

The practical conclusion to be drawn from these three cases is, that surgical interference may be attempted too early, that is, when the tumor is too small to be recognized, especially if it be sub-cortical.

(To be continued.)

## Original Articles.

### SUPRA-PUBIC CYSTOTOMY FOR THE REMOVAL OF FOREIGN BODIES WITH REPORT OF A SUCCESSFUL CASE.<sup>1</sup>

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INCREASED familiarity with the use of the lithotrite has made cystotomy for the removal of foreign bodies from the bladder as much the exception now, as it formerly was the rule. Of the 249 cases collected by Denucé there were, prior to 1830, 27 extractions and 100 cystotomies; between 1830 and 1856, 22 cystotomies and 101 cases of extraction. Poulet's figures, brought up to 1879, show substantially the same proportion; and there can be no doubt but that these later results represent a genuine and permanent advance in the management of these very annoying cases. Whenever the foreign body is small and can be easily crushed like a stone, or whenever there is reason to believe that it is so small and flexible that it can be easily withdrawn from the urethra, the case admits of no argument. Extraction by means of the lithotrite is then the safest and quickest as it is always the most brilliant procedure. But there are many cases in which the nature and shape of the foreign body, or the existence of urethral or prostatic obstruction makes extraction the more dangerous and cystotomy the more conservative method.

The problem of choosing between these operations lately presented itself to me in the case of a young man in whose bladder a piece of soft rubber catheter had been broken off six weeks previously, and it is to a brief consideration of those cases in which the whole or a piece of a catheter or bougie constitutes the foreign body to be removed that I wish particularly to call your attention. Such cases generally result from the use of defective or worn out instruments, although the large proportion which follows their use in the hands of patients themselves would indicate that unskillful or careless manipulation add much to the probability of their occurrence. The jointed silver catheter becomes unlocked at the joint, a silver catheter which has been once broken and soldered is very liable to refracture at the old place, and in one of the cases which will be found in the accompanying table (Mr. Heath's) an old man succeeded in leaving two fragments of a metallic instrument in his bladder. Such accidents are, however, far more common from the use of silk gutta-percha and soft rubber instruments. They crack easily, especially when old and dry, and when once cracked are easily broken.

From the records at my disposal I have collected the following cases in which a piece or the whole of a catheter or bougie has been removed from the bladder. They go back only to 1879:

#### EXTRactions.

- (1) A small piece of a silver catheter removed from a patient seventy-one years old, after being retained twenty-four hours,

<sup>1</sup> Read before the Worcester District Medical Society, November 12, 1890.

by means of lithotrite. A second piece, one and three-eighths inches long, after failure with lithotrite, was removed by perineal cystotomy. Heath: *Lancet*, 1879, i, 478.

- (2) A No. 10 gum-elastic catheter which had been retained in the bladder of a man seventy years old for seven months. Abbe: *New York Medical Record*, xx, 705.

- (3) The whole of a soft rubber catheter which had been retained twenty days. Cheine: *Edinburgh Medical Journal*, xvii, 744.

- (4) A No. 4 pilot bougie, twelve inches long, which had been retained two days in case of stricture. Edwards: *British Medical Journal*, 1882, i, 816.

- (5) A No. 3 pilot bougie passed for relief of stricture. Harrison: *British Medical Journal*, 1882, i, 816.

- (6) A gutta-percha catheter extracted after incision of urethra. Lediard: *British Medical Journal*, 1882, ii, 889.

- (7) Five inches of a soft rubber catheter retained sixteen hours, extracted after incision of urethra. Porter: *Boston Medical and Surgical Journal*, cxv, 399.

- (8) Whole of a soft rubber catheter retained twenty-four hours. Extracted by means of a wire bent over a steel sound. Osborn: *Journal American Medical Association*, 1883, i, 717.

#### PERINEAL CYSTOTOMIES.

- (1) One-half of a fine bougie which was being used as a guide. Teevan: *Lancet*, 1879, i, 478.

- (2) A gutta-percha catheter. Bryant: *Lancet*, 1879, i, 478.

- (3) Three and three-quarter inches of a No. 12 English silver catheter retained three weeks in a patient who had retention complicating cancer of sigmoid flexure. Lediard: *British Medical Journal*, 1882, ii, 889.

- (4) One inch of a gum-elastic catheter. Lediard: *British Medical Journal*, 1882, ii, 889.

