companying table varied very much on admission. Some were the plump offspring of well-to-do parents, but the greater number were underfed and emaciated children of poor villagers from remote and malarious districts. Some of the children were suffering from fever on arrival, and, in such cases, operation had of course to be deferred. Nine times out of ten, however, it was of necessity performed on the morning following the arrival of the patient.

The variation in the calibre of the urethral passages was remarkable. The fact of this variation has already been pointed out by Surgeon-Major Keegan. Thus, the urethra of the boy aged 5, Case 20, admitted a No. 7 lithotrite, while in Case 19, that of a boy aged 10, only a No. 6 could with difficulty be passed.

In the very great majority of the cases the operation was followed by immediate relief, without anything more than a trifling rise of temperature. The boy, if allowed, would be up and playing about in two or three days. In a few some fever ensued—always of an intermittent type, never high, and yielding readily to quinine.

I append notes of the few cases occurring during the same period in which I found litholapaxy impracticable.

CASE I.—A boy, aged 3. The smallest lithotrite at hand (No. 6) could not be passed in this case; lateral lithotomy was therefore performed, and two stones, weighing together 153 grains, were extracted. The patient did well.

CASE II.—A boy, aged 3½. In this case also the smallest lithotrite could not be passed. Suprapubic lithotomy was performed, and two stones, weighing together 256 grains, were extracted. The patient did well. Urine commenced to pass *per urethram* on the sixth day, but the fistula was not entirely closed until the thirty-eighth day.

CASE III.—A boy, aged 4½. Nothing larger than a No. 3 catheter could be passed into this child's bladder: suprapubic lithotomy was therefore performed. Failing a proper india-rubber bag a sheep's bladder was used to distend the rectum. He was a fat child, and the dissection down to the bladder took some little time. While it was going on some of the water leaked from the sheep's bladder, which was suddenly expelled from the rectum by the child's straining. As the bladder had been reached when this happened, it was thought better to proceed with the operation without delaying to reintroduce the bag. Shortly afterwards the peritoneum appeared in the upper angle of the wound; it was kept out of the way by a forefinger, and the operation completed, a stone weighing 109 grains being extracted. The patient did well, and was discharged on the twenty-third day after the operation. The case afforded a striking illustration of the value of distension of the rectum in suprapubic lithotomy.

CASE IV.—This patient, a boy, aged 12, had suffered from stone for many years, and when brought to the hospital was in a worn-out and emaciated condition. For four or five days previously he had been in great agony: the urine, voided in drops with much difficulty, was stinking, the respirations were hurried, and the pulse feeble and quick. The stone was found to be a very large one. His condition precluded a long operation lasting two or three hours, and consequently the choice lay between suprapubic and lateral lithotomy. Bearing in mind the accident that happened in the preceding case, and being still without a proper bag, I unfortunately decided on the latter. The stone proved too large to be extracted by the perineum, and attempts to break it failed; it was therefore removed through an incision above the pubes as rapidly as possible. The patient never rallied, and died the same night. The stone was an enormous one considering the age of the child: it measured 3 inches by 2 by 1½, and weighed 2,010 grains; its composition was pure ammonio-magnesian phosphate, and it was of extreme hardness.

CASE V.—A boy, aged 9. The bladder in this case was sacculated, a diverticulum existing at the upper part, and extending to the right of the middle line; its outline could be plainly seen when the bladder was distended. The stone was tightly impacted in this sac. An attempt was first made to crush it, but one end only could be reached by the lithotrite, and it was decided to proceed to suprapubic lithotomy. The patient, a very weakly and malaria-stricken child, is so far doing well.

CASE VI.—A somewhat similar case to the above was a wretched-looking emaciated boy already worn out by suffering. On examination the stone was found embedded in a sac, and could not be grasped by the lithotrite. Further interference was postponed, and the child died a few days afterwards unoperated on.

OBSERVATIONS ON LITHOTRITY, WITH A SERIES OF FORTY CONSECUTIVE CASES.

By F. SWINFORD EDWARDS, F.R.C.S.,
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LITHOLAPAXY AND LITHOTRITY.

