

CHAPTER XXIX

VESICAL CALCULUS—RADICAL TREATMENT—FOREIGN BODIES IN THE BLADDER

It has always been customary among writers upon the subject of the treatment of stone to weigh minutely the advantages and disadvantages of the various operations, as well as the propriety of subjecting certain cases to any operation. The lapse of time has brought theory and experience no nearer together. Each operation still has its supporters, and doubtless always will have. But, thanks to Bigelow and Lister, thanks to the modern perfection of operative technique, the difference of opinion, which seems bound to persist, almost narrows itself down to a matter of taste. The general surgeon who interferes but rarely with the bladder cannot fail to prefer the generous drainage and clear field afforded by the suprapubic operation. On the other hand, the surgeon who has been educated in the deft manoeuvres of litholapaxy will subject almost every case to that operation. If the statistics of the two operations are not identical, they are equally good in this respect at least: the surgeon who is unskilled in litholapaxy will have a higher mortality and more complications from that operation than from simple suprapubic cystotomy, while the skilled lithotritist will be able to assure his patients more rapid and comfortable cure than they could expect from lithotomy, with absolutely no danger of death in properly selected cases. In short, the situation may be summed up as follows: *Suprapubic lithotomy exposes the patient to more dangers and inconveniences than does litholapaxy. Yet lithotomy is appropriate to all cases, which litholapaxy is not; while litholapaxy requires a special training, which lithotomy does not.*

The facts upon which these views are founded will be developed in the following sections. We need dwell upon only three operations—viz., litholapaxy, perineal lithotomy (or litholapaxy), and suprapubic lithotomy. Lithotripsy is dead, having disappeared from surgery as its brilliant child and successor, litholapaxy, established its

claims. Similarly, perineal litholapaxy has replaced the lateral operation and all other devices for extracting large stones through the perineum.

LITHOLAPAXY

Of all the operations that are or have been employed in the treatment of stone in the bladder, litholapaxy when properly performed is generally conceded to be the safest and most brilliant. In support of this proposition it is only necessary to adduce the authority of Cabot and Chismore in this country, of Thompson and Harrison in England, of Guyon in France, and of the entire school of Indian surgeons who alone see more cases of stone than all the rest of the world put together. No age is a bar to litholapaxy. Any stone may be crushed if it can be caught in the jaws of the lithotrite. It is alleged that the stone may be too hard for the lithotrite to break, but I have not met such a case. The size of the stone may constitute a contra-indication to litholapaxy. The crushing of a large stone is always a tedious and protracted operation, and I am not prepared to agree entirely with Freyer,¹ who once continued the operation for two hours in order to remove a large stone. Such a stone would, I believe, be more safely relieved by the knife. These and the other contra-indications to litholapaxy may be summed up briefly:

1. Cases complicated by prostatic hypertrophy, in which—
 - a. Instruments cannot be introduced,
 - b. The stone cannot be grasped, or
 - c. The condition of the bladder and prostate is such as to indicate cystotomy or prostatectomy, the stone aside.
2. Cases complicated by cystitis so severe as to resist all attempts to ameliorate it. Such cases will usually show some obstruction at the neck of the bladder, which is best dealt with by perineal section.
3. Cases complicated by stricture, impassable or resilient, or with such urgent symptoms that there is no time for dilatation.
4. Cases complicated by tumour of the bladder.
5. Cases of encysted or adherent stone.
6. Cases of stone formation around a foreign body, the extraction of which through the urethra would be difficult or impossible.
7. Large or hard stones, as remarked above.
8. Cases of general sepsis or uremia, in which rapidity of operation and thorough drainage are the only important points.

This formidable list covers practically but a small percentage of

¹ Litholapaxy, 1896, p. 62.

cases. Cabot¹ adds such contra-indications as certain cases of false passage, ankylosed hip, and recurrent stone, yet argues strongly in favour of the crushing operation. Harrison, in his latest report of 110 stone operations, gives 101 litholapaxies, and I find in my own records 198 operations with 157 litholapaxies. Fully nine tenths of the cases not amenable to crushing are excepted on account of the necessity of drainage or the condition of the prostate. I venture to reproduce a recent summing up of my views² on the subject of the treatment of stone complicating enlargement of the prostate.

