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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, MARCH 1, 1841.

LECT. XI.—On the difficulties and dangers of the Operation of Lithotomy.

GENTLEMEN,—The last clinical lecture I gave you was on stone in the bladder, and the lateral operation for its removal, consisting principally of a description or demonstration of the different steps of that operation, and what I believed to be the best mode of completing them. To-day I wish to direct your attention more particularly to the various circumstances you may meet with likely to embarrass you in operating, or prevent your ultimate success in the perfect recovery of the patient. I wish also to speak of some circumstances which would prevent your undertaking the operation at all, or induce you to attempt its removal by other means.

Now in the first place, with regard to solvents of the stone, or lithontriptics, which I omitted to notice at our last meeting, a great variety have been recommended, tried, and failed to effect their object. Various medicines, mostly chemical reagents, acids, or alkalies, have been given internally; and others have been injected into the bladder, either mucilaginous, acid, or alkaline solutions, adapted according to the chemical constitution of the urine; but as yet the result of these experiments has only served to prove that we know of no means of dissolving a urinary calculus while it remains in the bladder. Some of these remedies, however, though not lithontriptics, are very valuable in prilliating the distressing symptoms arising from the irritation of the stone. I remember that the late Sir Astley Cooper was consulted by an Admiral, who had charge of the port of Yarmouth, and who suffered from stone so much as to be quite incapacitated from fulfilling his duties. Sir Astley put him on the strictest diet, attended scrupulously to the state of the digestive organs, and gave him continued doses of soda and magnesia, with such effect, that when, some time afterwards, a noble duke was about to be lithotomized by Sir Everard Home, the admiral said to him, 'Oh, why don't you consult Cooper? he has dissolved a stone for me.' So Sir Astley was called in, and Sir Everard Home asked what the admiral had taken. Sir Astley replied, that his means had been merely palliative, and he believed the stone was there still; and this proved to be the case, for after death a stone was found in the bladder. This is somewhat similar to an extra-

ordinary leaf in the chapter of accidents which occurred in the last century. A Mrs. Stone professed to have discovered an infallible lithontriptic, and a medical commission was appointed by a committee of the House of Commons to determine its value. Two cases, in which a stone was proved to be in the bladder by sounding, were submitted to the action of this woman's medicine, and after a time the stones could not be discovered, and the inventor was rewarded by a government grant of ten thousand pounds. After the death of these patients, however, an examination was made, when it appeared that the stone in each instance was still in the bladder, but had become sacculated in such a manner that its presence could not be appreciated by sounding. These facts, then, while they show that we at present know of no means of dissolving vesical calculi, also point out how much may be done by palliative treatment. The stone may not be removed, but the irritability of the mucous membrane of the bladder, and the acidity of the urine, may be greatly diminished by sedatives and chemical remedies. You will give acids or alkalies, according to the state of the urine; small doses of opium occasionally; attend strictly to the state of the digestive organs, and see that every function is carried on in as healthy a manner as possible.

This, then, is the palliative treatment; the radical cure is, removal by the urethra, either with the urethro-vesical forceps, or after the stone has been broken up by crushing instruments, or the different operations of lithotomy. The lateral operation is the only one with which we are concerned at present; and as we are speaking of its difficulties, I shall first refer to the fallacies to be met with in sounding, and some of the circumstances which may give rise to difficulty in finding the stone.

Now in some cases you may fancy you feel a stone in the bladder, when there is none; and when I tell you that Cheselden, who has left a reputation as a lithotomist which will never be eclipsed, actually operated on three patients, none of whom had a stone in the bladder at the time of operation; that Dessault has committed the same error; and that there are to my knowledge surgeons now living in this town who have cut into the bladder without finding a stone; you will see at once that this danger is far from being an imaginary one. You may ask, what could they have mistaken for the stone in sounding? and in answer to that question, I point to the preparations on the table before me. Here is one of a bladder, the coats of which are thickened, indurated, and studded with deposits of calcareous matter; and here is another dried preparation of the same kind, either of which, as you may readily conceive, would give a peculiar roughness to the mucous membrane, liable to be confounded with a detached calculus. As to

