

Prince (D.)



LITHOTOMY.

A TABULATED STATEMENT OF CASES,

WITH CONSIDERATIONS IN RELATION TO THE

Operation, the Treatment and the Preventives

MOST PROMISING OF SUCCESS.

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I have operated twenty-one times upon twenty persons, the youngest being 15 months, and the oldest 81 years.

My earlier experience was with the lateral method, but I became convinced by reading Allerton's account of his mode of performing the median operation, that the anatomical reasons for it were superior. My later operations have been by this method, of cutting in the median line of the perineum.

Allerton's operation, after the introduction of the staff, consists in introducing the fore-finger of the left hand into the rectum. Then a sharp pointed bistoury with edge upward is thrust in about half an inch anterior to the anus, and pushed forward until the point is lodged in the groove of the staff. The finger in the rectum prevents the accidental puncture of the wall of the cavity, and by its pressure upon the urethra with its enclosed staff, aids in inserting the point of the bistoury into the groove. The third movement consists in drawing the bistoury upward toward the operator, the point gliding along the groove in the staff for half an inch, and finally

cutting the raphe to a sufficient extent as the bistoury is withdrawn. The fourth movement is the introduction of a probe along the groove of the staff, after which the staff is withdrawn and the finger is introduced into the bladder.

The finger, by a rocking movement, works its way along the probe until the bladder is entered. A dilator, such as is used for the dilatation of the uterus or the female urethra, is then employed to expand the urethra to a sufficient extent to permit the entrance of the forceps. Farther dilatation is effected in the withdrawal of the forceps, after the stone has been grasped.*

This is a speedy and showy operation for small stones, and it is free from the danger of excessive hemorrhage. A less speedy proceeding is thought to be preferable. The anus having been dilated by the introduction of the fore-finger of each hand, pushing in opposite directions, and the staff having been introduced, an incision two or three inches in length, is made in the median line by an ordinary scalpel, reaching down to a point about half an inch anterior to the rectum. This incision is deepened by repeated strokes, and when the nail of the fore-finger of the left hand enters the groove of the staff behind the bulb, the intervening membrane is punctured by the point of the scalpel, which is then laid aside. A probe-pointed, straight bistoury is then inserted into the groove with one flat surface toward the staff above, and the other toward the rectum below, and pushed forward into the prostatic portion, but not into the bladder. The fore-finger of the left hand is then inserted between the staff and the bistoury and pushed forward by a rocking motion until the bladder is entered by the finger. If, on attempting to pass the finger, it is found not to go forward, it should be withdrawn and the bistoury carried a little further into the prostate, guided by the groove in the staff. The finger is then returned to the prostate, and any necessary cutting is done by the bistoury as it is pressed by the finger upon its flat surface. The cutting is therefore in the side of the urethra.

It is intended that there shall be no cutting in the posterior part of the prostate.

Allerton's recommendation of a dilator has not been found necessary.

The forceps once introduced along the staff, or along a probe by which the staff is replaced, affords a wedge for further dilatation, as the stone is extracted within the grasp of the forceps. If a moderate pull in a vibratory manner fails to bring out the stone which has been grasped in its narrowest diameter, aided by the fingers of the left hand in the rectum, the probe-pointed bistoury should be passed in on the outside of the forceps, and made to divide the most resisting fibers, while they are made tense by the force of traction applied to the forceps. In this way nothing is divided

*Allerton's Operation with remarks by Ward. Half yearly Abstract, No. 32, 1861, from *Lancet*, June 9, 1860. Signor Bresciani de Borsa, and Signor Manzoni reported, (See the *American Journal of the Medical Sciences* for July 1846, p. 239, and *Medico-Chirurgical Review*, for April, 1846,) very gratifying success without cutting the prostate.

which is easily stretched or easily torn. The conversion of the median incision, into the medio-bilateral, is done with the greatest economy of tissue and without danger of subsequent pelvic abscess from the infiltration of urine into the loose cellular tissue.

If the stone is small it is not necessary to employ the forceps; the stone being pushed forward by the fingers placed within the rectum. Generally, however, the smooth surface of the forceps obviates the abrasion of the parts by the rough surface of the stone, and thus more than compensates for the room the instrument occupies.

With the modifications here described, the median method is applicable to the cases presenting the largest calculi which can be extracted under the pubis. In the case of a large stone the operator takes sufficient time and feels his way with the forceps engaged in the wound. He carefully introduces the probe pointed bistoury, and divides little by little, whatever affords most resistance, first on one side, and then on the other, until the stone is delivered.

The element of time is important to enable the tissues to dilate as they do in slow parturition. Haste to remove a large stone must show a loss of presence of mind or an unmindfulness of the correct theory of the proceeding.

