touch, without that of hearing also. I distinctly felt and heard the stone in the bladder of the man now in the hospital this morning; but if I could not do so in the theatre to-morrow, I should put off the operation for that simple reason. You don't know what has occurred. The stone may have become sacculated; it may have passed out of the bladder through the urethra, or by ulceration; and in all these cases an operation would be improper.

Sometimes, on sounding, you find stone in the urethra. This may be removed either by the forceps or the knife. A child was once brought to Sir Astley Cooper, in whose urethra he distinctly felt a stone. He therefore told his man to hold the child on his knees, and separate the thighs, just as we tie them in lithotomy, and then made a cut through the perineum upon the stone. However, just as he was about to withdraw it with the forceps, it slipped back into the bladder. He determined not to leave off till he had effected his object, and accordingly carried on his incision into the bladder, and removed the stone with a pair of dressing forceps. He took his guinea, and the child was taken home in a hackney coach, and did uncommonly well; and I suppose Sir Astley is the only man who ever performed the operation of lithotomy on a mere morning patient, in his consulting room.

But let us take the common case. The stone is in the bladder, and you hear the sound strike it. I have had a stone placed in the bladder of the subject now on the table before you, and I suppose you can hear the evidence of its presence all over the theatre. The object you have in view is to remove it; and I am in the habit of dividing the operation practised for this purpose into four steps; namely, first the opening of the perineum; second, the opening of the cavity of the pelvis; thirdly, laying open the bladder; and fourthly, removing the stone.

Now for the first step, the opening of the perineum. You see this part exposed before you, and it is evident that there must be some guide where you are to commence, and where terminate your incision. You may also see where the raphe of the perineum and scrotum become continuous with each other, and on this point I place my fore finger, and commence the first incision a finger's breadth below it, carrying it downwards and outwards, on the left side of the raphe, to a point midway between the tuberosity of the ischium and the centre of the verge of the anus. In this incision you divide the skin, superficial fascia, and the transverse muscle and artery of the perineum. You may have to stop to tie this; but I do not think I have seen more than two cases where there has been sufficient hæmorrhage to render the ligature necessary.

The perineum being thus opened, the next object is to open the cavity of the pelvis, and to do this you open the urethra just after it has passed through the deep fascia of the perineum. You bring the knife, its back towards the pubes, in contact with the groove of the staff, and then, by dividing the deep fascia in the same direction as the first incision, your second step is completed. You will sometimes see the urethra opened anterior to the point I have named,—and it is much easier to do so,—but then you would be liable to divide the artery of the bulb. I open the urethra as far back as possible; for though it causes some little delay, the safety of the patient is of more importance than any little credit gained by completing the section a few moments sooner.

The third step is to open the bladder, which is commenced by passing the point of your knife into the groove of the staff, which had already been exposed in the last

step. The operator then takes hold of the staff in his left hand, and, depressing its handle, brings it parallel with the knife, which is held firmly in the horizontal position. The two instruments are simultaneously lateralized, so as to bring the cutting edge of the knife in the direction of the incisions already made. The knife is then directed onwards along the groove of the staff, through the prostate gland into the bladder, when usually an escape of urine, and the freedom of the motion of the knife, tell you that this step is completed. Your object is not to make a large incision, and you therefore keep the back of the knife in close contact with the groove of the staff; for if there is any considerable angle formed between them, of course a large incision is made as you push the knife on. It is always better to enlarge the cut through the prostate as you withdraw the knife, than to divide to any extent as it enters; but in either case you must be exceedingly cautious, for you may divide the large venous plexus of the prostate, wound the rectum or the vesiculæ seminales; or, if you divide the cellular investment of the prostate, you probably give rise to subsequent infiltration of urine into the cellular tissue of the pelvis. They say that you can tell when you have divided the prostate by the sensation given you on cutting it; but this is not the case; and if you only consider for a moment what a powerful lever you have in the long handle of this knife, you will see at once the danger you run by the slightest haste or carelessness. Enlarge your incision then as you withdraw the knife, but remember that it is only necessary to make it large enough to admit the end of your finger, as the prostate very easily tears, and the opening is enlarged far more safely by tearing than by cutting. Even if the perineum is so deep that you cannot reach the prostate with the finger, rather than run any risk with the knife, I would introduce a blunt gorget, and with this dilate the opening in the prostate. Having withdrawn the knife, you pass your finger on into the bladder, and feeling the stone, know that the third step of the operation is completed.