I BRING forward here a series of forty cases of lithotrity at a single sitting, or, as Bigelow its originator calls it, litholapaxy, though I agree with Mr. Buckston Browne in preferring to limit the use of this term to the removal of stone from the bladder without first crushing, using only an evacuating tube with aspirator, which methods may often be employed with

success in cases of small stones, such as weigh from 1 to 5 grains. By lithotrity I mean the complete evacuation of the bladder at one operation.

In the accompanying table I have included several cases in which the *débris* of the stone only weigh a few grains, and therefore should not, according to Sir Henry Thompson's views, be called cases of stone in the bladder at all, but rather instances of gravel or concretion. It seems to me a matter of small importance what we call them so long only as the weight is correctly stated, together with the methods adopted for their removal. Many cases of small calculi weighing considerably less than 20 grains entirely resist all natural efforts to expel them, and may cause as much and even more suffering than large stones. Should they be capable of being dealt with by litholapaxy, it follows that the patient runs less risk than he does after the instrumentation necessary to, and attendant upon, lithotrity. These small stones or gravel, if allowed to remain, will assuredly grow, and so necessitate a more prolonged and serious operation. Not that there is much difference in the risk between lithotrity for a stone of 10 to 20 grains, or for one of a drachm or less. The risk to the patient does not depend upon the size of the stone—speaking of comparatively small calculi—so much as upon the condition of the soft parts in which it lies. Again, it is all to the credit of the surgeon to find these small calculi—by no means always an easy thing. I would recommend sounding an empty bladder, and, if nothing is discovered, though the symptoms point to stone, that a small Bigelow's evacuating cannula and bottle should be used. If manipulated with gentleness, this will cause no great inconvenience to the patient. If a small stone is present and loose in the bladder, the water rushing into the tube will bring the stone up to its eye with a click easily felt or heard, and if small enough it may pass through, thereby verifying the diagnosis and ridding the patient of his trouble.

CASES.

I pass now to a short consideration of my four fatal cases, and will also say a few words about two of the more interesting of the remaining cases, commencing with the latter.

CASE II.—Mr. H., an old and feeble man, was sent to me by Mr. Treves, of Margate. He was suffering from severe hæmaturia and frequent micturition, and had passed several calculi at times. Under ether, given by Mr. Lloyd, and assisted by Dr. Fairweather, of Wood Green, I crushed a small stone of 11 grains, and washed away at the same time many villus-like processes, which led me to suspect that the bleeding was chiefly due to a villous tumour of the bladder. After the operation I injected a solution of iodoform, and prescribed hazeline by the mouth, with bromidia at night; the bladder to be washed out daily with Condyl's fluid. The following day he was in no pain and his pulse good. There was only a slight rise of temperature. I saw him again rather more than a fortnight afterwards on account of urinary fever, produced probably by the catheterism he was undergoing. He was passing no blood at this time. I have not seen nor heard of him since.

CASE 25.—Mr. M., seen in consultation with Mr. Chittenden, of Wheathampstead, on December 21st, 1889. He was 72 years of age, and had suffered from enlarged prostate and other urinary troubles for some time. On sounding him I found a calculus, evidently a large one. On December 28th, Mr. Lloyd having administered chloroform, I endeavoured to perform lithotrity with an ordinary fenestrated lithotrite, but with this I was unable to grasp the stone, so having one of Bigelow's large instruments with me I tried to pass it, after having incised the meatus, but was unable to get it through the prostatic urethra. Two courses were now open to me, as I excluded lateral lithotomy, namely, suprapubic lithotomy and median cystotomy combined with crushing. I selected the latter, believing it to be the safer operation of the two, looking to the patient's advanced age. Cystotomy having been performed, I found a large stone lodged above the pubes, and this I promptly attacked with Bigelow's largest lithotrite, though even with this powerful instrument I found it very laborious work, nor did I succeed in crushing the whole of it, but had in the end to remove a large fragment, amounting almost to one-third of the whole, with forceps, the rest of the *débris* being removed with either scoop or

forceps. There was a good deal of bleeding from the prostate, for which I inserted a large glass tube and plugged with styptic wool. The operation lasted one hour, and the weight of the stone was 3½ ounces. Two months after I heard that he was doing uninterruptedly well, and that there was only a small fistula left. Ten months later I saw him again with Mr. Chittenden, for chronic cystitis. This was a very satisfactory case. Possibly he might have done just as well had I removed his calculus entire by the suprapubic route. But I had only recently performed this operation in an old man at St. Peter's for a very large phosphatic stone with a fatal result. He lived over a fortnight, but the wound showed no signs of healing, and he gradually sank, and died of exhaustion. I might mention that there was no extravasation nor peritonitis.