The bladder having been found clear of stones, fragments or blood clots, a syringe with warm water having generally been employed: a cotton probang, saturated with undiluted carbolic acid, is mopped over the incised and the mucous surfaces.

The interior of the bladder is found to bear this application well, and very little pain is felt on awaking from the anaesthesia. The local anaesthesia caused by the contact of the carbolic acid may account for this. After the thorough mopping with carbolic acid, the incised and lacerated surfaces are mopped with a tincture of chloride of iron, with a view to the formation of an incrustation unfavorable to the absorption of fluids.

The patient is directed to be bathed in a full length or in a sitz-bath several times each day. The theory of this is, that the water of the bath enters by its gravity the urethra and the bladder, and that any material in process of decomposition is likely to be washed away. Unless resisted by the tonic muscular contraction of the bladder, the water must enter to the extent of the natural capacity, carrying away any ammonical urine or other causes of irritation or septic influence. The feeling of comfort from bathing is always great, and the time is anticipated with pleasure and often with impatience. Cutaneous excoriations are avoided and all fear of septic absorption is banished. No catheter is left in the wound. The iron and carbolic acid applications are certain to prevent union by the first intention so that the urine is sure to flow without obstruction and the wound is protected from the irritation of flowing urine by these applications, until protection is afforded by the suppuration, which throws off the artificial crust.

A hypodermic injection of morphia is generally given before the patient has become fully aroused from the sleep of ether. The state of insensibil-

ity is thus prolonged. Since the adoption of this expedient, it is a rare event for a patient to complain of pain. The restlessness which prevents sleep is generally more effectually removed by a bath than by a Dover's powder.

A liberal use of quinine helps the reparative processes, and the diet should be that which agrees and furnishes the best relish. To avoid the tediousness of detail of cases, they have been incorporated in the following table:

Kind of operat'n.	No. cases.				No. of stones in each operation.	Other sub- stances.		Total.
	Adults.	Children.	Males.	Females.				
Lateral.....	5	4	1	5	4-14-8-1	1	23	Of the two cases of other substances, one was that of the bone of the male organ of the coon, in the male bladder, carried six weeks—the soft investment being infiltrated with calcareous material.
Lateral converted into bilateral	1	1	1	1	1	1	1	
Median.....	9	3	5	9	1-1-1-I-1-1-1-1-1	9	6	The other was that of a pen-knife carried a year and a half in the female bladder, incrustated in calcareous material.
Medio-bilateral.....	3	2	1	2	1-4-1	6	6	
Vagino Vesical.....	2	2		2	1	1	2	
Urethral.....	1	1		1	1	1	1	
Totals.....	21	13	7	17	3	40	242	

Twenty-one operations have been made upon twenty persons, nineteen recovered, and one (that of a woman with a small calculus) died at the end of five days, probably from the loss of blood. The infant was operated on at fifteen months and again at twenty-one months; died three months afterward. Two adult cases died at the end of a year. The other cases survived several years or are now living.

In one of the lateral operations in a gentleman 63 years of age, fourteen stones were obtained very similar to each other, weighing in the aggregate four ounces avoirdupois, or 113 grams. The patient was able to walk a mile in five weeks from the time of the operation.

The lateral converted into the bilateral operation furnished a stone weighing four ounces avoirdupois. Five days after the operation a fistulous opening was developed which never healed. This probably resulted from a slough, very much as a fistula is developed after parturition. The conversion of the lateral incision into the bilateral was done with the probe-pointed bistoury, with its flat surface to the outer surface of the blade of the forceps, the edge being turned out sufficiently to divide the most resisting tissues.

Two plastic operations were subsequently made to close the fistula, but were unsuccessful.

This patient came very near being lost by a peritoneal inflammation which supervened five weeks after the time of the operation, as the result of drafts of air from the cracks of a window.

An illustration is also afforded of the relief of irritation which follows the removal of a stone. Great prostration from vesical inflammation was attended before the operation by a pulse of over 100. Spare diet aggravated the condition. Liberal feeding and quinine improved the condition of the patient, but the pulse would not come below 80.

The operation afforded relief from this great irritation. It follows from the consideration, of which this is an illustration, that it is not advisable to

wait for the complete removal of morbid general conditions. The removal of the stone is essential to this end.

This case is also illustrative of the influence of diuretic spring water. The patient consulted me six years before he submitted to an operation, and on being told that cutting would afford the only relief, he went away sorrowing. He afterwards spent two years at a saline spring in Greene county, Ill., and was so much benefitted as to think he was completely recovered. He married and engaged in farming, and for three years believed himself free from the presence of a stone. Overwork brought on a vesical inflammation, from which he found no complete relief except in lithotomy.

The rationale of the diuretic cure, probably, is that the large amount of fluid holds in solution the material which would otherwise be deposited, while the surface of the stone becomes polished by its friction against the mucous membrane.