the cause of this condition, it is probably from some inflamed or deranged state of the mucous membrane of the bladder, which produces an alteration in the secreted mucus; this acts chemically on the urine, and precipitates the concretions. Here is another preparation, showing a deposit of adhesive matter on the coats of the bladder, with calcareous concretions, and these are the cases, probably, in which injections into the bladder might prove serviceable. Analyze the urine, and adapt your remedies accordingly. There is also a roughness, most common in young children, without any earthy deposit, and is very often accompanied by the usual symptoms of stone, pain after passing the water, frequent desire to pass it, straining, tenesmus, and sometimes bloody urine. There was a boy sent here from Kingston, some little time since, who had these symptoms, and came in to be cut for stone; but the real disease was this roughness of the bladder. How, then, do you distinguish one case from the other? Why, you pass the sound, and then turn its end first downwards, and then to each side, to bring it to the most frequent situations in which a stone usually lies; but feeling nothing, you depress the handle of the instrument, and draw it forward, so as to bring its extremity in contact with the upper and anterior part of the bladder, and then on turning it a little you feel a sensation very similar to that produced by an extraneous body. When this coexists, as I have said it frequently does, with all the symptoms of stone in the bladder, you might be readily deceived; but remember that you can never hear the peculiar *crank* produced by the sound when it strikes a detached calculus. Then you repeat your examination, and find the roughness always at the same spot, which of course would not be the case with a loose stone. The sensation, too, is different, more resembling what would be produced by rubbing the sound over an irregular surface. Bear these points in mind,—remember the fallacy you have to guard against,—never operate unless you can *hear* the sound strike the stone, and you will avoid an error which no illustrious precedent can justify. It is very singular, that with this state of roughness of the bladder I have never found a calculus, and the symptoms are generally quickly removed by the following medicines:—liquor potassæ, fifteen drops; tincture of hyoscyamus, twelve drops; camphor mixture, an ounce,—take twice a day.

Here is another preparation, showing one of the difficulties you may meet with in finding a stone when the patient really is suffering from one. You see it is partly in the ureter and partly in the bladder, and the urine having accumulated, has distended the ureter. Now, in such a case as this, you would have the symptoms of a calculus passing the ureter, namely, pains in the loins, along the thighs, sickness, and retraction of the testicle, with some of those arising from its presence in the bladder; you will not have the stream of urine stopped, the urine will probably not be bloody, and the desire of passing water, with the pain after its passage, are not so urgent, though sufficiently obvious. Then, on sounding, by finding that the stone is always in one place, and that from the distance the sound has passed, and the direction you have given it, its extremity is in the situation of the opening of the ureter into the bladder, you may determine the nature of the case, and must form your prognosis accordingly, remembering that you will necessarily have greater difficulties to encounter in the seizing and removing the stone than if this were lying loose in the cavity of the bladder. This preparation, which was sent us by Mr. Parrot, of Clapham, is perfectly analogous to the case of Boyer, I spoke of in the last lecture.

There are other preparations here you will do well to examine—preparations in which the stone has passed between some of the muscular fasciculi of the bladder, carrying a sort of pouch of the mucous membrane before it, and there become sacculated—and in most of these you will easily perceive that the sound would have the greatest difficulty in reaching the stone. These are the cases

where, with every rational symptom of a stone in the bladder, though perhaps less acute; you may sound fifty times without finding it. The water is not stopped, and the urine is not at all, or less, bloody. This is from the mechanical condition of the stone; in one case, on any sudden motion, it irritates or even tears the delicate lining of the bladder, by roughly passing over it, while in the other it is confined in one position. You may find it on sounding, and if so it is always in one position, which will lead you to suspect the state of things with which you have to deal; but it is not uncommon for one surgeon to sound, perhaps a dozen times, and not finding any stone, assures his patient that there is none. Well, the sufferer goes to another surgeon, who perhaps on the very first trial strikes directly on the stone; and then one party *thinks*, and the other, perhaps both, say what a stupid fellow the first doctor was. Perhaps the patient says, as the latter surgeon has found the stone, he shall remove it, or he himself, a little proud of his tact, proposes to do so; but nothing could be more injudicious, for on a little reflection he would see that it could only be some accidental circumstance, from the position of the man, the situation of the stone, or the state of the bladder, which had given rise to the occurrence, and he would reasonably suppose that the same thing might occur again. You would wait, therefore, and sound again, when probably the stone would again be out of reach. This would show the difficulty with which an operation would be attended, especially if unprepared for such conditions, and in any case would lead you to form a more unfavourable prognosis than in an ordinary case.