1. When stone complicates enlarged prostate, if the condition of the latter be such that were the stone absent no operation would be called for, then the whole question is to be solved by deciding whether the obstructive quality of the prostatic enlargement, the size of the bar, the depth of the *bas fond*, the irritability of the prostatic urethra, and its resentment of instrumental interference—whether any of these factors be sufficiently accentuated to make litholapaxy impossible, or to make it possible only at the expense of leaving the patient (as to his subjective symptoms) worse than before. If such conditions do obtain, then the stone should be removed by the knife.

2. In short, the main matter is one of diagnosis by the searcher, the cystoscope, rectal touch, and the tentative testing of the prostatic urethra with instruments.

3. The mere size of the prostate is not a factor in the problem.

4. The size or position of the stone is not a factor, unless the stone is encysted, or too large for the lithotrite to grasp, or formed about a foreign body. The smallness alone of the stone is relatively an argument against litholapaxy, since the symptoms in such a condition must be ascribed to the prostate rather than to the foreign body.

5. If lithotomy be performed the suprapubic route should be elected, since this opens the door for more perfect work and permits the surgeon to remove obstructions, such as third lobe, interstitial growths, outstanding horse-collar enlargement, bar, and to lower the vesical end of the urethral floor, thus accomplishing all that could be done by a more extensive prostatectomy, without very seriously increasing the operative risk.

6. Finally, here as elsewhere in surgery, the only safe practical guide is surgical judgment based upon diagnosis, and guided by experience.

Preparation of Patient.—If when first seen the patient is suffering from an acute cystitis, he should be put to bed and kept there until the attack subsides under treatment. If unaffected by

¹ Bull. Johns Hopkins Univ., 1900. ² Trans. Med. Soc., State of New York, 1898.

treatment, litholapaxy may still be performed, though I confess a preference for the perineal cutting operation.

If the cystitis is not extremely acute, preparation for litholapaxy need occupy but forty-eight hours, while the patient is freely flushed with some bland diuretic water and, if possible, accustomed to a milk diet. During this time I administer 0.5 gramme of urotropin thrice a day, and prefer to have the patient in bed. The night before operation the intestinal tract should be cleared, and it is well to irrigate the bladder twice a day with boric-acid solution in order to reduce infection as far as possible. It is well to estimate the calibre of the urethra by the introduction of a blunt sound or a bulbous bougie. The usual catharsis and bath should precede operation. I have entirely abandoned the use of quinin and other antipyretics. Shaving the pubes and perineum is unnecessary, and antiseptics applied to the skin over an infected bladder only make of it a whited sepulchre. *Antisepsis must terminate the operation, not precede it.*

Instruments Required.—Besides the usual tables, rubber cloths, basins, towels, etc., I carry the following outfit to all litholapaxies:

One searcher.

Three lithotrites, at least.

Two aspirators, and at least 2 tubes.

One sound—full size for the individual.

One rubber catheter.

One large piston syringe (150 grammes).

The apparatus for making the two solutions I employ—viz., 2% boric acid and 1:4,000 nitrate of silver.¹

Nearly every operator of prominence has his own lithotrite, and many have devised washing-bottles and special tubes. With any form of apparatus the operation may be done, and with more or less rapidity and success, according to the deftness of the surgeon. On these different questions it is impossible to enter freely here, as it is impracticable to describe all the instruments employed at various hands. I shall only describe the instruments which I employ, and touch briefly upon the more notable points of those commonly used by other operators.

Lithotrites.—The lithotrite (Fig. 106) may be called upon in any operation to perform two very different functions—viz., to crush a stone of some size and perhaps of great hardness, and to catch and

¹ For this purpose a small bottle of 10% nitrate-of-silver solution, a dropper, small and large graduates, and a box of boric-acid crystals form an adequate outfit. One gramme of the silver solution to 400 (approximately 10 minims to 8 ounces) of water make a 1:4,000 nitrate-of-silver solution.

crush small crumbling fragments that are only just too large for aspiration. For the former purpose a heavy, powerful lithotrite with a fenestrated female blade (Fig. 107) is required, while for the latter I prefer a lighter instrument with a solid female blade of a broad duck-bill shape. A complete outfit should include these and several intermediate varieties of lithotrites, as the surgeon's judgment dictates. Small lithotrites are made for children.

