LECTURES

ON

SOME IMPORTANT POINTS IN CONNECTION WITH THE SURGERY OF THE URINARY ORGANS.

Delivered at the Royal College of Surgeons, June 1884.

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LECTURE V.—THE PROGRESS OF OPERATIVE SURGERY FOR STONE DURING THE PRESENT CENTURY, WITH THE MOST RECENT IMPROVEMENTS IN LITHOTRITY.

[The lecturer commenced by remarking that, amidst the progress made in art and science during the present century, surgery was not less distinguished than other branches, of which the recent history of operations for the stone afforded a complete illustration.

[A minute historical outline, commencing with the lithotomy practice, provincial and metropolitan, at the end of the eighteenth century, described the advent of crushing, and the various improvements as they arose both in the cutting and the crushing methods, as they competed with each other in the middle of the present century, until the lithotrite began gradually to supersede the use of the knife. It was interesting to observe how the idea of rendering lithotritry complete, at a single operation, had slowly been developed, even from the time of Heurteloup, who had laboured hard to realise it, until its recent accomplishment in modern times. The lecturer continued:]

Thus far, it has been my object to make a rapid sketch of the general practice in relation to the surgical treatment of calculus, in the chief capitals of Europe, up to within about the last five years. But, in 1878, Professor Bigelow, of Harvard, U.S., proposed a further and a considerable advance in regard of the amount of crushing and aspiration which might be employed at a single sitting. Whatever the size or the nature of the stone, provided only that it was deemed to be within the compass of our power to crush, he advocated, on principle, that the whole should be removed at once, and no portion be permitted to remain, so far as the operator knew, for a second attempt. The principle enunciated was, that broken fragments remaining in the bladder were more injurious to it and more dangerous to the patient, by causing cystitis, etc., than a prolonged sitting and a very considerable amount of mechanical interference expended on the task. This apparently bold proposal took many by surprise. It was not that the removal of a calculus at a single sitting was by any means a novelty in itself; small ones had been often thus disposed of. It was the proposal to deal with stones of very considerable size, and the prolongation of the sitting from a short term of minutes to one which might, according to the Professor's experience, occupy two hours, or even more, which naturally aroused much question. Nevertheless, I must avow that my experience of the value of removing all the fragments from a bladder, when acute cystitis was set up, had disposed me to receive the new doctrine with favour. Hence, I at once put it to the test, and, without any change of instruments, proved its value in the first twenty cases which I treated by this method. Professor Bigelow had, however, made a further proposal—namely, that much larger and more powerful instruments, both lithotrites and evacuating tubes, should be employed than heretofore. These proved to be not only, for the most part, unnecessary, but to be sources of danger, especially in unpractised hands. The American surgeons had long been accustomed to use instruments in the treatment of stricture larger than those generally employed on this side the Atlantic; and this fact had the advantage of facilitating the production of Professor Bigelow's proposal. No doubt, heavy and powerful crushing machines become absolutely essential to success in dealing with those exceptionally large calculi which have hitherto been relegated to the cutting operation, but to such rare examples only should they be applied.

A minor, but not altogether unimportant, proposal of Professor Bigelow was to change the name of the operation, in future, from lithotritry to "litholapaxy." His procedure, however, introduces no mode of action not employed before. Bigelow's achievement has been to