CASE 40.—On February 12th I was sent for by Mr. Milner Burgess, of Harlesden, to remove a stone or concretion from the bladder of Mrs. B. It appeared that she had for twenty years suffered with cystitis, which came on after a confinement. She was suffering much pain, and micturition was very frequent. Under chloroform I sounded, and found a stone, which I crushed. In order to introduce an evacuating tube I had to dilate the urethra. On using the evacuator I found it did not act, and I saw some of the water escaping by the side of the cannula. Accordingly, I fully dilated the urethra, and introduced my finger, when a sacculi was found on the right side filled with calcareous *débris*, whilst phosphatic deposits adhered to most of the bladder wall. Almost all of this I removed, either with the finger or with a scoop. Once during the crushing I was cognisant of the fact of having nipped the bladder wall in the blades of the lithotrite. But as this had happened to me more than once before without any apparent ill effect, I did not think much of it, and left the house having given a favourable prognosis. The operation lasted rather under an hour. I should think that the *débris* removed would have about filled a teaspoon. On the second day after the operation, in the evening, I received a letter telling me of the patient's death, presumably from peritonitis. We could not get leave to perform a *post-mortem* examination. It is not long since one of my colleagues had a very similar case at St. Peter's, with death from peritonitis on the second day. Mr. Butlin, at a meeting of the Clinical Society on January 24th, mentioned the case of a patient with stone in the bladder, always to be felt with a sound, but never except once caught with a lithotrite. At the *post-mortem* examination a sacculus in the wall of the bladder, with very thin walls, was found. The lithotrite had at last caught the stone in the sacculus, causing the thin wall to rupture, death resulting in twenty-four hours. This I have no doubt now was what occurred in my case. Looking to these three fatal cases, I would recommend a suprapubic cystotomy in all cases where the stone is encysted.

CASE 15.—J. D., an old and feeble man, was admitted with paralysis agitans and bronchitis. As a small stone gave rise to much pain, I decided to crush it by using a 5 per cent. solution of cocaine instead of general anaesthesia. The operation only lasted sixteen minutes, and he suffered no pain. The bladder was washed out with borax (3j to 3i) afterwards. Although I used all possible gentleness in the operation, as shown by the washings being almost free from discoloration by blood, his temperature went up slightly, and he died of exhaustion on the third day. No *post-mortem* examination was allowed. In looking back on this case I do not see what else I could have done to relieve the bladder symptoms.

CASE 22.—E. R., aged 20, died on the tenth day from suppurative nephritis. The urine before the operation was normal (specific gravity 1010, acid, no albumen). I regret that the notes of this case do not throw much light upon its fatal termination. It is, of course, possible that things might have been better had his bladder and urethra been washed out with some antiseptic after the operation, but this was not our habit at St. Peter's Hospital.

CASE 36.—J. P., an old man of 71. His urine was acid, specific gravity 1010, and contained traces of blood and albumen. He had a rigor within two hours of the operation, the temperature rising to 103°. There was suppression of urine for forty hours, after which he passed urine at frequent intervals, having in the mean time been given digitalis and a hot-air bath. He died on the second day. The *post-mortem*

examination showed fatty kidneys. The bladder was thickened, but contained a thin-walled sacculus posteriorly, from which at the time of the operation one of two stones had to be dislodged. No rupture of the bladder nor of the cyst had occurred. Here death was no doubt caused by instrumentation of the urinary passage, and possibly might have been prevented by a careful employment of antiseptics.

ANTISEPTICS.