In some cases you will only find the stone when the bladder is empty—in others, again, you will have to raise it by passing a finger into the rectum—and you may have to put the patient into almost every conceivable position, and use a variety of instruments, before the stone is struck, but bearing in mind the obstacles which impede you, it is very rarely that you need be mistaken.

The stone being found, it must be removed; but it is not every patient that you would subject to operation. You would not operate if the patient had serious disease of some vital organ, as in this case he would probably sink under the operation, or die worn out soon afterwards. Then, in very young children, whose nervous and vascular systems are always highly irritable, the operation is dangerous, being usually followed by convulsions. As a general rule, two years is the youngest age at which it should be undertaken, though it has been done with success under one year. If extreme suffering should render this necessary, the warm bath is the best preparative means to reduce the patient's irritability. Dr. Barlow, of Blackburn, in Lancashire, who enjoys a very high reputation as a lithotomist, very strongly recommends the warm-bath in most cases, especially in children, as far preferable to bleeding, purging, or any other means of reducing constitutional irritation, and he believes it contributes greatly to the success of the operation. Between the ages of twenty to forty-five is the most dangerous epoch in which to perform this operation, owing to the irritability of the generative organs, at this time in their fullest development. Such patients require careful preparative treatment, calculated to diminish irritability without depressing the powers of the constitution; mild aperients, simple diet, and quiet of body and mind. You should also accustom them to the position in which they will be bound during the operation, or they will otherwise not only be struck with horror at finding they are to be tied in such a painful state, but as many muscles not in frequent use are brought into play, after a little time that extremely painful and irritable state comes on which we all know to be produced by unusually protracted muscular exertion; whereas, if you tell them a few days before to hold their feet in their hands for a few minutes at a time, you not only do away with one source of much fear in the operation, but the muscles become somewhat used to the exercise, and the man suffers far less from his constrained position, is much more patient under

the operation, and you avoid danger in not exciting irritation. Then, if a man be very fat you must reduce it before you operate. Mr. Green was called to Manchester to lithotomize a gentleman, who was so immensely fat that Mr. Green very properly postponed the operation, put the patient under a very strict regimen, and actually reduced his weight seven stone in three months, and this not only without injuring his health, but really improving it. He then operated with complete success. Some such course is necessary in very fat people, for not only is the perineum much deepened, and the operation thereby rendered more difficult, but the constitution is not in a fit state to support it. Lithotomy is less dangerous after the age of fifty, even in extreme old age. Mr. Cline removed three stones from a man eighty-two years of age, and he recovered without a bad symptom. I operated on a man at Ticehurst, aged seventy-six, and he lived ten years afterwards; though, as he had a very deep perineum, there was more than common danger and delay in the operation.

You will remember that I divided the operation itself into four steps: first, opening the perineum; secondly, opening the pelvis; thirdly, opening the bladder; and fourthly, removing the stone. Now, in each of these steps, various difficulties may present themselves, and many errors may be committed. On making the first incision, you may be saluted by a full stream of blood, thrown into your face, the transverse artery of the perineum being of unusual size. This no one could foresee or prevent; so, all you have to do is either to tie the vessel at once, if the hæmorrhage is very copious, which you can easily do from its superficial situation,—or let your assistant compress it with his finger, and then by the time the operation is concluded it will perhaps have retracted, or, having been compressed by the stone, hæmorrhage has ceased, and if not, you can still tie it. The errors you may commit in this step are, not making the incision sufficiently free to allow the egress of the stone and the free discharge of urine; carrying it too much outwards so as to wound the pudic artery; or too much downwards so as to wound the rectum. These you will avoid, however, by following the directions I gave you.

The principal danger, in the second step, is the liability of wounding the artery of the bulb. This is best avoided by cutting into the urethra as near the prostate as you can. Get well behind the bulb before you pass the knife into the groove of the staff; for, as the arteries of the bulb diverge behind and converge anteriorly, of course the nearer you get to the bladder, the less chance there is of their being opened. You open the pelvis, and it is not uncommon for this to be followed, in old people, by considerable venous hæmorrhage, from the large plexus of veins which surround the neck of the bladder. There is not much danger to be apprehended from this; though it would render you more anxious to complete the operation speedily, in order that the pressure exercised by the stone in its withdrawal might stop the hæmorrhage, which it usually does.

