

believe that any such could be devised that would not arouse sufficient opposition to ensure its defeat. I am satisfied that whatever is done in the near future, at least looking to the removal of this dark stain from this great and otherwise honored profession, must be done in our own ranks by both combined and individual effort.

The last quarter of a century, so far as the development of medicine is concerned, has been the grandest in all its two thousand years of history, and in that short time it has advanced a long way over the road that leads from the darkness, the groping and uncertainty of the practice of an art toward the broad, bright daylight of exact science, until the teachings of to-day are founded on the results of observation and experiment, rather than on those of speculation and theory as formerly. In this grand march, surgery, chemistry, physiology, pathology and sanitary science, have all taken part, and now Theory and Practice is beginning to feel this influence that has pushed the other branches of medical science so well forward, and it is moving in the same direction. Certainly there never was a more opportune time than the present for the medical profession to develop medical jurisprudence, and that by a more careful study of its duties and responsibilities and by a just appreciation of its high importance in both civil and criminal causes. By so doing we shall not only bring credit to ourselves, but add another benefit to the long list the world already owes to medical science.

NOTES ON THE TREATMENT OF STONE IN THE BLADDER.¹

REPORT OF TWENTY-FOUR CASES. RECURRENCE OF STONE. LITHOLAPAXY IN THE FEMALE BLADDER. FISTULA AFTER LATERAL LITHOTOMY. CALCULUS WITH SHOE-STRING NUCLEUS. STRICTURE OF THE URETHRA COMPLICATING LITHOLAPAXY.

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In no branch of surgery has there recently been so complete a change of practice as has come about in the treatment of stone in the bladder. Within the past eight years, two operations have come to the front and have rapidly superseded the older methods. Of these, one, litholapaxy, is new, and the other, supra-pubic lithotomy, although old, was not formerly in good repute. A brief review of the steps in this radical change may be of interest, and will serve as an introduction to a short series of cases treated in accordance with modern ideas.

Ten years ago, it was the generally received practice among those who might be regarded as authorities in this branch of surgery, to crush only those stones which could be satisfactorily disposed of in three or four sittings by the lithotrites then in use. So great was the fear of instrumentation in the bladder, that it was thought important for these sittings to be very short (from three to four minutes). Evidently, therefore, the stones considered proper for lithotritry were small or soft. Larger and harder stones were submitted to lithotomy, and the lateral operation was the favorite one for these cases. The central perineal operations had some strong advocates, but were only useful for stones of moderate size.

¹ Read before the Boston Society for Medical Improvement, November 23, 1886.

Supra-pubic lithotomy was generally looked upon as a dangerous method, only to be resorted to with stones of large size which could not be safely dragged through the perineum.

At about the time of which we are speaking, the antiseptic method of treating wounds came to a general adoption and the consequent improvement in the results after lithotomy was so considerable as to threaten to place still closer limits to the field of lithotritry.

In the year 1878, Dr. H. J. Bigelow published his first paper introducing the operation of Litholapaxy, which was rapidly adopted, and is to-day the generally accepted method of dealing with the great majority of cases. With the efficient lithotrites and evacuator which made "lithotritry at one sitting" possible, it is now usual to remove stones of considerable size and hardness, and practically it has been found that under ordinary conditions in adults, any stone which is suitable for lateral or other perineal lithotomy is suitable for litholapaxy, and that even stones so large that they would require a supra-pubic incision if they were removed by the knife, may, when soft and friable be safely crushed and pumped out.

The exceptional cases in which litholapaxy cannot be used are as follows: (1) A very large and hard stone may resist every attempt at crushing. (2) A stone may have as a nucleus a foreign body, such as a piece of necrosed bone or a bullet, too hard to crush and too large to come through a tube. (3) An encysted stone may be out of reach of the lithotrite. (4) Some writers consider that stricture of the urethra may prohibit litholapaxy. This cannot often happen, for strictures, however close, yield readily to divulsion which may be immediately followed by the crushing and evacuation of the stone. I have so often seen these two operations successfully done together on an etherized patient, that I can but think this the best practice. While it economizes time, it saves the patient much needless manipulation. (5) False passages may exist, which so interfere with the introduction of instruments that the dangers of the operation are greatly enhanced, and the question of lithotomy is to be entertained. (6) The hip may be ankylosed, in a position which interferes with the use of urethral instruments.