I believe that 2 of the 4 fatal cases I have recorded might possibly have ended differently had I been more careful as to antiseptics. In performing an internal urethrotomy we are, or ought to be, most particular in seeing that our catheters and urethrotome have been thoroughly cleaned and soaked in carbolic for some hours previous to the operation, and after the operation we take care to wash out the bladder and urethra with a weak sublimate solution; then why not take the same care with regard to lithotripsy? In two lithotrities which I have recently performed at St. Peter's—not included in the present series—I washed the bladder out subsequent to the removal of the stone with boracic solution and the urethra with sublimate.

SELECTION OF INSTRUMENTS.

It is desirable to have a variety of sizes of lithotrites, as also more than one evacuating tube. I have found a No. 16 tube most generally useful in adult cases. The lithotrites should be fenestrated and made after Bigelow's model. Sometimes towards the end of a long lithotomy a difficulty may be experienced in passing so large a lithotrite or tube as the one used on commencing, hence the advantage of having others at hand. Amongst the instruments ready to hand should be a blunt-pointed straight bistoury for division of the meatus, which is no guide to the size of the urethra, and often has to be cut to allow the passage of lithotrite and evacuating tube. A urethrotome should also be at hand in case a stricture—a complication which often exists—be present.

PRACTICAL HINTS.

Of course gentleness and delicacy of manipulation are points on which I cannot lay too much stress, and they should be particularly employed when squeezing the bottle or aspirator. I doubt if it is necessary to inject at each squeeze more than a tablespoonful of fluid, and these light or gentle compressions should follow each other pretty rapidly. The bladder can be emptied of the fragments more quickly in this way than when more force is used. Now and then it is difficult to pass a given evacuating tube through the deep urethra. Instead of changing it for a smaller it is well to fix on the already filled bottle and compress it; this will have the effect of distending the passage and of allowing the tube to pass.

In some cases in which it is difficult to catch the stone, particularly if it is a small one, success may be attained by raising the thighs and pelvis, thereby allowing the stone to drop back on to the posterior wall, or rather the junction of this with the floor. In cases of enlarged prostate with a deep prostatic pouch in which the stone may lie, the finger of an assistant in the rectum, making pressure upwards, is of much service, as I have no doubt would be a Petersen's rectal bag, as recommended by my friend and colleague, Mr. Harrison. I think Surgeon-Major Keegan's advice with regard to having stylets fitted to each evacuating tube—especially when used in boys—very good, as by this we may prevent laceration of the urethra taking place when withdrawing a tube in the eye of which a large fragment may be lodged.

All manipulations, whether of crushing or evacuating, should be stayed when the patient from any cause is straining, or damage to the bladder might ensue.

SELECTION OF METHOD.

In Boys.—If the stone is not too large or too hard to be crushed by a No. 6 or No. 8 lithotrite and if a No. 8 evacuating cannula will pass, I think lithotripsy much to be preferred to lithotomy; but, where crushing is out of the question, I am of opinion that suprapubic is preferable to lateral lithotomy. Surgeon-Major Keegan, in a paper read before the Medical Society on March 15th of this year, stated that he had performed lithotripsy in 125 boys below 15 years, the

youngest being 1 year 9 months, with a mortality of only 3.2 per cent., and there was only 1 case of recurrence out of the number. The average weight of calculi removed was just under 90 grains. The four deaths were all due to organic disease of the kidneys.

In Girls lithotripsy should be the rule, but, if impracticable, then suprapubic lithotomy.

In Adult Females.—For small stones, lithotripsy or litholapaxy, or dilatation and removal; for large stones, suprapubic lithotomy.

In Male Adults.—Lithotripsy for all small stones, and even for large ones, which can be seized and crushed with Thompson's largest improved Bigelow lithotrite; otherwise the suprapubic operation. Lithotripsy is not applicable to cases of encysted stone, nor to some cases in which the bladder is much contracted. Stricture should not militate against lithotripsy, as internal urethrotomy should be performed as a preliminary.

In Old Men (for example, those over 65) lithotripsy should also be the rule, failing which, if there be no considerable enlargement of the prostate, median cystotomy, combined with crushing; if much prostatic hypertrophy exist, the high operation for stone (although much risk is involved in all over 70) is yet, I venture to think, more likely to be successful than lateral lithotomy.