The powerful lithotrite should possess several characteristics: (1) The male blade must fit entirely within the fenestrated female blade: this minimizes the danger of catching the bladder wall; (2) the male blade when screwed home should pass quite through the female blade: an instrument thus constructed cannot become clogged; (3) the wheel (Fig. 108) or globe (Fig.

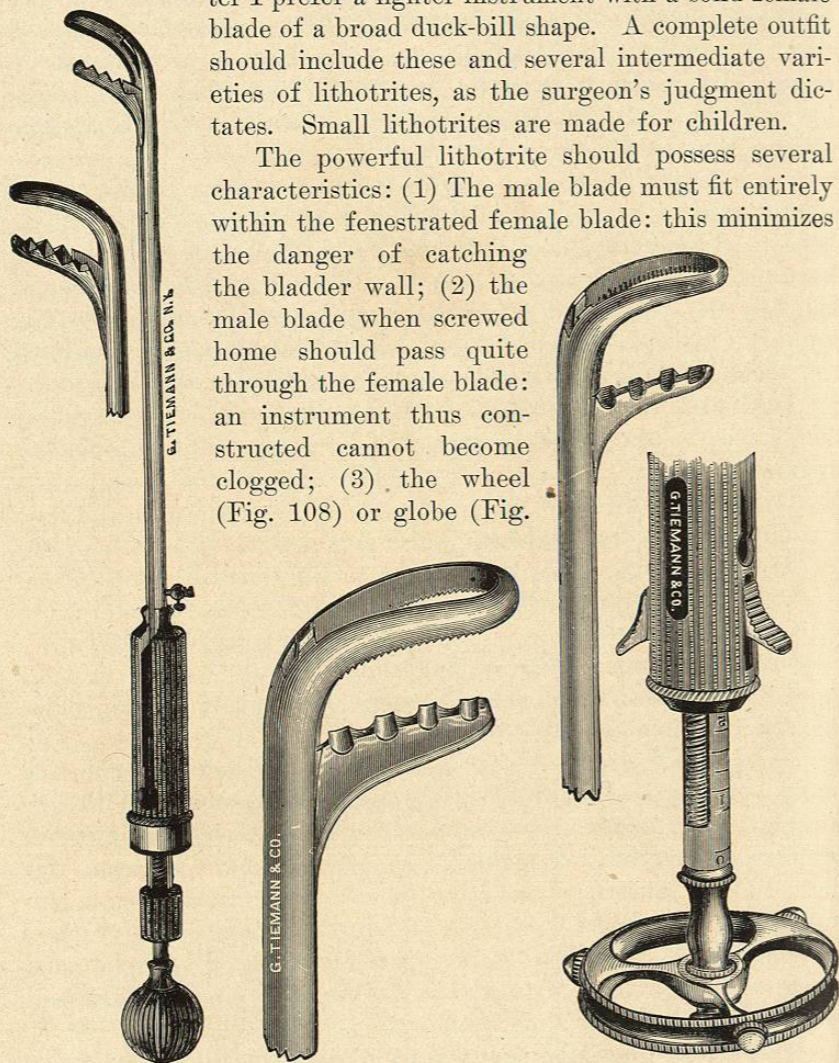


FIG. 106.

FIG. 107.

FIG. 108.

106) handle of the instrument must be large enough to afford firm purchase for the surgeon's hand (instrument makers have a tendency to neglect this point upon which the utility of the instrument largely depends); (4) the catch for adjusting the screw action should be sufficiently prominent to be worked without the least difficulty. In my

instrument (a modification of Réliquet's) the catch is saddle-shaped (Fig. 108). Bigelow's lithotrite (Figs. 106, 109) has a forward curve at the toe of the female blade which assists its passage over an enlarged prostate, but carries the bite of the instrument away from the wall of the bladder so that it cannot crush small fragments. Chismore had added to his lithotrite an automatic hammer such as dentists use, and with it claims to crush the hardest and largest stones with scarcely any effort.

