REMARKS ON LITHOTOMY:

WITH A STATISTICAL ACCOUNT OF OPERATIONS; COMPARING THE LATERAL WITH THE MEDIAN METHOD.*

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I PROPOSE, with your permission, to give some account of the cutting operations for stone performed in this Infirmary since the year 1851; and, although I find it impossible to enter into the details of all the cases in the short space of time which can be allowed to any readers of papers at such a meeting as the present, I think I may venture to intrude upon your time and patience whilst I bring before you some statistics of the operations which have been performed in the Leicester Infirmary by our present surgical staff, comparing the method chiefly adopted here with the lateral adopted elsewhere.

I am led to do this, because I believe that the lateral operation, as a general rule, is that which is followed at most of our large metropolitan and provincial hospitals, and because so high an authority as Sir Henry Thompson strongly advocates it in preference to the median method. It may, indeed, savour of presumption on my part to oppose in any way such authority; and, therefore, with my comparatively very small experience, I desire only to state facts which have come under my own observation, and to elicit at this meeting the results of the experience of those gentlemen whose opportunities of observation have equalled and exceeded my own, and whose power of concentration and whose judgment have most probably surpassed what it is my lot to possess.

It is most difficult to obtain a perfect comparative analysis of a large number of cases, because it needs a most minute and accurate detail of all the circumstances, such as age and constitution, the nature and size of the calculus, the condition of the prostate and urethra; and hence the great obstacle to the conveyance of such knowledge as shall unmistakably point to the safest and best method of removing stone from the bladder by lithotomy. Each surgeon may have his own bias and opinion according to his individual success and habit of operating; and he may have more tact in operating in *his accustomed* mode than in that which may have been more successful with others.

I have performed both lateral and median operations in several cases, having had only two deaths; and the majority of my operations has been by the median method, or that advocated by Mr. Allarton in a pamphlet which he published in the year 1854. This is the operation which, since its first adoption, has, with some few exceptions, been the practice of my colleagues and myself, and, I venture to believe, with very satisfactory results. It is, as you know, a modification of the Italian operation; but I need not detain you by describing it, as it is, almost certainly, *theoretically* known to all, and *practically* to many of you.

Sir Henry Thompson admits the applicability of it especially in children; though I do not gather from his observations that he recommends it in preference to the lateral, even in them, for he says (p. 69), in his work on *Lithotomy and Lithotripsy*, published in 1863: "The lateral is generally, and no doubt correctly, held to maintain its superiority, as a rule, over other methods." Yet, in speaking of it in children, he says, that "the deep incision in the urethra and prostate should be made with cleanness and decision, and with sufficient freedom to admit the tip of the operator's index finger with tolerable ease, otherwise he may drive the neck of the bladder along the staff, or slide the finger into the cellular interval between the bladder and rectum."

This, at least, shows how much care is requisite even in the lateral operation in children, and brings to my mind what before appeared to me one of the chief difficulties or sources of anxiety in the median operation in young subjects. Let each one of us be careful how he exults in his own success, for difficulties and *contretemps* occur to all, and do not necessarily imply want of skill. Again, one surgeon may have a long career of success, and yet, by one or two subsequent misadventures, reduce his previously large percentage of successful cases to the average, or below the average, of the good fortune of others.

I have seen a similar accident, against which Sir H. Thompson warns us, occur in the median operation, in which the urethra was so much torn as to preclude the possibility of passing the finger into the bladder, and in which the patient died without the removal of the stone. Mr. Maunder, of the London Hospital, has described, in the *Medical Times and Gazette* (No. 972, p. 167), the case of a child in which this same accident occurred, with failure in the extraction of the stone, and which also resulted in death. These two cases show the importance of a suf-

ficiently free and clean incision of the urethra in both operations, as the like accident may occur in either; and here I may remark, *en passant*, the necessity of being sure of the entrance of the finger into the urethra before any attempt at dilatation of the prostate be employed in the median method.