demonstrate that crushing a stone, even if large, and removing all the fragments from the bladder at one sitting, is a safer proceeding than dividing the work between two, three, or more sittings. The value of this principle was perceived and insisted on, as we have seen, by Heurteloup, thirty years ago, but he failed for want of anaesthesia. And it is a curious fact, too, as an illustration, if one were necessary, that the principle of evacuating the stone largely, as a part of the operation of lithotritry, is in no respect a novel one, that Heurteloup himself endeavoured, at the close of his career, to change the name of the proceeding on this very ground—namely, that he not merely crushed the stone, but that he also evacuated the *débris* artificially as completely as possible. The term which he desired to substitute, to denote his method of crushing and evacuating the bladder, was "Lithocénose," from *λίθος*, a stone, and *κένωσις*, extraction. Nevertheless, he signally failed to do so, although the proceeding was really then, to some extent, a new one; and the original term, lithotritry, still remained as it does to this day. For there is an equal disinclination among many surgeons, foreign and English, to admit a similar change now; it being evident to everyone who knows anything of the history of lithotritry, that evacuation by artificial means has been an essential part of the procedure for at least fifty-five years; and that this part has steadily grown in importance in a direct ratio with an increasing ability and determination to crush more largely than before. Five years of experience of lithotritry, completed at a single sitting, enables me to testify as fully concerning its capabilities, perhaps, as any other operator. It has been only partially tested at present on the Continent; entertained very cautiously at Paris; but received with gradually increasing favour at Vienna, where it is now the rule; but it is not in either place accepted for the largest calculi, and a cutting operation is preferred for those hard stones which weigh one ounce and a half and upwards in size. To this fact I shall hereafter refer, in presenting an analysis of my own experience of the one-sitting operation, which I have adopted in the last two hundred cases, to use round numbers, consecutively treated by myself.

I propose, first, briefly to describe that proceeding which has appeared to me the most desirable in order to achieve successful lithotritry at a single sitting. We will commence by examining the instruments necessary for the operation, and then consider the method of employing them best adapted to effect our purpose.

In the first place, in respect of all instruments, we must recognise the importance of not inflicting any needless injury on the urethra and bladder, and should, therefore, always select the smallest lithotrites and evacuators which possess strength and capability adequate to crush and remove the individual calculus to be dealt with. And inasmuch as the great majority of calculi are small when first found by the surgeon, undue stretching of the natural calibre of the urethra is unnecessary for their removal, since no instrument need be used which exceeds the limit of that calibre. It is only when dealing with calculi of exceptional size, that instruments which distend the urethra to a considerable degree are to be employed.

Secondly, in dealing with a calculus of any size, but especially when large, it is important to employ instruments which are simple in construction and not easily liable to be deranged in action when employed in the bladder. The presence of *débris* in quantity, mixed with viscid mucus, perhaps with some coagulating blood, has to be reckoned on in circumstances which demand prolonged manipulation; and mechanical arrangements which work admirably in experiment with limpid fluids outside the bladder are not unlikely to fail when brought to the test of actual service. Simplicity in the construction of instruments is, therefore, to be attained if possible.

Let me suppose that the presence of a calculus has been determined by sounding in the bladder of an elderly adult male. It is almost certain that the note obtained and the resistance felt in making contact generally suffice also to convey an idea, approximately accurate, regarding the size and nature of the stone. As a rule, it is not so necessary now, as it formerly was, to make an exact diagnosis in relation to those particulars. When it was desirable to limit the application of lithotritry to calculi of, for instance, one inch and a half diameter, it was important to ascertain, by some easily managed method of measuring, what were their dimensions in every case. But now that the scope of lithotritry is considerably increased, all that is requisite to be learned is, whether the stone is an exceptionally large and hard one, and whether any unnatural narrowing of the canal is present; and both these points are almost sufficiently determined by an ordinary sounding in practised hands. At all events, it is unnecessary to make any further examination for the purpose of diagnosis, until the patient has been placed under the influence of an anæsthetic upon the operating table, the surgeon having full liberty to exercise his judgment and act as circumstances demand.

