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THE MEDIAN OPERATION OF LITHOTOMY.

By KELBURNE KING, M.D., Edin.[1]

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On the 4th of February 1854, I performed Mr Syme's operation on an excessively irritable and tight stricture, of many years duration, and having a small calculus impacted behind it. After completing the incisions and removing the urethral calculus, I introduced a full sized silver catheter into the bladder, and immediately became aware of the presence of another calculus. Thinking that it might lie in the prostatic portion of the urethra, I carefully extended the incision in a backward direction, and introduced first a pair of dressing-forceps, and then my finger, into the wound. I found that a stone of considerable size existed in the bladder, too large to admit of extraction with the ordinary dressing-forceps, or, as far as I knew then, with any other forceps; but I was much struck at the time with the nearness of the external wound to the stone, and the facility with which a digital examination of the latter was made. I, however, drew from this fact no practical deduction, until, in the *Lancet* for May 12, 1855, I read a review of Mr Allarton's little work, entitled "Lithotomy Simplified." This recalled vividly to my mind the feeling I had experienced in the case alluded to above, that the uncut prostate was capable of very considerable dilatation, and that had I had a larger pair of forceps with me on that occasion, I might have extracted the stone.

I performed the operation, as described by Mr Allarton, twice on the dead body, and convinced myself, by a subsequent dissection of the parts, that a stone of moderate size, say $1\frac{3}{4}$ inch long by $1\frac{1}{4}$ inch broad and 1 inch deep, could be readily extracted without producing laceration of the prostate,[2] and with a perfect certainty of not

[1] Communicated to the Medical Society of the Hull and East Riding School of Medecine.

[2] I have named these figures because they represent a stone of full the average size, and are the dimensions of one which I removed from the dead body, in presence of the Society, and proved, by dissection afterwards, that the prostate and other adjacent parts were uninjured.

wounding the rectum or any other important part; and I determined that I would perform this operation on the first favourable subject that I should meet with.

But it may be objected, that the mode of operation introduced by Cheselden, and performed by most surgeons since his time, has exhausted the subject of operative procedure in this disease, that by its means lithotomy may be performed as "tuto cito et jucunde," as it is possible for that operation to be, and that such a modification as the one referred to, though applicable enough in many cases, is but the revival of an old procedure which has been fairly tried and found wanting, and, therefore, is not entitled to be again forced on the attention of surgeons. Such is the verdict which, I believe, I would have myself given at once, but for the accidental circumstance alluded to in the commencement of this paper, and I admit freely, that an operation would require to have strong points to recommend it, which advances any pretension to supersede, even in a limited class of cases, the old and well known lateral operation.

But even the staunchest friend of that operation must admit, that there is some difficulty in performing the necessary incisions, and that it is not, even when well performed, as free from danger as might be desired. On the first of these points, it is universally admitted, that the posterior part of the membraneous portion of the urethra, and the left lobe of the prostate, should be incised. But the extent to which this latter part of the incision should be carried, was long a subject of dispute, if even it can be considered as now finally settled to the satisfaction of the profession. Mr Syme points out, with his usual clearness, the precise spot to which the incision must extend. "At the base of the gland, where it joins the neck of the bladder," he says, "there is a dense texture, forming a sort of ring round the urethra." "This part of the prostate seems endowed with an extraordinary degree of sensibility." "There can be no doubt that, if this texture be torn, the patient will die." "If, however, the prostate be divided as far into its substance as this ring extends, the rest of the gland tears very readily, without any bad consequence."[1] But, Mr Syme lays down no rule by which the surgeon is to know when he has accomplished this indispensable part of the proceeding.

He also quotes, from the last edition of Mr Liston's *Operative Surgery*, a passage which proves that the same view was finally entertained by that eminent surgeon, although he had, throughout his whole life previously taught, that "the less that is cut the greater will be the patient's safety;" and that "the prostate and other parts round the neck of the bladder, are very elastic and yielding."[2]

I quote this to show the doubt that hangs over the very important

[1] *Lancet*, 1855, vol. i., pp. 505, 506.
[2] Liston's *Operative Surgery*, p. 506. Third Edition.

point of the parts to be cut, and the method of cutting them, no more and no less, in the lateral operation; and, indeed, I think, the whole history of the operation proves that Mr Syme's early impression, as detailed in the lecture from which I have quoted, was not far wrong; that some men acquire a knack of cutting safely, they can hardly tell what, and, consequently, cannot communicate their success to others. It is admitted, that if the prostate be too freely divided, there is hazard, nay, almost certainty, of fatal extravasations; if it be not sufficiently divided, and the texture spoken of by Mr Syme be torn, as it must be if the stone be of any size, the patient equally dies; but no rule is laid down by which these accidents may be certainly guarded against.