In Mr. Maunder's case, just alluded to, the difficulty which he encountered was in passing the finger between the upper surface of the probe used and the under and grooved surface of the staff, in attempting which, the prostate and neck of the bladder slipped away in front of his fingers; and he therefore suggests the use of a grooved director instead of the probe, with a view to incising the prostatic urethra if the resistance at that point be great. This is not following, precisely, Allarton's operation, for he recommends the withdrawal of the staff after the introduction of the long probe, and *before* the introduction of the finger. Now, the practice which my colleagues and I have generally followed, has been not to withdraw the staff until the bladder has been entered by the finger, though I have done this in one case, trusting to the probe alone as a director, because I had great difficulty in inserting my finger without the removal of the staff; and I have seen my colleague, Mr. Marriott, adopt the same plan. I have generally, however, found the staff a most useful director to my finger, and I consider that it, in addition to the finger, forms an admirable dilator of the prostate. Indeed, this is the plan which Manzoni, of Verona, adopted; but he gives this necessary caution, viz., not to pass the finger into the prostatic urethra under the staff, but on the patient's right side of it. This plan I have always followed; rather, indeed, curving my forefinger towards the upper surface of the staff; and I am convinced of its importance.

I will now describe the chief structures divided in the two operations. In the lateral, they are the skin and superficial fascia, the transversus perinei muscle, and transverse perineal artery; the deep perineal fascia, the membranous urethra and its muscular surroundings, very probably the artery of the bulb, a part of the prostate gland with its urethra, and frequently the accelerator urinæ muscle covering the bulb, and a portion of the levator ani. In the median, they are the skin, the superficial and deep fasciæ, the membranous portion of the urethra and muscular fibres surrounding it, but not of necessity the prostate gland, the avoidance of which, according to Mr. Allarton, is one of the chief advantages of the median over the lateral.

I consider that the division of fewer and less important structures renders the median operation worthy the consideration of surgeons. The largest stone that I remember to have seen extracted by this method, without any breaking by the forceps, weighed an ounce and a half avoirdupois; and I have removed several of nearly the same size successfully. If the stone were very large, and the prostate unyielding, I should not hesitate to incise it, and to extend the incision in the deep fascia, and to crush with the lithotrite, although I should incline in such cases rather to the adoption of the lateral.

Sir H. Thompson gives a table of 1827 cases of lateral lithotomy, with 229 deaths, or 1 in 7.977; i.e., nearly 1 in 8; and I am gratified to find that the Leicester Infirmary ranks second only to Cambridge; but I will mention all the hospitals, with their results.

Norwich (Crosse).....	669 cases, with 91 deaths—about 1 in 7½
Since that time.....	124 „ 15 „ „ 1 in 8½
Oxford	110 „ 14 „ „ 1 in 8
Leicester	90 „ 8 „ „ 1 in 11
Leeds.....	29 „ 4 „ „ 1 in 7½
Birmingham	102 „ 10 „ „ 1 in 10
Guy's Hospital.....	230 „ 33 „ „ 1 in 7
St. Thomas's Hospital..	200 „ 29 „ „ 1 in 7
University College.....	90 „ 12 „ „ 1 in 7½
Cambridge	183 „ 13 „ „ 1 in 14

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It is but just, however, to say that such a table is incomplete without more detailed statistics as to age, etc.

Mr. Martineau of Norwich is reported to have operated on 84 cases, with only 2 deaths (Sir H. Thompson); and I am informed by my friend Mr. Fullagar that his operation was by the lateral method, with curved staff and knife, and by dilatation of the prostate with the blunt gorget.

"Mr. Allarton records 139 cases of median lithotomy at all ages, with 13 deaths" (Sir H. Thompson), or 1 in 10½.

"De Borsia declares, of 100 cases operated upon by him and Manzoni, by the latter's median method only one died, and that from causes irrespective of the operation" (Mr. Allarton).

The operations performed at the Leicester Infirmary by the present surgical staff, and not included in Sir Henry Thompson's table, are as follows.

* Read before the Midland Branch.