The third step is to divide the prostate; and this is difficult in a direct ratio with the depth of the perineum. In some cases, having made your incisions, you find that you cannot reach the prostate with the finger; or the prostate being greatly enlarged, the neck of the bladder is equally carried further from the perineum. As I told you before, it is far safer to trust, in such cases, to a long beaked blunt gorget than to use the long knife, without any definite guide. If you use the knife, you may wound the vas deferens, the vesiculæ seminales, or the rectum; you may divide the neck of the bladder, or the prostatic plexus of veins, and give rise to subsequent infiltration of urine into the pelvic cellular tissue. You avoid these dangers by using the gorget, as I told you, and overcome any difficulty arising from the depth of the perineum; but, if not carefully used, the gorget may do great mischief. You might allow the gorget to slip from the staff, and pass between the rectum and the bladder, wounding either or both, without

dividing the prostate. The prostate has been torn from its adhesions to the bladder, the bladder from the pubes, followed by inflammation of the cellular tissue, peritonitis, and death. The bladder has been entirely separated from the urethra; the gorget has passed between the pubes and the bladder; the pudic artery has been cut; and all this without any opening having been made by which the stone could be removed; and the patients have died with it still in the bladder. All this, however, is inexcusable; it is carelessness, ignorance, or rashness; and will be avoided by using the gorget in the determinate manner I advised in the last lecture.

In removing the stone, even if all your previous steps have been completed as successfully as possible, circumstances over which you can have no control may offer great or even insuperable obstacles. The stone may be very large, much larger than you had expected from the sensations it gave on sounding, and perhaps even larger than will pass through the bony apertures of the pelvis. Here is one, weighing sixteen ounces, which I assisted Sir Astley Cooper to remove. It became wedged, in its long axis, between the arch of the pubes and the junction of the sacro-iliac ligament with the coccyx; and Sir Astley was two hours endeavouring to remove or break it. We bent forceps in all directions, and he vainly tried to pierce it with a common gimlet, but at last managed to remove it whole; the patient, however, died a few hours afterwards. It might be asked whether, in such a case as this, the operation should be proceeded with; but we have no means of appreciating the precise size of the stone with which we have to deal, as it will often happen that, from seizing a stone in its long axis, it appears much larger than it really is. Mr. Earle invented a kind of forceps for crushing the stone in such cases, and I have no doubt some of the instruments employed in lithotomy, which could not be safely applied through the urethra, would also be very useful; and it would be far better to use something of this kind than use any violence. You may be embarrassed by there being a large number of stones; but all you have to do, is to use smaller forceps, and be very careful in their introduction, or inject warm water pretty freely, which will probably wash them away. Here is a preparation, showing you how a stone may become impacted behind an immense prostate gland in a sac of the bladder; and here you might feel and hear the stone, but could not lay hold of it. Sometimes a peculiar form of the stone may give rise to difficulty in its removal; and this especially occurs when the concretion has taken place around some extraneous body, as this one, which formed in a patient of mine on a piece of bougie he had allowed to slip into the bladder. In other cases, you meet with almost insuperable difficulty without any evident cause. You can feel the stone, hear the forceps strike it, but cannot seize it. I remember seeing Mr. Cline operate, at St. Thomas's Hospital, on a boy, seventeen or eighteen years of age; and, after performing all the previous steps with his usual dexterity, he could not seize the stone, and he spent three quarters of an hour in incessant and ineffectual efforts to do so, when at last he removed it; and turning to the class, said, "Gentlemen, here is the stone; but why I did not seize it at first as readily as I have done this minute, you who have been looking on, know as well as I who have been operating. There was some difficulty, but what it was I cannot imagine." In the case with which my name is associated in connexion with certain legal proceedings well known to the profession, the difficulty which occurred was from the position of the stone, which was resting upon the upper part of the prostate gland, in a sac, between the former and the pubes, so as to elude the grasp of the forceps, until I pressed their handle sufficiently downwards and backwards to raise their points to the stone. Mr. Liston has told me, that he lately had a precisely similar case, offering similar difficulties, from the same condition.

Next week, I shall direct your attention to the subject of piles.