With reference to the mortality of the lateral operation, I cannot do better than refer to a paper of Mr Coulson's, in the *Lancet* of Jan. 22, 1853, where, amidst the splendid occasional results of particular surgeons and particular hospitals, full statistical tables are given, showing that, taking all periods of life, the average mortality is, in round numbers, from 1 in 7 to 1 in 9. Mr Coulson states, that "no statistical records exist which throw any light on the causes of death after lithotomy." But, if we glance at the various causes of danger, we may form an opinion as to the chance of their being obviated by the one or the other mode of operation. Of these the principal are—1*st*, Shock. 2*d*, Hæmorrhage. 3*d*, Infiltration of urine. 4*th*, Inflammation of the neck of the bladder. 5*th*, Purulent deposits. 6*th*, Peritonitis.

1*st*, With reference to the first of these, the risk in the case of stones of moderate size is but small; and I may here say at once, that, in my opinion, Mr Allarton's operation is not applicable to very large stones. In cases, therefore, in which the two operations can be compared, there is not much risk of sinking from shock, but less, of course, in the less serious proceeding. 2*d*, Of hæmorrhage there is absolutely no danger, hardly even a possibility in operating in the medial line. The danger from this source may not be great in the lateral operation, but it is sometimes troublesome; and in the event of the pudic artery following an abnormal course, which it occasionally does, might very probably be fatal. 3*d*, Infiltration of urine may occur at either extremity of the wound, in the lateral operation. If the prostate be too freely divided, it takes place at its upper extremity; and the urine getting introduced into the cellular substance which invests the superior fundus of the bladder, produces mortification and death. If the wound be carried too far forward in the perinæum, infiltration may take place there, and lead to very troublesome results. To neither of these accidents is the mesial operation liable. Infiltration of urine may also take place in the lateral operation, when the levator ani and muscles of the membranous urethra are not sufficiently freely divided, leading to partial closing of the wound, and the stream of water being forced out of its natural channel. This, I suspect, is the commonest source

of urinary infiltration, and from it the mesial operation is perfectly free. Purulent deposit and peritonitis are rather accidents which may attend all operations, and depend more on atmospheric and external causes than on any particular mode of operating; we may, therefore, dismiss them from our consideration, and turn to the remaining source of danger, inflammation of the neck of the bladder.

This is, I believe the most frequent cause of death after lithotomy, and in the absence of statistics, we have to consider whether it is more likely to occur when the prostate is partly divided and partly lacerated, or when it is simply dilated. A stone of even from 1 inch to 1½ inch in its smallest diameter cannot be removed in the forceps without more or less dilatation, *i.e.*, laceration of the prostate. Mr Syme, in the clinical lecture alluded to, states that the prostate gland "tears readily," after the sensitive texture at its base has been divided, and indeed experiment on the dead body will convince any one that, after the prostate has been cut into, it does not dilate on the application of pressure, but tears; and this torn structure is in contact with urine, which, getting into the fissures, excites inflammation of a more or less acute character, and, I believe, produces more fatal results in lithotomy than all the other sources of danger put together—except, perhaps, purulent deposits in crowded hospitals and unhealthy localities. But the condition of things is entirely altered if the prostate be not incised at all. It is then capable of very considerable dilatation, if that process be conducted with patience and gentleness. In the old Marian operation, the prostate was actually torn asunder by instruments, and there is no wonder that death often resulted from the laceration of the gland, the passage of urine into its substance, and consequent inflammation. The wonder is, that the mortality did not range higher.[1]

Mr Allarton's proposal is of a very different nature. He recommends that the finger should be introduced, in the first place, and dilatation effected by careful pressure—that long-bladed forceps should next be passed into the bladder, and, the stone having been seized, should be carefully and steadily withdrawn—the length of the blades causing the instrument, with the stone in its grasp, to act as a wedge, and thus assist in the process of dilatation. Even should the structure of the prostate tear under this gradual pressure, it is of little moment, so long as the mucous membrane remains entire, the urine being thus prevented from having access to the lacerated portions, which access, and not the mere fact of laceration of the prostate, constitutes, in my opinion, the grand danger in lithotomy.

Such is a rapid glance at the usual sources of danger after this operation, and it seems to me that the median operation is less liable to them than the lateral. Indeed, I think the question narrows

[1] See M. Coulson, *Lancet* 1853, vol. i., p. 74.

itself to the following consideration—Is it better partly to cut and partly to tear the prostate gland, leaving the urine free access to the lacerated organ, or to dilate, without cutting to such an extent as to admit the forceps, and then, by gradual traction, to dilate so much more as to permit the passage outwards of the stone?