Median operations, 57; with 3 deaths, or 1 in 19; of these, 9 were adults, or above 17 years of age; the deaths were, 2 adults and 1 juvenile. *Lateral operations*, 12; of which 11 were cured, and 1 adult died, aged 67. The grand total is 69, with 4 deaths, or 1 in 17. The result is, in median operations, 1 death in 19; in lateral operations, 1 death in 12. Comparing these with the statistics of the Leicester Infirmary, given in Sir H. Thompson's table, *all* of which were *lateral*, it stands as 1 to 11 in that table, and 1 to 17 in our mixed operations subsequently performed; but, in taking our median alone, as 1 to 19 against 1 to 11 lateral.

To economise time, I will not enter into further comparison of the two methods, but rather refer you to my statements, because I believe that the Italian, and its modification in the median method, have not had the due consideration by the profession to which they are entitled.

I do not regret to say that I have had very few opportunities of judging whether or not the prostate gland has or has not been lacerated or overstretched in the extraction of stone by the median operation. I can only say that I have never had any ocular demonstration of that lesion, nor have I met with any statement to that effect, and proved by *post mortem* examination; but this is a question, gentlemen, which you must decide from your experience and reading, the answer to which I shall be glad to elicit at this meeting. When I consider the structures divided in the median operation as compared with those divided in the lateral, and at the same time weigh the results of our smaller number of operations with the more generally adopted lateral, I think I have reason, in properly selected cases, to continue its use, and to bring it before your notice as worthy of your consideration. In my own two cases which died, the stones were not large; the extraction of them was easy; there was nothing to lacerate the prostate; and, in Mr. Marriott's single median death, abscess and peritonitis occurred suddenly at the end of three weeks.

In respect of hæmorrhage, I must say a few words. In one case only out of twenty-five median have I had occasion to use the lithotomy-tube, or to ligature; but in one lateral operation out of nine, I was obliged to secure two vessels, on account of sharp bleeding. Now I think it is but just and honourable to say why, in my opinion, the hæmorrhage, followed by death, occurred in that median operation, and it was this: the perinæum was deep, and I failed at first to hit the groove in the staff; and the blade of the knife passed by the side and beyond the urethra, probably wounding the artery of the bulb, or some artery abnormally distributed. In no other cases have I encountered primary hæmorrhage which was not easily controlled, or in which I had occasion to ligature or to use the tube.

On referring to Mr. Marriott's notes, which he has kindly given me, I find that he had occasion to use the tube twice in his median operations, and both patients recovered; in three cases there was smart hæmorrhage requiring ligatures: but in two out of his three lateral operations there was severe hæmorrhage requiring the plug, and one of these patients died from pyæmia in seven days; and in the third case there was free venous hæmorrhage.

I have once had secondary hæmorrhage in a child, which occurred on the tenth and eleventh days after the median operation, and which was so severe as almost to threaten death. This was controlled by ice applied to the perinæum, and by the internal administration of gallic acid, and the child recovered.

Mr. Thomas Smith of St. Bartholomew's Hospital, in a paper lately published in the BRITISH MEDICAL JOURNAL, quotes twenty lateral and one median operation, all in children, in all of which he introduced the lithotomy-tube, and he recommends its use in all cases as a preventive of hæmorrhage; but from my own experience I think this unnecessary, and, if unnecessary, objectionable; nevertheless, all his cases were successful.

In two or three cases I have observed in my own practice orchitis of one or both testicles following the median method; this I do not recollect to have seen after the lateral operation. The inflammation somewhat retarded the recovery, but occasioned no further inconvenience.

In two cases—one lateral, the other median—liquid feces passed *per urethram*; and in one of them—the lateral—flatus also escaped by the same passage. In the median, it occurred in a boy 12 years old on the thirteenth day after the operation, in which case the stone was rough and large, and composed of oxalate of lime. In the lateral case, which was a complicated operation, on account of the extraction of two large phosphatic calculi, combined with stricture of the urethra, flatus passed by the urethra at the end of three weeks, accompanied by liquid feces; but both of these recovered completely without further surgical interference. In neither of these was the rectum wounded by the knife, but, as I infer, from sloughing occurring after the operation.