For small, soft fragments a flat-bladed, duck-bill instrument is useful. This instrument should only be employed towards the end of the operation. The non-fenestrated blade has a tendency to clog, but this in-

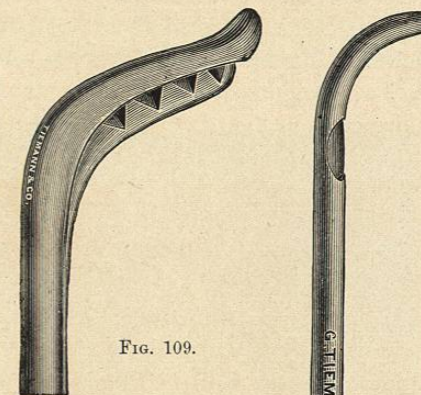


FIG. 109.

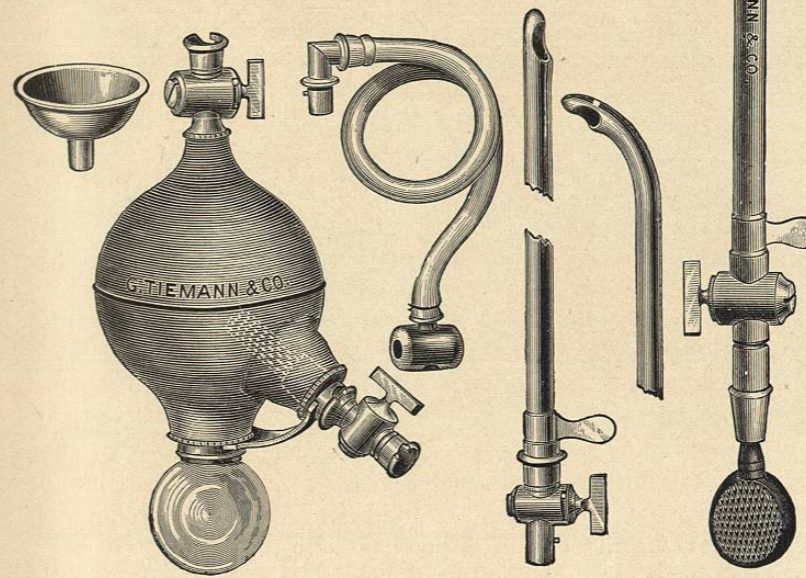


FIG. 110.

FIG. 111.

strument will, in my hand, pick up fragments that no other lithotrite will catch. For small, hard fragments I employ a light, small-bladed fenestrated instrument.

The Aspirator.—The aspirator or washing-bottle of Bigelow (Fig. 110), as now perfected, I prefer to any other. The aspirating

lithotrite of Chismore I have employed but once, and cannot say that I found it advantageous.

Washing-tubes.—Bigelow's tubes (Fig. 110) are equal to any others. The large terminal eye, when placed just within the vesical orifice, acts quite as thoroughly as can any straight tube. Although I formerly used a straight tube I have abandoned it. Its introduction causes a great deal of bruising and it has no special advantages. Guyon's tube, which has two eyes, is excellent to search for the last fragment, for the water rushing through its two eyes causes more commotion of the contents of the bladder than occurs with any single-eyed instrument. But in my hands it seems more liable to catch the bladder wall, and therefore I rarely use it. To catch the last fragment I prefer a tube of my own (Fig. 111), which is, for all purposes of introduction, a short curved sound. Its eye is on the concave side of the junction, between shaft and beak, and is protected by an obturator. It has also a stop-cock in its shaft to prevent the escape of fluid from the bladder when the obturator is withdrawn. I find it most useful when introduced and turned beak downward. Its tip then depresses the floor of the bladder into a dependent pouch whose contents are readily aspirated into the eye which overhangs it.