The penis bone, (of a coon) mentioned in the table, was removed from a man aged about fifty, whose story was that "a doctor had attempted to remove the gravel and had broken his instrument, leaving a part of it within the bladder, where it had remained about six weeks.

The pen-knife, mentioned in the table, had been carried in the bladder a year and a half, and assumed a transverse position, so that the patient, a girl of fifteen, could not completely empty her bladder, and yet there was a constant and imperative desire to urinate.

An incision through the vagina was closed successfully by sutures, six weeks after the removal of the knife. The amount of inflammation, incident to the presence of the knife, did not permit an earlier attempt at closure. The restoration of health was complete.

The other case of vagino-vesical incision for the removal of a small calculus, resulted in death in five days.

The patient was extremely emaciated and anemic before the operation, and it is supposed, that a loss of blood sufficient to stain the discharges for three days, exhausted the already impoverished blood below the grade of repair. The death was by asthenia.

It is regretted that the operation had not been by an incision by the platinum wire, heated by the galvanic current, or by extraction through the urethra.

The readiness with which the patient was thrown into a condition of terror, led to the making of the incision at the close of an examination, rather than subject the mind of the patient to the anticipation of an operation at a subsequent time.

The removal of a fusible calculus, weighing 121 grains, (18.67 grams,) through the urethra sufficiently dilated, resulted in permanent incontinence of urine, though the patient, aged 60, regained good health in other respects.

It is regretted that the stone was not thoroughly crushed before its extraction.

The youngest case was that of a child, fifteen months old, from whom a

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soft, phosphatic calculus, weighing forty-four grains, was removed by the median operation. In six months another similar formation was removed in the same way. The child became sickly and died about three months after the second operation.

The greatest age is that of eighty-one years, in a gentleman who had lived an active and healthy life until old age. For many years he had been obliged to employ a catheter, which passed easily and without pain. Polypous growths around the urethra were suggested as the cause of the retention, and they were found in the progress of the lithotomy.

In July, 1877, the patient detected a calculus in introducing the catheter. Since then a burning sensation had been one of the most annoying symptoms. He had been for a considerable time bed-ridden, and was willing to have an operation performed as a means of terminating his life or his suffering.

Oct. 29, 1877, after a cathartic taken the night before and 10 grains of quinine each morning for three mornings and the usual preparations in a warm room, the median incision was made as already described. The sphincter of the anus having been dilated previous to the incision, the fingers of the left hand were readily passed behind the bladder, and the forceps were thus aided in grasping a calculus. The extraction was found to require considerable force, and the probe-pointed bistoury was passed in along the blade of the forceps on one side and the resisting fibers were divided, and then the same thing was done on the other side. The stone was extracted, piloted by a polypus which had been torn off by being caught in front of the stone. Three other stones were seized and extracted in succession, each one driving a polypus before it. Four polypi, each about an inch in length, were thus removed, and one of smaller dimensions, making five in all.

The calculi were irregularly triangular, one a little larger than the others and weighed in the aggregate four and a half ounces avoirdupois, (122 grams.)

The wound and the bladder were freely mopped with carbolic acid and the wound afterwards mopped with chloride of iron.

The pulse, before going into operation, was 120. On coming out from the effects of ether, so as to talk rationally, or about four hours after the operation, the rate was 96, soft and full.

Bathing several times a day was enjoined. The recovery was without a bad symptom. Writing several months after the operation; he holds his water completely, when in the horizontal position, but in the erect posture there is some loss. He uses no catheter.

I early got a hint that the great success of Dr. Benjamin Dudley was attributed by himself in part, to cutting as little as possible. The more consideration I have given to this subject, the more value I have placed upon the maxim. The other extreme, of excessive violence in tearing the tissues in the extraction, must be avoided.

After an incision of moderate extent, the remainder of the cutting can be

executed much more safely under the tension of the expanded forceps, than as a part of the primary cutting made preparatory to the extraction.

In the proceeding as here described, the vessels and other easily yielding parts escape before the knife, (which should have a thick edge,) while the fascia and the trabeculæ are divided. The elasticity of the undivided tissues helps to lessen the size of the wound remaining after the conclusion of the operation, thus lessening the work to be accomplished by granulation and cicatrization.

One of the cases of median operation in a child and one in a lad of thirteen, had the stone pushed out by the fingers of the left hand in the rectum, and those of the right hand above the pubis. There is, however, nothing in this procedure to recommend it as a general practice, because the rough surface of the stone produces an unnecessary abrasion of the mucous and the incised surfaces. My cases have all been in the white race.

I have not selected my cases, and have never rejected a case. I have not operated in a case of such congestion or degeneration of the kidneys as to produce albuminous urine. There is therefore something of the element of luck in not having lost a case in a male; but I cannot avoid feeling that the methods which I have described are in part to be credited with the success in the later cases.

