TWO CASES

WHERE

MULTIPLE CALCULI WERE REMOVED FROM
LARGE NARROW-NECKED SACCULI

CONNECTED WITH THE

MALE URINARY BLADDER

BY

REGINALD HARRISON, F.R.C.S.
SURGEON TO ST. PETER'S HOSPITAL

Received January 25th—Read March 28th, 1899

As a contribution to the surgery of a condition which is only sparingly illustrated, the two following cases, with some remarks on the subject, may be acceptable to the Society. The point it is intended to give prominence to relates to the treatment of extra-vesical saccules containing calculi.

CASE 1.—J. R—, a male aged fifty-six years, came under observation in August, 1892, with symptoms point-

ing to vesical stone, which had extended over two years. The bladder was irritable, and the urine normal in quantity but ammoniacal, purulent, and offensive. The external urethral meatus was somewhat congenitally contracted. There was no history of previous kidney disease, hæmaturia, or renal colic. The neck of the bladder appeared to be elevated, and gave the impression that the prostate was much enlarged.

The patient was placed under an anæsthetic by Mr. Braine, when, on passing a sound, a stone was indistinctly felt. The urethral meatus, being narrow for a lithotrite, was divided, and then the instrument passed easily. A small stone was found and crushed, and the fragments evacuated, but as this was insufficient to account for the symptoms, it seemed not unlikely that more might be concealed or encysted in the neighbourhood of the prostate. The bladder was therefore opened by a median perinæal incision as for lithotomy. The patient, though tall, was spare, and having regard to the character of the urine, it was thought that this mode of access, both for exploration and drainage—if the latter proved necessary—would best meet the case. On the finger being passed through an incision affording ample room, I was at once struck at finding what appeared to be a healthy, normal organ. After a little searching with the finger a small pit or depression situated above the prostate, and somewhat to the left side of the median line was found, and at the bottom of this the rough or rather broken edge of a calculus was distinctly felt. The finger not being long enough to enter the sac, a pair of narrow-bladed curved lithotomy forceps was guided into it, and then several stones were easily withdrawn. After four or five had thus been removed, the sac was thought to be emptied, but on Mr. Braine and Dr. Highet, who kindly assisted me, making pressure upon the abdomen over the region of the bladder, other stones could be distinctly felt being protruded downwards, and were extracted by the forceps in a similar manner. Altogether thirty-

four calculi, varying in size, were removed, and there was every reason to believe that the sac was emptied. This was tested in several ways. The prostate proved much smaller than was anticipated, its apparent hypertrophy being in some measure due to the prominence given to it by the pressure exercised by the calculi. When the sac had been emptied of its contents, its extent and immediate relation to the anterior wall of the rectum were readily recognised. It must have been capable of holding several ounces of fluid, and by introducing the forceps to the bottom of the cavity, the amount of tissue separating it from the bowel was found extremely small. It would have been very easy to have established a direct communication between the sac and this portion of the large intestine. There was very little bleeding, though the operation occupied twenty-five minutes. A drainage-tube was put into the sac from the incision leading into the bladder, and the subsequent treatment of the case resolved itself into endeavouring to secure cleanliness and a free outlet for the contents of the bladder, which, of course, included the discharge from the large and probably suppurating sac connected with it. The patient left the private hospital on the twenty-fourth day, and returned home. The operation wound had not completely healed.

Four months afterwards, Dr. Highet wrote me :—"He has improved very much in his general health, and is now better and more free from pain than he has been for a long time. The only thing that troubles him is the urinary fistula, which still continues to discharge. He has very seldom to get up at night to pass water, and has gained weight."

In the following year (1893) he was again under my observation, relative especially to the urinary fistula, and various means were adopted to bring about its closure, but though considerable relief was afforded by irrigation of the bladder, catheterism, and drainage, the wound failed to heal, and continued at intervals to discharge pus and urine.

In 1894 the patient again presented himself for further treatment, his condition, so far as the fistula was concerned, being practically unaltered. With the view of endeavouring to deal with the sac, which was obviously the cause of the fistula, the bladder was opened above the pubes. The sac relative to the bladder was found much the same as on the occasion of the first operation, when the calculi were removed in 1892. Its orifice would just about admit the finger; its extent and relation to the rectum were unchanged. Careful exploration with forceps and syringe failed to discover any further evidence of stone, though in the previous interval phosphatic concretions had escaped through the fistula. A drainage-tube was passed to the bottom of the sac and brought out through the supra-pubic incision in preference to the perinæal, and drainage, aided by the patient's position, was maintained for some weeks. The abdominal wound gradually closed without any obvious change taking place in the perinæal fistula, through which urine mixed with pus continued to escape. It was interesting to observe that though both wounds continued to discharge pus and urine for some weeks, the tendency to heal was far stronger in the supra-pubic than in the perinæal, and was gradually completed in the former in spite of the efforts to maintain drainage through it. The patient died towards the end of 1896, the opening in the perinæum failing to heal.

I received the following report relative to the composition of one of the calculi (which seemed typical of the remainder) from the Clinical Research Association. Thirty-four calculi in all were removed entire, exclusive of the one that was crushed. The largest stone weighed 150 grains, and the united weight of the thirty-four amounted to $11\frac{1}{2}$ drachms. The analysis is as follows:

“The calculus is composed of tricalcic phosphate, calcic phosphate, and triple phosphate (magnesium ammonium phosphate), the first constituent being present in greatest amount. The greater part of the stone was somewhat

soft and friable, the central part being harder and laminated. The latter only differs from the rest in containing a still larger proportion of the neutral tricalcic phosphate. No trace of any urate, oxalate, or other constituent is present. There is no discoverable nucleus other than the somewhat harder core mentioned above."