Anesthesia.—Small stones may be aspirated whole or crushed and aspirated from a tolerant bladder without anesthesia. For the majority of cases I have found local anesthesia unsatisfactory. The patient usually suffers a good deal, and his straining may interfere very seriously with the manipulations. When local anesthesia is employed $\frac{1}{4}$ grain of morphin should be administered hypodermically and 2 ounces of whisky by mouth a quarter of an hour before operation. Five minutes later a few drops of a 10% solution of cocain or eucain-B are instilled into the posterior urethra. Five minutes after that 100 grammes of a 2% solution are injected into the bladder. Five minutes later the operation may commence.

This method has not given me any satisfaction, and the use of cocain is not without its dangers. I prefer general anesthesia. For short operations nitrous oxid suffices; longer ones require ether or chloroform.

The Operation.—This is litholapaxy—to catch the stone with an instrument passed through the urethra, to fragment it sufficiently for the detritus to pass out through a tube, and to suck out the *débris* by some suitable apparatus.

The patient is placed upon the operating table on his back with his feet widely separated and a sand-bag beneath his hips. He is then catheterized and 100 to 175 c. c. of warm boric-acid solution injected into the bladder. A lithotrite, selected in accordance with the

size of the stone, is then introduced (Fig. 112). It may have to be assisted over the prostate by pressure on the perineum. Once in the bladder, the instrument is passed gently onward until its jaws touch the back wall. Then, gentle tappings along the side wall quickly indicate the position of the stone. When this is found, the jaws of the lithotrite are turned away from it, opened, returned while open over the spot where the stone was found, and, being gently closed, the stone will be grasped. The screw power is now thrown on by the aid of the button in the handle, and a half turn given

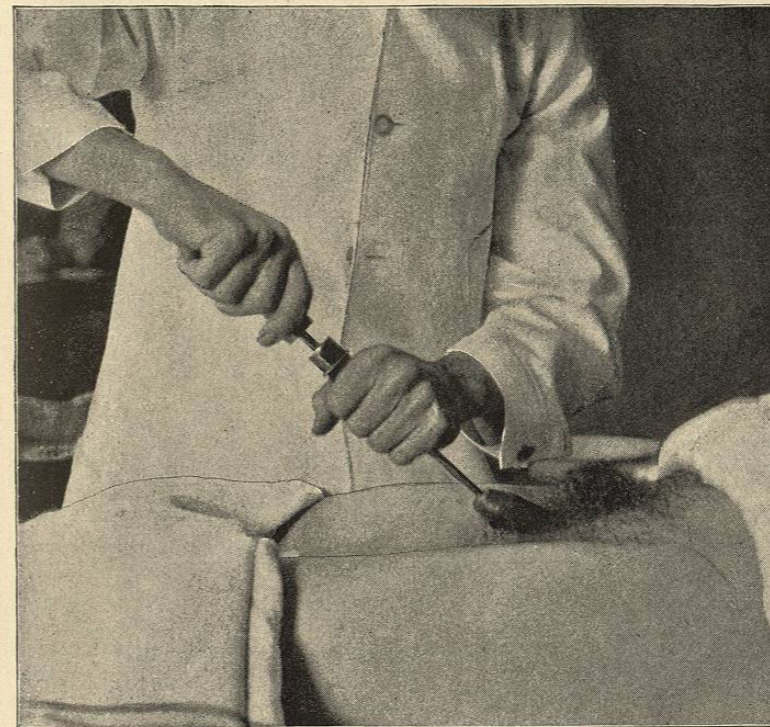


FIG. 112.—SHOWING THE MANNER OF HOLDING THE LITHOTRITE WHEN OPENING AND SHUTTING IN THE SEARCH FOR FRAGMENTS.

to the screw. This fixes the stone. As the half turn is being given, the jaws of the lithotrite are to be gently moved away from the bladder-wall towards the centre of the bladder. If a portion of mucous membrane has been entrapped with the stone, the operator instantly appreciates it as an obstacle to the easy rotation of the shaft of the instrument. In such case the jaws are unlocked, the stone allowed to drop out, and another effort made to catch it more cleanly. If the instrument rotates freely to the centre of the