- (5) One-half of a gum-elastic catheter after being retained one year. Fayrer: *Lancet*, 1883, i, 545.

- (6) Four and one-half inches of a No. 22 Nelaton catheter retained four days. Evacuator failed to remove it. Keen: *Philadelphia Medical Times*, March, 1888.

- (7) Two or three inches of a soft rubber catheter retained six or eight months. Three calculi removed, each containing bit of catheter. Halsted: *New York Medical Journal*, xxxix, 227.

#### SUPRA-PUBIC CYSTOTOMIES.

- (1) Piece of a jointed silver catheter, the bladder was not sutured. Hyatt: *North Carolina Medical Journal*, December, 1883.

- (2) Whole of a No. 14 elastic bougie. Bladder was sutured but leaked for one week. Orłowski: *Deutsch. Zeitsch. f. Chir.*, December, 1885.

Among these 17 cases there are eight extractions—seven by means of the lithotrite and one by means of a wire bent over a steel sound, seven perineal cystotomies, and two supra-pubic cystotomies. For this particular class of foreign bodies the cutting operation seems to have been resorted to relatively more often than one would have expected from the earlier and more comprehensive tables of Denucé and Poulet. The introduction of antiseptics and the safer technique secured thereby have undoubtedly done much to contribute to this result. Of the 17, all recovered but one—a man seventy years old with cancer of the sigmoid flexure, who succumbed seven weeks after a median perineal operation to pyæmia. Of the eight extractions three were attended with great difficulty, and in one of them the procedure failed. Mr. Heath (Case 1) succeeded in withdrawing a small bit of the end of a silver catheter through the urethra, but his lithotrite failed to remove or crush a second piece which perineal cystotomy proved to be only one and three-eighths inches long.

In Mr. Lediard's and Dr. Porter's cases pieces of a gum-elastic and of a soft rubber catheter respectively, were extracted only after incising the anterior urethra. In Mr. Keen's case (No. 17) extraction by means of an evacuator had to be abandoned in favor of cystotomy. These cases recovered promptly, but they suggest certain dangers and difficulties attendant upon extraction. Laceration of bladder or urethra must be avoided if possible—if unavoidable it is better that it should be by incision from without so that the extent of the damage may be under the direct

control of the surgeon. Whenever the foreign body is a fragment of a metallic instrument, the lithotrite is at a great disadvantage. It can only extract it when the direction of the long axis of the fragment corresponds to the long axis of the instrument. Such a correspondence can be secured only by repeated trials. With each trial there is beside the risk of catching the bladder-wall, the resistance of which it is difficult to distinguish from that of the foreign body, the additional risk of injuring the bladder with the fragment, one end of which is usually ragged and sharp. In all such cases, therefore, the cutting operation is to be preferred. With gutta-percha, gum-elastic, or other flexible instruments, it is somewhat different. Experience has proved and our table illustrates that even a whole catheter or bougie may be withdrawn with but little difficulty even when doubled on itself. The same uncertainty about catching the bladder-wall must, however, be taken into account with the added risk of lacerating the urethra. If the instrument has not remained long enough to have rendered the urine ammoniacal, or to have become encrusted with a calculous deposit, so that it presents a comparatively smooth surface, and if the urethra is of normal calibre, extraction by means of the lithotrite is certainly the simpler and safer operation. A foreign body, however, which has been in the bladder so long that cystitis with ammoniacal urine has resulted, and has become covered with a rough and sharp crystalline deposit can hardly be withdrawn from the urethra without considerable risk. Dr. Abbe (Case 4) has successfully removed a No. 10 gum-elastic catheter which had been retained seven months and was everywhere encrusted. It can probably be done again. But surely any one would hesitate to introduce a catheter from without which presented a rough, ragged surface, and was covered with foul decomposing urine lest it should cause urethral laceration and septic infection. The same reasoning applies with greater force when a stricture makes urethral laceration by divulsion or internal urethrotomy a necessary preliminary to the introduction of the lithotrite. Upon these grounds, in my own case, I rejected extraction and preferred cystotomy.