It at first seemed unlikely that "lithotritry at one sitting" would ever be applicable to children. Before puberty the urethra is so small that instruments of any considerable size cannot be used through it. Quite recently, however, Dr. Keegan,² of India, has published a series of fifty-eight cases of stone in children, in which he used litholapaxy, and with only one death. Such results must command our attention and make us reconsider the matter, although it is hard to believe that the present very low death-rate after lithotomy in children can be improved upon.

In any of these exceptional cases to which litholapaxy cannot be applied and in which a cutting operation is required, we have, as has been said, three general methods to choose from. The median perineal, the lateral perineal, and the supra-pubic operations.

Median perineal lithotomy, in which the membranous urethra is opened, and the prostate then either dilated or incised on the middle line is only applicable to small stones, and finds but little use at the present time. In case of a foreign body of small size, it might be employed.

Lateral lithotomy has a much wider field, being

² Indian Medical Gazette, May, 1884.

competent for the removal of stones of considerable size. It has the disadvantage of necessarily wounding the urethra and prostate, at the same time putting the seminal ducts and rectum in danger. It also exposes the patient to certain risks from hæmorrhage.

On the other hand, owing to the dependent position of the wound, it has the decided advantage of providing thorough drainage to the bladder.

In the treatment of stone in children lateral lithotomy has had its greatest success, the death-rate being very low (from five to seven per cent). Dr. Freyer has even achieved the feat of completing one hundred and forty-three operations without a death.

Lastly, we come to the supra-pubic operation, with the recent great improvement in its technique.

In the year 1878, which was an eventful one in the history of stone operations, a few months after the publication of Professor Bigelow's monograph, there appeared in the *Edinburgh Medical Journal*, an article by Dr. Garson, upon the influence which distension of the rectum had upon the position of the bladder and the pre-vesical fold of peritoneum. This paper attracted but little attention at the time, but was followed two years later by another upon the same subject by Petersen, in the *Verhandlungen der Deutschen Gesellschaft für Chirurgie*, 1880.

These observers showed that by filling the bladder with water and then distending a colpeurynter introduced into the rectum, it was possible to lift the parts so as to very materially raise the peritoneum and thus widen the space between it and the pubes through which the bladder could be reached. The distension of the rectum pressed the bladder forward and held it firmly against the abdominal wall, so that it could be easily recognized and readily opened. It also, by raising the vesical floor brought all parts into easy reach of the finger and eye, making thorough exploration possible.

By the previous methods of operating, the two principal dangers were: *first*, of wounding the peritoneum; and *secondly*, of infiltration of urine with septic processes starting in the wound. The first of these dangers was one which could be avoided with care, but, this very care in separating the parts, and bringing the bladder into view, opened the cellular spaces about and greatly increased the danger of septic absorption. The new method not only rendered the danger to the peritoneum more trifling than it had been before, but also by bringing the bladder into easy reach rendered much manipulation unnecessary and made it possible to open it by a clean, direct incision without interference with its cellular surroundings.

The German surgeons quickly put this improvement into practical use, and the operation became at once a popular one with them; It was almost simultaneously adopted in France and soon found its way to England and to this country. So firm a hold did it take upon the German mind, saturated with an enthusiasm for antiseptic surgery that at Magdeburg in 1884, Volkmann of Halle, who was one of Lister's earliest and most strenuous advocates, declared it as his belief that lithotomy was the proper operation for stone, and that "the various methods of crushing only deserved a place in the history of medicine." He was supported in this view by Bergmann: their opposition to litholapaxy being based on the supposition that it could be successfully practised only by especially skilful and experienced surgeons.

This theoretical position was ably opposed by Professor Dittel and others of large experience in genito-urinary surgery, who held the same high opinion of litholapaxy that prevails in France, in England, and in this country. The best answer to so speculative an opinion as that of Professor Volkmann, is, however, an appeal to facts; and the lithotomist who hopes to establish his pet operation in advance of all others for the treatment of stone, must show that it is capable of saving more than ninety-seven per cent. of ordinary adult cases, for this is about the percentage of recovery after litholapaxy.

From this brief sketch it will be seen of how recent a date are the two operative procedures for the treatment of stone in the adult, that now meet with the most favor, and which have within six years to a great extent displaced the perineal operations, that up to that time had been in highest repute. The modern treatment of stone in the bladder may then be briefly summarized as follows:

Litholapaxy is to be used in all ordinary adult cases. How far this operation can be applied to children is still doubtful.