The recent improvements in the methods of crushing stones within the bladder, especially the improved apparatus devised by Dr. Bigelow of Boston, have enlarged the field of fitness for this proceeding, but the process of cutting must remain the preferable method for a considerable portion of the cases, and the indispensable method for the cases in which the stones are hard or in which the nucleus are some substances incapable of being crushed by ordinary pressure.

The great safety of lithotomy, (where the methods and precautions here insisted upon are employed,) makes it probable that this operation will always hold nearly its present comparative value.

ADDENDUM—THE BATH.

Such is the sense of relief expressed by the patient recovering from perineal section, on being placed in a bath, that it seems proper to add a few paragraphs in explanation.

The open air management is unavoidable; because the flow of urine must saturate any application, rendering it necessary that it should be changed. It is then both an open air and at the same time a wet treatment.

The *Lister method* of a spray of carbolic acid to prevent the introduction of organisms during an operation, and of a filtration of air through carbolized dressings afterwards, to prevent their entrance, is altogether inapplicable. The antiseptic application must be wet, because a fountain of liquid is ready to saturate any dry application which can be made.

The wound is necessarily one of suppuration, where the mingled pus and urine quickly pass into putrefaction in the warmth of animal heat. The application of sponges must be limited to the cutaneous surfaces, while the introduction of the point of a syringe must occasion pain unless effected with more care and skill than is to be expected. The use of sponges or syringes for the application of water, either simple or medicated, must therefore be very imperfect, though better than no application at all.

The position of the pelvis in water meets the necessity for cleanliness without any harsh contact; the water passing to the fundus of the suppurating surfaces, and in those in which the urine is dripping away without any control, the water of the bath passes into the bladder itself.

If the bathing is employed as often as the irritating character of the discharge creates uneasiness, the pus is almost certain to be washed away before it passes into the putrefactive condition.

A child, whose case has been referred to in the preceding pages, who was nursed by his father, usually became restless in the night. His father would then place him in the bath with a speedy subsidence of all irritation. A refreshing sleep invariably followed the bathing.

This is an example of the uniform experience of those who have been subjected to bathing to the extent of desire, after perineal section.

If the measure were not one believed to add greatly to the safety of the patient, it would be worth the trouble it requires, in order to secure the comfort which must otherwise be obtained by opiates. The latter blunts the sensibility to a source of irritation, which is itself the occasion of danger as well as of discomfort. This suppression of irritation often deceives the surgeon, with regard to the presence of dangerous putrefaction, which only needs a shallow pocket as the beginning of a deep burrow, while the bath removes at the same time the source of uneasiness and the cause of mischief.

From the great relief obtained by the frequently repeated and the prolonged bath after lithotomy, the suggestion occurs that perhaps the expedient has been underestimated in other suppurating wounds. In a paper on the management of wounds, I have published in some detail the history of cases in which exceedingly great relief has been derived from this management.*

In suppurating wounds of the extremities it is practicable to employ prolonged irrigation, but in wounds of the pelvis this is difficult. It is however practicable to alternate the drip with the bath, so that the wound may be kept constantly wet, either with simple water, or with water medicated with carbolic acid, salicylic acid or other disinfectants.

In the operation for extroversion of the bladder, where the perpetual flow of urine is liable to inflame the flaps and destroy their adhesion, this combination of irrigation and immersion is of exceedingly great advantage.

Observations have proved that union by the first intention, as well as union by the second intention, goes on under irrigation and immersion quite as well as under a dry dressing, whether the dry dressing be a scab or a blood clot dried in the open air, or, be an artificial dry dressing.

Operations upon the vagina, as for vesico-vaginal fistula, and upon the perineum to close lacerations from child-birth, present cases which, according to analogy, should be treated subsequent to surgical operation, by the employment of the bath to the extent of comfort. Any other method of securing cleanliness involves danger of destroying the adhesions while they are delicate, and without cleanliness, the adhesions are liable to fail, through the destructive presence of pus in the condition of putrefaction.

It is probable that this method of after treatment has not received the attention which it deserves, on account of the trouble its execution occasions where there is not proper preparation for it. If water must be brought and carried away in buckets, the bath is nearly certain not to be employed as often as it ought to be.

In a case of such importance as the cure of stone in the bladder and one involving the danger attendant upon the ordinary management, it is worth while to make the necessary preparation.

In all public institutions it is entirely practicable to have a room in which there shall be a bed with a bathtub alongside of it—with hot and cold water supply, easy of management. If the patient is very helpless the assistants can lift him into the water and when sufficiently soaked they can lift him out again. This will be less trouble to the attendants than giving an opiate, and will therefore be willingly executed.

*The management of wounds by David Prince, M. D.—Lindsay & Blackiston, Phila.