In this latter case, the man, aged 32, had been the subject of stricture for several years; and although I had dilated the stricture gra-

dually for days prior to the operation, I was unable to introduce the curved laterally grooved staff; and, whilst he was on the table, I first opened the stricture by Thompson's dilator, and then readily passed Aston Key's straight staff. The first stone (for there were two) was removed after prolonged careful extraction; but I was compelled to crush the second by the lithotrite, as it could not be extracted without using undue violence. And here, I may remark, that this latter proceeding is one which Sir H. Thompson condemns as a dangerous proceeding in a bladder entirely empty of urine; but, with the exception of the sloughing before mentioned, which, in my opinion, was entirely independent of the use of the lithotrite, no untoward symptoms followed, and the man recovered.

I ought to add that upwards of thirty operations were done by my late colleagues, Messrs. Paget and Macaulay, since the year 1851; but I have been unable to obtain satisfactory details as to the method adopted, and therefore they are not included in my table.

THE MODE IN WHICH DIRECTION IS ASCERTAINED BY MIGRATORY ANIMALS.*

By FREDERICK JAMES BROWN, M.D., Rochester.

I AM impressed with the idea that migratory animals are provided with some mode of determining the course of their voyages. If such power be not conceded to these animals, it becomes necessary to refer their migratory movements to pursuit of food scented in definite directions, or to the appreciation of temperature in definite directions.

The vertebrata possess only five outward senses; consequently, fishes and birds are unprovided with special senses for determining direction, yet these classes of animals may possess olfactory and visual powers capable of guiding them in a definite course. It appears to me that the olfactory sense may enable fishes, and possibly birds and mammalia, to perceive electric and magnetic currents; and that the visual sense may enable birds to distinguish differences in the light emanating from the stars, also angles caused by the varying position of the heavenly bodies. If this be true, fishes and birds navigate the seas and the air by the aid of the same sciences that guide the mariner. And I ask, is not this highly probable? Art is nothing more than Nature elaborated by man, and Science is Nature herself. Sensational animals do instinctively that which man has learned to do by laborious research. It is possible that man may one day be able to navigate the globe by modes identical with those employed by fishes and birds.

The social instincts of man are multitudinous and exceed those of the lower animals a thousand-fold; yet by their subordination to the reasoning faculty, they render him a creature dependent on his own industry rather than on native gifts. In this way the social life of man differs essentially from that of the lower animals. The peregrinations of mammalia generally, and of the cetacea particularly, are probably guided by the same forces that guide birds and fishes. Ordinary smell and sight are capable of guiding quadrupeds for long distances; yet the return of the dog and of the cat to their homes when removed to incredible distances, renders some mode of determining direction a necessity.

I should think that experiment on the different senses would elucidate this question; for instance, migratory birds might be blinded, others might be deprived of the sense of smell, others of hearing. Should such maimed birds, duly ticketed, be found in the countries to which they usually resort, the inference would be that the birds were conducted by their companions, or that they possessed some other mode of discovering direction and locality than that which is assumed to exist.

I beg leave to record an anecdote of a sheep-dog, related to me many years since by a shepherd. A dog was taken from the Hundred of Hoo to Ashford. The dog found its way back; but, strange to say, it took a straight course through the Isle of Sheppey, and crossed the harbour of Sheerness to the Isle of Grain,† instead of passing circuitously by way of Rochester bridge.

It is evident that the faculty or power of locality, however highly developed, will not account for the return of animals to their home when removed in closed vehicles to very great distances; and in the case of migratory birds, it is known that the young cuckoo leaves this country after the departure of its parents, consequently inexperienced as to route and locality. I feel confident that experimental inquiry into this subject will demonstrate, in the lower animals generally, and in migratory animals particularly, the existence of power to ascertain direction. I would mention one circumstance taken from human experience that bears on this question. A half-witted man could tell the

* Read before the West Kent District Meeting.

† Whether by swimming or in a boat, I do not recollect.