Then came the necessity of choosing between the perineal and supra-pubic operations. The revival of an operation which has once been condemned after fair trial, can be justified only by the disappearance of the causes which led to its abandonment. In the case of supra-pubic cystotomy these were chiefly two. First, the danger of wounding the peritoneum and opening the peritoneal cavity, and second, the increased danger of urinary infiltration and septic infection. The former has been happily removed by the experiments of Garson, Peterson, Strong and others, which have been confirmed by a large and increasing experience with a technique founded upon their observations. Distension of the bladder with or without simultaneous distension of the rectum lifts the anterior reflexion of the peritoneum far enough above the pubes so that it can be easily avoided and need not be seen during the operation. The dangers of urinary infiltration and septic infection have been diminished by the use of antiseptic irrigation and the open treatment of the external wound, so that the probability of their occurrence is no greater than after the perineal incision. Its immediate dangers are then no greater, and it has the advantage of avoiding entirely what is a rare

but sometimes very troublesome complication of the perineal operation, namely, hæmorrhage. The plexus of veins in the prevesical fat can often be dragged one side with the finger, or if not, is perfectly accessible, and can be easily secured. The supra-pubic incision possesses the further advantage of making the bladder much more accessible, and of enabling the operator when necessary to see as well as feel. A foreign body which has been partially encysted or whose sharp ends have caused ulceration or thinning of the bladder-walls can in this way be removed with very much less danger of rupture—moreover it can always be removed even when from the perineal wound it may be inaccessible. The low operation has besides, certain rare, but possible sequences which cannot be wholly disregarded. Greig Smith says: "In this Bristol district, where stone is rare, I have seen in the last nine years five operations for perineal fistula following perineal lithotomy, and I have been concerned in the treatment of one case of stricture and one of fistula from the same cause. . . . Stricture, fistula, sexual incompetence—separately or combined must be admitted to be rare sequences of perineal lithotomy." Such accidents are as likely to follow the removal of a piece of catheter as the removal of a stone and the supra-pubic operation appears to be free not only from these but from any other complications. I, therefore, selected it in the following case.

R. D., a French-Canadian, twenty-three years old, had gonorrhœa two years ago, and has had a slight gleet discharge ever since; has never had retention, but has observed that the size of the stream was slowly diminishing. In August last, while in Canada, he was induced to go to a hospital for the relief of stricture. On his return toward the end of the month, he had a well-marked purulent urethritis. There was pain at the end of micturition, and the last drops of urine were decidedly bloody. He was obliged to get up two or three times to pass water at night, but there was no increased frequency by day. Such was his condition when I saw him about September 1st. He said that while at the hospital a bougie had broken off in his bladder, and that he thought his trouble resulted from the retention of a fragment. I thought his story highly improbable, and gave it little attention. The gonorrhœa soon stopped, but the pain and blood continued, and he began to complain of pain and distress in the perineum. Accordingly he entered my service at the City Hospital, October 2d, at which time I searched the bladder under ether but found nothing. His urine at this time had a specific gravity of 1,016, was cloudy, alkaline, and contained a trace of albumen with a sediment of pus, blood and considerable mucus. Blistering the perineum and irrigation of the bladder were alike of no effect. Finally, in answer to my inquiry I heard from the Canadian hospital that a piece of a No. 11 soft rubber catheter was probably responsible for his trouble. It had been in the bladder now about seven weeks, and on October 21st after distending the bladder with about eight ounces of boroglyceride solution, I made an incision in the median line two and a half inches long extending from the top of the symphysis pubes upwards. The recti were held apart, their attachments to the symphysis partially divided, and the bladder-wall incised for about one inch. The piece of catheter was then withdrawn with the fingers, and the opening closed with an interrupted silk suture. A drainage-tube was

placed in the external wound and a catheter tied in the urethra and connected by a rubber-tube with a bottle hanging by the bed. The wound was dressed with a dry antiseptic dressing. There was no leaking from the bladder wound until the sixth day, when the catheter was left out. On the next day it was replaced, and except some suppuration about the sutures of the external wound no further trouble occurred. The catheter was permanently removed November 4th, and on the 6th, sixteen days after the operation, he was discharged well.

The fragment removed was doubled on itself at the upper end of the eye, and was covered with a crystalline phosphatic deposit. It was two and a half inches long and weighed thirty-one grains.

There are two points in connection with the operations which demand at least a moment's consideration, namely, the value of rectal distension and the advisability of suturing the bladder. I followed Greig Smith in not using the rectal bag. Its advantages are of course, that it lifts the peritoneum further out of the way, and that it raises the floor of the bladder into a more accessible position. The latter is a great advantage when operating upon tumors of the bladder or prostate; for the removal of foreign bodies that lie within the cavity, it is unnecessary. The experiments of Strong show that the peritoneal reflexion is a little higher when both bladder and rectum are distended, than when the bladder alone is filled. The difference, however, is slight and unless it can be shown to possess some very positive advantage, it seems to me that the chance of injuring the rectum makes the use of the rectal bag quite inadvisable.