You have seen me perform these successive steps as I have described them, and now all the surgery of the operation is concluded; but all the real difficulty is to begin; for it is in seizing and removing the stone that the greatest mechanical dexterity is often required. You withdraw the staff, and pass the forceps into the bladder, as I now do, strike them against the stone, to discover its precise position, then gently open them, and endeavour to seize the stone. This I readily remove, drawing downwards and outwards in the direction of the external wound; but I find there is another; and now you see that, though my finger is on it, and it appears scarcely an inch from the skin of the perineum, and there are no contractions of the bladder to impede the action of the forceps, as you will meet with in operating on the living, still I have difficulty in seizing it; and now I have hold of it in the long axis. When this is the case, you must endeavour to alter its direction; but be careful not to push it out of the forceps again, as this would be very annoying, after you had been some minutes vainly endeavouring to seize it. If, notwithstanding alteration of position, you are unable to withdraw it, you must enlarge your incision.

I believe, Gentlemen, that this is all I have to say to you with regard to the operation of lithotomy, with the exception of a remark or two on the straight staff, which is the one I prefer, because, by the depression of its handle, the prostate becomes so raised from the rectum as to bring the opening made through the former in a line with your external incisions, and forms, therefore, a straight passage into the bladder. You also derive another advantage from the greater space gained between the prostate and rectum, so that the intestine is much less liable to be wounded, and the removal of the stone is facilitated. With respect to the knife recommended by Mr. Key, although I generally use it myself, I certainly feel it my duty to recommend a young surgeon to use Sir Astley Cooper's probe-pointed knife for the division of the prostate gland, as the resist-

ance which it offers, compared to the sharp-pointed instrument, gives a better indication of its having entered the cavity of the bladder, and is less liable to injure its coats.

I may also make a few remarks upon the difficulties which present themselves in the seizing and removing the stone, which may arise from the size, form, position, and consistence of the calculus, and the condition of the bladder itself—circumstances, however, of such practical importance, that I shall occupy another lecture upon the subject of lithotomy, especially with regard to the various difficulties which may embarrass the operator.

CASE OF SCIRRHUS OF THE OPTIC THALAMUS AND CORPUS STRIATUM.

BY JOHN WATERS, M.D.

In the month of September, 1837, I was called to see a gentleman, 33 years of age, of robust constitution, who was seized with a fit, apparently of an apoplectic nature. There was complete annihilation of the intellectual and locomotive powers; the expression of the face was vacant, and the complexion was of an exceedingly yellow straw-colour. There was slight strabismus divergens of the left eye, and the pupils of both were very dilated; there was no spasmodic constriction of the maxilla, extremities, nor frothing of the mouth. Respiration was regular, though protracted, and occasionally accompanied with a few forcible and deep expirations; the heart's action was labouring, slow (60), and the impulse of the left ventricle was sensibly felt by the hand at the precordial region, accompanied with marked *bruit de soufflet*, which could be even easily distinguished in the carotids; percussion dull in a circumscribed portion of the left side of the heart's region. There was an involuntary discharge of feces.

He remained in this comatose state for about twenty minutes, when he gradually resumed all his faculties, though still feeling some sensation of prostration. I then learned that this was the tenth attack which he suffered from during a period of nearly two years and a half; that he generally complained of violent headache; and had a sensation as of some foreign body in his brain, which induced him frequently to shake his head; he never presented any symptoms of spasmodic contraction, or paralysis in any organ; memory not impaired; appetite good; bowels regular. Until the last twelve months he led rather an intemperate life, but cannot even attempt to resume the slightest irregularity; was much addicted to venereal excitement. He, as well as the other members of his family, assured me that his father died (in their opinion) of an affection similar to the one which I was called to see; the mother, whom I myself remember, died suddenly, although apparently in the enjoyment of health. Ordered him to take at once calomel, five grains; tartar emetic, quarter of a grain; extract of conium, two grains; carraway oil, two drops; and in three hours to have two large spoonfuls of the following mixture; compound infusion of senna, two ounces; camphor mixture, three ounces; sulphate of magnesia, four drachms; dilute sulphuric acid, two drachms; orange-flower water, half an ounce; syrup of rhamnus, two drachms.