Invariably, as soon as the patient is thus prepared for operation, I pass a full-sized conical steel-plated sound, about No. 15 (English), in order to determine that most important point of urethral calibre before touching the stone. If the urethra is healthy—and of course in the very great majority of cases it is so—the instrument has passed with perfect ease, and may probably be followed by 16 or 17 in an elderly adult; by which term I mean a man of 60 years and upwards. I am sure the urethra is more capacious in such patients, than in those whose age is between thirty and fifty years. In these latter, the urethra often resents any active distension, and the bladder also more readily becomes inflamed than in older patients. With an urethra admitting the easy passing of No. 16, almost anything is possible, and suffices for almost any calculus; but if I am dealing with one which weighs, in my judgment, about two ounces and more, I am glad to use larger sizes, and No. 18 I have never found it necessary to exceed. But if the stone be known to be small, No. 14 amply suffices, and there can be no reason for going beyond it. This is the size which was mostly used with the original instrument of Clover in 1866, and for all ordinary purposes answers admirably.

The lithotrite is next introduced. With small and medium-sized stones, a light instrument of the half-fenestrated pattern—that is, the lower portion of the male blade penetrating the female blade, which prevents the possibility of blocking by *débris*, while the upper portion is flat, and crushes the stone into small fragments—is, I think, the best. This mode of construction is applicable for a wide range of size in calculus, answering for any one of uric acid below about an inch and a half in length. To accomplish the first fracture of such an one, or to crush into fragments a larger calculus, a fully fenestrated lithotrite is better. There are some old forms of blade which have been in use for fifty years, which cannot, I think, be excelled; so numerous are the patterns which have been employed, that it is difficult now to imagine a new design.

To proceed: supposing that a considerable quantity of *débris* has been made, the calculus being large, it is advisable to withdraw the lithotrite, to introduce an evacuating sound, and attach the aspirator, so as to withdraw the *débris* already made before crushing more. When this is removed, the same or a lighter instrument may crush the fragments into *débris*, before again using the evacuator. By this time, probably, the remaining portion is not considerable, and another introduction of the lithotrite, followed by another aspiration, very likely empties the bladder. If, however, a fragment or two be heard and felt to strike the end of the evacuator, yet do not pass through it, they are probably just too large to issue, and require another crushing before the task is completed.

There is certainly now no difficulty in removing any last fragment from the bladder, the more powerful aspirators emptying the cavity so efficiently that no other instrument is necessary for the purpose; while by no sound is the last fragment found so well as by the evacuating catheter, against which contact of the fragment is certain to be felt or heard, through the action of the outrushing current of water.

In regard to aspirators, the original instrument of Clover, simple in the extreme, is a very good instrument, and requires only some modification to be as efficient as most of the modern ones. For my own aspirator, I have provided a tap with a funnel-shaped opening to the upper part of the India-rubber ball, by which to fill it, and to remove air accidentally introduced, which offers a decided advantage. Last year, I attached to the end of the evacuator in the interior of the glass receiver a light wire-valve, which, while it admits any fragments to enter, renders their escape impossible; its action meantime being always visible to the operator. After the operation, the patient remains in bed, and rarely requires any special management, except sometimes that which a simple traumatic cystitis demands—namely, absolute rest in bed; occasionally the urine neutralised by potash; hot hip-baths, mild diet; and watchful care that chronic retention of urine do not occur, or be not permitted to continue unrelieved; avoiding, on the other hand, undue or unnecessary interference by means of catheters. But of all the agents for rapidly removing sub-acute or chronic cystitis after lithotrity, nothing equals mild injections of nitrate of silver, the effect of which is sometimes almost instantaneous. I use only half a grain of the salt in four ounces of warm water at first, gradually increasing to a solution three times that strength, beyond which it is rarely necessary to go. Usually, one application a day, sometimes two, will, in the course of three or four days, remove the painful symptom, and produce clear and healthy urine.

My own experience of the system of treating all calculi but the very largest, by a single sitting of lithotrity, dates from shortly before Christmas, 1878; the first example being a case which I saw with Sir Spencer Wells, who was present at the operation.

Since that time, I have adopted the system of completing the operation at a single sitting for every case in which lithotrity appeared to be possible, with two exceptions only, to be described immediately.

The total number of adult male patients on whom I have operated during the period referred to, a term of rather more than 5 years, is 211.