But, in addition to all this, the median operation prevents the following positive advantages:—1. The incision is exactly defined 2. No important parts, except the membranous portion of the urethra, are divided. The division of that part in its posterior surface, does away with one of the great difficulties of the lateral operation, and one which always prolongs the period of convalescence—the division of the muscles on one side of the neck of the bladder, and the consequent displacement of the parts. 3. The neck of the bladder being uninjured, the patient has from the first the power of controlling the stream of urine, which flows by the natural channel almost immediately after the operation—a result not usually obtained by the ordinary method until from one to two, or even three weeks, have elapsed. On the whole, then, it seemed to me, that the operation described by Mr Allarton, afforded a simpler and less dangerous way of removing moderately sized calculi than the usual lateral operation, and accordingly, when I met my friend, Mr Henry Gibson, of this town, in consultation on a boy who laboured under this disease, I recommended, and he consented, to the performance of, the median operation. The subject of this case, T. B., æt. 7, had laboured under symptoms of stone from a very early period. When three years old, he was admitted into the Leeds Infirmary, and lithotomy was recommended, but, owing to some whim of his parents, was not performed. From that time his sufferings continued to be occasionally very great. He presented, when I saw him, a weak, delicate cachectic appearance, and his skin was covered with an impetiginous eruption—the result of deficient nutrition. He suffered from prolapsus ani, and was teased by a constant tendency to diarrhœa. The symptoms did not differ from those usually produced by stone, except that, from the long duration of the disease, he was more exhausted than patients usually are when brought under the notice of the surgeon. As no benefit could be expected from delay, we resolved to operate upon him at once; and although the stone was supposed to be larger than was quite favourable for the median operation, we thought that, in his feeble condition, the less the trial to which his system was subjected, the better. Accordingly, on the 22d Sept. 1856, the following operation was performed. Chloroform was administered at the express desire of his parents—he was tied up in the usual position, and a curved staff, grooved on the back, was passed into the bladder, and intrusted to an assistant, with directions to maintain it steadily in the middle line. The left forefinger was then passed into the anus, and the staff was felt distinctly, as it lay in the membranous and prostatic portions of the urethra, and in the bladder. A good strong knife, dagger-shaped

at the point, and with a thick back, was then entered into the middle of the perineum, about half an inch in front of the anus. It was pushed straight in, with the back towards the rectum, until it entered the groove of the staff, and was directed by the finger in the anus to the membranous urethra immediately in front of the prostate. It was then pressed forward, still in the middle line, and an incision made in the centre of the perineum of about 1¼ inch in length—the point of the knife being pressed against the groove of the staff, so as to divide the membranous portion of the urethra on its posterior aspect. A long silver probe was directed along the groove, into the bladder, and the staff was withdrawn. The forefinger of the left hand, lubricated with oil, was passed into the bladder, and came in contact with the stone. The forceps were then introduced, but some little delay took place, owing to the stone being partially encysted. By means of a scoop, it was freed from its attachments, when it was forced out into the wound by the contraction of the bladder. A little delay again took place, from the position in which the stone lay in the wound, being in its long diameter. This was speedily rectified, and the stone extracted—the whole proceeding not occupying many minutes. The stone was 1½ inch long by 1 inch broad, and half an inch deep. Had it been somewhat less, I have no doubt that it would have been protruded by the action of the bladder, without the aid of forceps at all. The progress of the case was most satisfactory. The next day the urine began to flow by the natural channel, and at the end of the week none was perceived to come by the wound. It was hardly possible, after the first few days, to keep the patient in bed, or even in the house. His appetite improved rapidly, and on the 3d October, twelve days after the operation, I discontinued my attendance, the boy being then perfectly well, and the wound almost cicatrized.

It is right to add, that about a fortnight after, I was informed by Mr Gibson that this boy was very ill, and even in a dangerous condition, in consequence of an attack of diarrhœa. I saw him on the 20th October, and found him very much reduced. The wound, however, had healed, except a large flabby granulation about the size of a pea—and it was clear that his symptoms were quite unconnected with urinary disease. They yielded to the usual treatment, and I had the satisfaction of meeting the lad lately on the street, and hearing from him that he is perfectly recovered.

On this case I have only a few remarks to make. I have never, either in my own practice or in that of others, seen so complete and rapid a recovery after lithotomy. Although the operation is rarely fatal in children, I question whether this lad had sufficient stamina to have passed through the lateral operation in safety. I have only to add that, had the stone turned out to be so large as not to admit of extraction otherwise, I was prepared to divide the prostate with a "bistouri caché," and, with my finger in the wound, I could have guided the incision so that neither too much nor too little would

have been cut. For stones of very large size, the lateral operation will probably always be preferred. It is too much, perhaps, to expect that surgeons, who have long and successfully practised it, will be inclined even to give a trial to any other proceeding; but having formed, after mature deliberation, the opinion that the majority of stones, not fit cases for lithotrity, can be removed more safely and more simply by the method described by Mr Allarton, I have thought it my duty openly to express my views.

HULL, November 20, 1856.

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