Supra-pubic lithotomy is to be employed in cases where the stone is too large and hard to be crushed, or when an impervious stricture makes the introduction of a lithotrite or staff impossible. In case of an encysted stone the high operation is also the best, as the thorough inspection of the bladder which it makes possible, enables us to treat the condition intelligently.

Perineal lithotomy may be reserved for occasional use upon stones of moderate size where false passages or ankylosis of the hip make litholapaxy impossible or when a stone has a foreign body as a nucleus. It is possible that the supra-pubic incision may eventually prove to be the best for even these cases; but at present the percentage of recovery after lateral lithotomy, in cases of small calculi, is better than the high operation can, or at any rate has, produced.

The treatment of stone in children is just now more unsettled than in any other class of cases. Litholapaxy and supra-pubic lithotomy are both putting in their claims, but thus far the best authentic results are from lateral lithotomy. Dr. Keegan's results from crushing are, it is true, better than the average results from the lateral operation; but until they are confirmed by other operators, they must be looked upon as exceptional and are far excelled by Dr. Freyer's success with lithotomy (one hundred and forty-three cases without a death). Whether supra-pubic lithotomy can accomplish something better still, has not been shown.

REPORT OF TWENTY-FOUR CASES.

The cases to which reference will be made in this paper are twenty-two in number, and comprise all of those operated upon by the writer up to this time. Twenty of these operations were by litholapaxy, one by lateral lithotomy and one by supra-pubic lithotomy.

The following table gives the essential facts in regard to them.

It will be seen that in but one case did death follow the operation, and I will give that patient's history somewhat at length.

M. M., a laboring man, sixty-nine years of age, entered the Massachusetts General Hospital January 20th, 1885. He gave a history of frequent, painful

	Age	Sex	Residence.	Duration of Symptoms.	Operation.	Date.	Stone.	Weight Grains.	Result.	Remarks.
1*	65	M	Boston	4 or 5 months	Litholapaxy	Nov. 17, 1883	Phosphatic	270	Recov.	Multiple calculi
2*	66	M	Boston	3 or 4 months	"	July 24, 1884	"	127	"	"
3	10	M	Cambridge	Since Babyhood	Lateral Lithotomy	Nov. 11, 1884	Calcic Oxalate	132	"	"
4	69	M	Brighton	1 year	Litholapaxy	Jan. 21, 1885	Phosphatic	98	Died	Death from bronchitis
5	53	M	Charlestown*	2 or 3 years	"	Jan. 28, 1885	"	78	Recov.	"
6	61	M	Milton	1 year	"	May 11, 1885	"	94	"	"
7	67	M	New Brunswick	5 months	"	June 11, 1885	"	121	"	Structure divulsed
8	73	M	New Brunswick	2 or 3 years	"	June 24, 1885	"	20	"	"
9	57	M	Brookline	A few weeks	"	Oct. 5, 1885	Uric Acid	113	"	"
10	20	M	New Brunswick	6 months	"	Oct. 10, 1885	Phosphatic	150	"	Leather shoe-string nuc.
11	67	M	Boston	1½ years	"	Oct. 23, 1885	Uric Acid	80	"	Epididymitis, etc.
12	47	M	Providence	1 year	"	Nov. 6, 1885	"	140	"	"
13	60	M	Boston	2 months	"	Nov. 10, 1885	Phosphatic	23	"	Multiple Calculi
14	50	M	Boston	3 months	"	Dec. 27, 1885	Uric Acid	19	"	"
15	75	M	Needham	9 months	"	Feb. 9, 1886	"	34	"	Second Oper. on No. 8
16	74	M	New Brunswick	1 or 2 years	"	Mar. 30, 1886	Phosphatic	143	"	"
17	70	M	St. Louis	2 years	"	May 26, 1886	Uric Acid	68	"	Stricture divulsed
18	48	M	Dakota	24 years	"	Sept. 4, 1886	Phosphatic	225	"	"
19	53	M	Portsmouth	1½ years	"	Sept. 11, 1886	Uric Acid	265	"	"
20	68	M	Brookline	8 years	Sup.-pub. Litho'my	Sept. 12, 1886	Phosphatic	1180	"	Strict. and false passages
21†	49	M	Medfield	Several years	Litholapaxy	Sept. 15, 1886	"	140	"	"
22	53	F	Kingston, N. H.	5 or 6 months	"	Sept. 20, 1886	Phosphatic	95	"	Prostatotomy done at
23	60	M	Martha's Vineyard	5 or 6 months	"	Oct. 29, 1886	"	79	"	[same oper.
24	63	M	Boston	5 or 6 months	"	Nov. 9, 1886	"		"	

* See Boston Medical and Surgical Journal, Aug. 28th, 1884.