Of these, 15 have been by lithotomy, and, of course, forming the largest and worst cases, with 7 deaths.

There remain, therefore, 196 cases treated by lithotrity.

One of these was a Portuguese gentleman, No. 535 in my collection before you, to whom Mr. Clover thought it prudent to administer chloroform only for a very limited time. He had five sittings to remove a stone weighing no less than 787 grains, and made a good recovery.

The other exception was that of a large oxalate of lime calculus, No. 538, which at that time I preferred to crush in four sittings. The *débris* weighs 640 grains; he is now perfectly well.

Every one of the remaining cases, 194 in number, has been treated at a single sitting, making a total of 196 cases of lithotrity at a single sitting, with 10 deaths, or just 5 per cent.

The total is 211 cases of adults by the two operations, with 17 deaths, or 8 per cent. The mean age of these patients was over 60 years. And this is a result which hitherto has, I need hardly say, not been approached by any other mode of treating calculus in the adult. This subject, however, will be illustrated more fully in the succeeding lecture, when I shall present the results of my entire series, embracing upwards of 800 cases, by the two operations.

I have crushed several stones of uric acid, and one of oxalate of lime, considerably upwards of an ounce in weight. The largest uric acid calculus I removed at a single sitting weighed 2½ ounces, and occupied me seventy minutes. The patient was seventy years of age, and made a capital recovery. I cannot speak too highly of the results thus attained. Indeed, nothing need be added to the figures I have adduced above, which exceeded any expectation I could have previously formed as to the success of operating on men upwards of sixty years of age, with stones of all sizes. In conclusion, I think we must admit that the operation of lithotrity at a single sitting bids fair to supersede lithotomy for the adult calculous patient, in all cases except those in which the stone is of rare and exceptional size.

STOURPORT.—Dr. Masterman's appointment as health-officer to the Stourport Local Board dates from 1881, and, in his first annual report, he refers to the general condition of the town, and to the diseases more especially connected with it. One point which greatly impressed him was the prevalence of Bright's disease, which, he thinks, is probably due, in a great measure, to the humidity of the air. To the same cause, aided by the excessive use of hard cider, he attributes the commonness of rheumatism. Dr. Masterman calls attention to the action of the parish medical officer in refusing to furnish him with short abstracts of his fortnightly returns. It is to be hoped that this officer will no longer persist in his opposition to a practice which is become well-nigh universal, and which, as pointed out by Dr. Masterman, greatly helps a medical officer of health in gaining at a glance an insight into the general healthiness or the reverse of a district. Dr. Masterman further contends that, as the more dangerous forms of disease usually show themselves first amongst those who are entitled to parochial relief, and frequently attack them only, such abstracts should be regularly sent to the medical officer of health, as a matter of public health-policy. The birth and death-rates for the year were respectively 39.63 and 15.79 per 1,000. The 1882 report is chiefly of interest on account of the introduction of enteric fever, and the persistence of scarlatina in the district. The cases of enteric fever appear to have originated in the water of a polluted well at Wilden, and often to have been largely aided by excessive overcrowding. As to the contagiousness or otherwise of enteric fever, the cases were too few, Dr. Masterman states, to decide this vexed question; but it is quite clear that it must be very slight indeed, as not one of those who attended on the sick was attacked by it. Scarlet fever was, as is usual here, of a mild type; but, although the mildness of the disease is a matter for congratulation, it constitutes, at the same time, as Dr. Masterman remarks, its greatest danger. The most effectual means of preventing the spread of the disease—that of isolation—is wanting, as the town is, unfortunately, without any hospital-accommodation whatever. Four deaths were due to diphtheria, and under circumstances which led Dr. Masterman to adopt the theory that fungoid growths—mouldiness—on the walls of damp bedrooms may be one of its causes; and this would be encouraged by the excessive atmospheric humidity above referred to. The death-rate for the year was 16.09, and the birth-rate 33.93 per 1,000.