On calling next day, Sept. 21st, I found that his bowels had been well acted on; he slept well; pulse 70, regular, full and strong; tongue clean; no thirst. The strabismus of the left eye continues since the fit, and he complains of slight dimness of vision, and a tottering condition of the lower extremities, such as may be felt after a day's severe exercise; the mouth for the first time now presented a slight deviation; has no recollection of the preceding day, and feels an indescribable uneasiness in his head. Ordered to be cupped from the lumbar region to sixteen ounces; mustard sinapisms; blue pill, twelve grains; digitalis, six grains; compound calomel pill, twenty grains; extract of

conium, twelve grains; divide into twelve pills, one every second hour; milk diet.

22. The strabismus improved; head not so troublesome; bowels relieved; pulse more compressible; the debility felt in the lower extremities much less; feels much better. Treatment continued. He went on each day improving, and on the 29th was sent to the country, when there was no strabismus, scarcely any deviation of the mouth, and his feelings of strength quite recovered. I saw him occasionally afterwards; and early in the following December I met him accidentally, but not at his own house. He then complained of great confusion of ideas, loss of memory, which was so great that he could not recall what had passed a few minutes before; vision was considerably impaired, and under the influence of the strongest light the pupil remained much dilated; could give little or no account of his sensations; the heart's action was not so forcible as usual, regular. Desired him to go home, whither he was accompanied by a servant, who left him at his own door. I afterwards learned that on the door being closed he fell, but immediately recovered himself, and went up stairs, but not to his own room, remarking that he was completely blind. In the morning he was found dead in bed.

Autopsy 25 hours after Death.

Cadaveric rigidity considerable; the external appearance presented nothing worthy of note, except some spots of ecchymosis on the face and chest. On dividing the scalp there was a great effusion of blood; the vessels of the pia mater were very turgid, but there was no effusion of blood on the surface or in the convolutions; the superficies of the brain was rather moist. On slicing the hemispheres the same state of moisture was observed, without the slightest trace of injection: the most minute search was made for chronic apoplectic cysts, but without success; both ventricles were filled with a fluid of a light yellow colour. The choroid plexus on the left side was in an oedematous condition; and I found a few small concretions of the size of a millet-seed in the left. The optic thalamus of the left side presented a central spot of ramollissement, without the slightest trace of vascularity. The corpus striatum presented nothing abnormal. The corpus callosum and fornix in a normal state; the third, fourth, and fifth ventricles also contained a similar fluid to that in the lateral ventricles. The right ventricle was also filled with yellowish-coloured fluid; the choroid plexus was remarkably pale, and by no means oedematous. On examining the corpus striatum and optic thalamus of this side, their surfaces were completely covered with a semi-fluid pultaceous matter, of a dirty greyish colour. On removing this partly liquefied mass, there was a central nucleus which filled each organ, of a semi-transparent glossiness, exceedingly hard and dense, without a trace of vascularity, and had become more adherent to the base of the ventricle than in the normal state. Cerebellum presented nothing unusual. On dividing these indurated masses, they had an almost cartilaginous consistence, were of a bluish aspect, and were traversed by fibrous septa; the substance of the base of the brain presented nothing unusual, but there was a great effusion of a sero-sanguinous fluid, which evidently came from the spinal canal, for as quickly as it was removed, it was visibly replaced by a continual flow from that source. There was no trace of hyperæmia. On examining the spinal column, it was found distended with a bloody fluid, and the vessels were evidently in a congested state. The substance of the cord presented nothing remarkable; there was no coating of either a fibrinous or albuminous nature. The lungs were healthy, if we except a few ancient adhesions on the right side. The pericardium contained about a dessert-spoonful of serum; and viewing the heart in situ, its volume appeared much increased, particularly the left ventricle, which was considerably developed; its cavity was much diminished, constituting that form of hypertrophy denomi-