† See Boston Medical and Surgical Journal, Nov. 11th, 1886.

micturition with an occasional sudden stoppage in the full stream, hæmaturia and pain on riding in a wagon. These symptoms had existed for about a year, and Dr. H. E. Marion, of Brighton, had sounded him, and detecting a stone, had sent him to the hospital. The patient was a feeble old man with a weak pulse. An examination of the urine showed nothing beyond alkaline fermentation with purulent sediment. By the kindness of Dr. Bigelow, in whose ward he entered, I operated on January 21st. The stone was small and soft, weighing only ninety-eight grains, and the lithotrite was introduced but twice. On the following day he was very comfortable, was passing urine in good quantity, and had no tenderness or discomfort about the bladder. He had, however, a troublesome cough with profuse purulent expectoration.

January 25th, his cough was worse. Abundant sonorous and sibilant râles were to be heard over both sides of his chest with fine moist râles over the right lower front. There was considerable dyspnoea and his breath was very foul. The urine was almost clear and he had no bladder symptoms whatever.

From this time the condition of his lungs gradually became worse and he finally died on the 30th of January, nine days after the operation. No autopsy was allowed, but clinically it was evident that the fatal issue resulted from bronchitis and secondary pneumonia, and that his bladder was in good condition at the time of his death.

In only one case (No. 11), did any serious symptoms result directly from the operation. This patient was a man of sixty-seven, and infirm for his age. I saw him in October, 1885, in consultation with Dr. J. P. Reynolds, who kindly transferred him to my care.

For one and a half years he had had frequent, painful micturition, with a good deal of pain through the penis, which was greatly aggravated by riding. For the previous eight months he had had frequent attacks of hæmaturia. Otherwise the urine was that of an ordinary cystitis. For a long time he had lived alone, and, eating but little, had gradually acquired the habit of taking a good deal of stimulant, often more than a pint of whiskey in a day.

The sound touched a stone and on October 23d, 1885, I operated by litholapaxy under ether. A hard, uric-acid stone of good size was crushed and removed. At

the first use of the evacuator, a sharp, angular fragment caught in the eye of the tube and scratched the urethra considerably in its withdrawal. With this exception the operation went smoothly and at the third pumping, the bladder was found to be empty. On the following day there was a considerable rise of temperature (102.5° F., in the evening), and on the second day after the operation it rose to 104.5° F. At this time no casts could be detected in the urine.

On the fourth day the temperature fell to about 100° F., but on the fifth day it again suddenly rose to 104.6° F., at night, and the patient became delirious and tremulous. On this day an epididymitis started in the right testicle. On the sixth day, the fever continuing, the urine contained a trace of albumen and a few hyaline, granular and epithelial casts.

It was now found that by increasing the amount of stimulus to about a pint of whiskey a day, the tremulousness and delirium could be controlled. As the epididymitis subsided, the fever slowly left him and the casts and albumen disappeared from the urine. Convalescence, although tedious, was steady, until he left the Hospital, six weeks from the time of operation.

(To be continued.)

REPORT ON PROGRESS IN OPHTHALMOLOGY.

BY O. F. WADSWORTH, M.D., AND MYLES STANDISH, M.D.

STILLING¹ asserts that no one of the theories of the cause of myopia hitherto formulated has taken firm root. The accommodation theory is now generally disbelieved. There are strong arguments against the convergence theory; Arlt has pointed out that staphyloma is never developed in convergent strabismus; and myopia and staphyloma have developed in eyes which never had binocular vision.

The chief element in the production of myopia is to be sought in the action of the muscles, and especially in that of the superior oblique, which, with the inferior rectus, is in a state of continued contraction during near work. Examination of fifty eyes *in situ* showed that the course and insertion of the superior oblique is extremely variable, and its action, therefore,

¹Bericht der Ophthalmologischen Gesellschaft, Heidelberg, 1881.