Table showing particulars of Forty Consecutive Cases of Lithotripsy or Litholapaxy. All the Patients were Males except Nos. 1 and 40. R = recovery, D = death.

No.	Date.	Age.	Duration of Operation.	Variety of Stone.	Weight in Grains.	Results.	Remarks.
1	1881	3	30	Phosphatic	73	R	
2	1882	30	30	Uric acid	100	"	▲ rectal stricture incised and dilated at same time.
3	"	36	65	Phosphatic	192	"	
4	"	18	17	Oxalates	36	"	
5	1884	69	84	U. and phosph.	515	"	Slight rigor on third day.
6	1885	46	25	Phosphates	60	"	
7	1886	71	30	U. and phosph.	67	R	
8	"	22	25	U. and oxalates	70	"	
9	"	15	25	U. and phosph.	56	"	
10	"	35	15	Phosphates	2	"	
11	"	75	—	Urates	11	"	In crushing many villous processes were brought away.
12	1887	70	25	Uric acid	92	"	
13	"	70	30	Phosphates	178	"	
14	"	35	5	Oxalates	6	"	
15	"	65	16	U. and phosph.	30	D	A paralytic. Bronchitis and septicaemia. Died on third day.
16	1888	50	20	Oxalates	14	R	Stone impacted in urethra; pushed back.
17	"	71	20	Uric acid	42	R	
18	"	39	60	Phosphates	66	"	
19	"	17	—	"	—	R	
20	"	69	—	"	50	"	
21	1889	41	25	"	74	"	
22	"	20	35	"	180	D	On tenth day; suppurative nephritis.
23	"	49	35	"	150	R	
24	"	54	20	Oxalates	4	"	Litholapaxy.
25	"	72	60	Urates	1680	"	Perineal lithotripsy.
26	"	74	35	U. and phosph.	44	"	
27	"	74	20	"	62	R	
28	"	72	25	"	80	R	Fifth time of recurrence.
29	"	72	35	Phosphates	80	R	Second time of recurrence.
30	1890	45	26	"	30	"	Internal urethrotomy at same time for stricture.
31	"	65	45	Uric acid	437	"	Epididymitis.
32	"	45	15	Phosphates	10	"	
33	"	76	30	"	65	"	
34	"	58	25	"	36	"	Meatotomy.
35	"	42	25	"	32	"	
36	"	71	70	Mixed calculus	75	D	In forty-eight hours suppression, sacculated bladder.
37	"	—	15	Phosphates	26	R	
38	"	64	35	Uric acid	106	"	Bronchitis, prostatic abscess.
39	1891	66	10	U. and phosph.	34	R	
40	"	50	50	Phosphates	—	D	Cystitis, sacculated bladder; peritonitis.

FATAL FOOTBALL.—Thomas G. Meadowcroft, aged 21, has met his death from injuries incurred in a football match played at Newbey.

CASE OF ELEPHANTIASIS ARABUM.¹

By C. E. ABBOTT, L.R.C.P.I., M.R.C.S.

THE case is a well marked example of an affection rare in this country. Dr. Duhring, Philadelphia, in his work on *Diseases of the Skin*, 3rd edition, 1882, writes as follows:

"Elephantiasis Arabum is a chronic hypertrophic disease of the skin and subcutaneous connective tissue, characterised by enlargement and deformity of the part affected, accompanied by lymphangitis, swelling, cedema, thickening, induration, pigmentation, and papillary growth. Elephantiasis

Græcorum, or true leprosy, is an endemic, chronic, malignant, constitutional disease, characterised by alterations in the cutaneous, nerve, and bone structures, resulting in anæsthesia, ulceration, necrosis, general atrophy, and deformity." The dark races are more liable to elephantiasis than the fair. In India it is particularly liable to attack the scrotum; in the West Indies the leg is its favourite seat, hence the term "Barbadoes leg."

The patient is a widow, aged 62. She has a florid complexion, and is not a "drinker." She complains chiefly of difficulty in walking, caused by the disease which affects her left leg. She is very fat, weight 16 stone, height 4ft. 11in. The patient was thin up to the age of 43, when, after the

¹ Read before the Essex District, East Anglian Branch. Case exhibited.