The propriety of suturing the bladder is still *sub judice*. König in his report before the International Medical Congress of 1886, absolutely condemned it. Eigenbrodt, from an experience of thirty-eight cases in Trendelenberg's clinic, regarded complete closure by suture as not yet justifiable. Sir Henry Thompson rejects it, and Jacobson thinks "the risk run is greater than any advantage gained." The record of eight deaths and seventeen failures out of forty cases collected by Meyer in 1884, was not encouraging. On the other hand it cannot be denied that when primary union of the bladder wound can be secured, it not only prevents septic infiltration, but adds very greatly to the comfort of the patient, as well as to the rapidity of his convalescence. Even if not uniformly successful, still if it can be done without increasing the danger, suture is surely worthy of trial. Of 100 cases collected by Watson in 1889, suture was successful in thirty-five, certainly an encouraging showing. Moreover, he found that whenever serious results had followed suture it was because the outer wound had been closed. Accordingly, he follows Kraske Ultzmann and Mickulicz in recommending that the outer wound be left open. It may be packed with iodoform gauze or partially closed around a drainage-tube. Managed in this way it is difficult to see what harm can be done by attempting the closure of the bladder wound except where it is desired to leave it open for purposes of irrigation or drainage. In applying the suture the edges of the wound must be turned in, and the outer surfaces of the bladder on either side of the incision brought into close and accurate apposition. Very little of the edge is to be turned in, not more than one-sixteenth of an inch if possible, but the careful turning in of that little and the accurate adjustment

of the sutures, will be found to be two of the chief elements of success. A third will be found in taking advantage of the submucosa in placing the sutures. Each stitch must include something stronger than the muscular walls else it would not hold. It must not penetrate the mucous membrane or it would become encrusted with salts or form a channel for urinary infiltration. As was pointed out by Halsted and Mall in intestinal suture one can readily familiarize one's self with the sense of resistance which the submucosa makes to the passage of the needle, and so strong is this tissue that if only a few fibres are caught sufficient strength is given to the suture to allow of its being firmly tied. In sewing up the bladder in my own case precisely the same sense of resistance was encountered in the submucosa that I have felt in experiments on intestinal suture, and precisely the same advantages are, I think, to be derived from making use of it. The uninterrupted square suture of Cushing or any of the various forms of intestinal suture may be adopted. If the interrupted form is used, the stitches must be applied as closely as possible, for accuracy and closeness of adjustment are of much more importance than the kind of suture. Either catgut or silk may be used. I prefer silk because it admits of a finer needle. I had a No. 8 straight milliner's needle such as I have used in intestinal suture, but found it so long that I had great difficulty in applying my sutures. The wound in the bladder lies below the surface of the abdomen, and a needle more than one inch long can only be used at a disadvantage. On this account I failed to secure an absolutely accurate adjustment of the edges of my wound, and to this I attributed the slight leakage which subsequently occurred. I am, however, satisfied that my suturing, imperfect as it proved to be, made the period of convalescence very much shorter than it would have been had it been left undone.

#### THE NECESSITY OF AN EMERGENCY HOSPITAL IN THE BUSINESS DISTRICT OF BOSTON.<sup>1</sup>

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The subject for discussion this evening is one which I have had under consideration for the past eight years. Believing, as many medical men do, that in order to become a successful general practitioner, it is necessary to locate yourself in a thickly populated place, I selected the South Cove district. In all large cities the cream of the practice goes to the physicians and surgeons who have established themselves in the confidence of the public by their excellent work, and their connection with the various hospitals and medical schools, while the younger men content themselves with the overflow from their seniors in the profession and an occasional emergency case which may bring them into more or less prominence.

It has been my good fortune to receive a large share of the patronage of the latter class. The past five years have demonstrated to me, and a few colleagues who have been associated with me, that the time has arrived when something should be done for the great number of casualties occurring in the business district, requiring immediate surgical or medical aid.

<sup>1</sup> Read before the Section for Clinical Medicine, Pathology and Hygiene, of the Suffolk District Medical Society, November 19, 1890.