CASE 2.—A man, aged 50, was seen in July, 1897. He had during the previous year passed by the urethra small, round, and facettèd calculi, and as there was some enlargement of the prostate it was suggested, in the absence of any other explanation, that these concretions were possibly connected with this part of the urinary apparatus. The composition of these calculi will be presently referred to. There was no history of any renal colic or any other urinary symptom or disease, and the stones had generally been spontaneously voided without much difficulty. The prostate was examined from the rectum, and found to be larger and harder than natural, especially on the right side. Having regard to the age of the patient and the nature of the enlargement, it seemed almost impossible to form a precise diagnosis of the case, and a wish was expressed to Dr. Hopkinson, who asked me to see the patient, for another opportunity of doing so. In the meantime the patient went to Cromer.

About one month after my seeing him he passed a large number of small calculi, which were reported to be composed of calcium phosphate, with a small proportion of calcium carbonate. On this supervened an attack of epididymitis and urethritis. There were no symptoms of renal colic or hæmaturia. As he was not emptying his bladder it became necessary to use the catheter, upon which he soon became almost entirely dependent.

After leaving Cromer he continued to pass calculi occasionally, and the urine gradually became offensive and ammoniacal. He was sounded for stone on more than one occasion, but nothing was found till towards the

end of 1897, when several small soft calculi were removed by the lithotrite and wash-bottle. About this time evidence was obtained that the bladder was largely sacculated, as it was found possible to catheterise it and a large sac independently of each other, and considerable difference was sometimes observed in the two fluids thus drawn off. It was also noted that when urine was escaping by a rubber catheter from the sac it was possible to arrest the outflow by pressing one finger firmly over a point corresponding in the bladder with a spot about an inch below the right ureter. On pressure being removed the outflow returned, and continued till the sac was emptied.

Towards the beginning of 1898 the patient's condition improved under catheterism and irrigation, and the discharge of calculi ceased for some weeks, so that he was able to attend to his business, and take bicycle exercise. He however continued almost dependent on the catheter, and the urine was usually more or less offensive.

On Easter day, 1898, he took a long and taxing bicycle ride, which was followed that night by most acute pain in the bladder and a severe attack of cystitis, accompanied with high temperature. He returned to town as soon as possible, and I saw him, in consultation with Dr. A. Bland, on April 28th, when acute suppurative cystitis was present. The conclusion we arrived at was that some calculi in the sac had been disturbed by the bicycle ride, and had set up acute inflammation in this confined area, which had extended to the bladder. We saw him again together on May 2nd, and as the symptoms were unabated we advised his immediate removal to a surgical home for operation.

On May 4th an anæsthetic was administered by Mr. Braine, and I was assisted by Mr. Pardoe; Dr. Bland was also present. The bladder was opened in the usual way by a vertical supra-pubic incision. On examining the base with the finger a small aperture was found, just admitting the index finger, to the right of and a little below the

orifice of the right ureter. The sac with which this aperture communicated contained more than half a pint of exceedingly foul purulent urine and five stones weighing a little over three drachms, facettèd, and in the recent state very friable. They were removed with forceps, a matter of considerable difficulty owing to the depth of the sac from the abdominal wound. The base of the sac was pushed up from the rectum, somewhat facilitating their removal; one of the stones was crushed by the forceps during extraction, so soft was it. The sac was flushed out thoroughly with a solution of mercury perchloride 1 in 5000, and a large drainage-tube, inserted to the bottom, was stitched to the edge of the skin incision. Another shorter tube was placed in the bladder and also stitched in position.

The two lateral lobes of the prostate were greatly enlarged on their bladder aspect, rising into the bladder and completely obstructing the internal meatus. It was not considered advisable to remove them at this period, as the bladder was in such a foul condition that septic absorption by the raw surfaces which would have remained would have probably occurred.

The patient's condition was extremely grave for a fortnight after operation. The wound in the abdominal wall sloughed extensively, no doubt owing to the excessively foetid urine which continued to escape alongside the tubes. Various antiseptic solutions were used for flushing, the most satisfactory proving to be a solution of hydrogen peroxide. The patient required dressing at least every three hours during the first ten days. By May 20th the wound was quite clean. The sloughs had all separated, and the edges were granulating in a healthy manner. The pouch was contracting, and would only hold about five ounces of solution. It still secreted a considerable amount of foul-smelling pus. The rubber drainage-tube was removed on this date from the sac, and the latter was washed out twice daily by a full-sized canula attached to an aspirator bottle. After a little practice it became quite easy to

pass the canula into the opening of the sac, although the opening was but little more in diameter than the calibre of the canula. The abdominal wound was allowed to close until only just sufficiently large to admit the canula.

The patient was up and allowed out in a chair. During June several pieces of soft phosphatic stone formed in the pouch and were washed out through the canula; on one occasion a piece required crushing *in situ* by a smooth-bladed lithotrite introduced through the abdominal wound before it could be evacuated. In the last week of June the patient had a sharp rise of temperature, accompanied by several rigors, followed by severe sweating; this lasted several days, and was at length relieved by the passage of about one ounce of most offensive pus.

The sac was evidently not draining satisfactorily, so on July 12th, under ether, the supra-pubic wound was enlarged and the pouch explored again. The opening into it was about the size of a shilling, with very sharp edges. It felt quite circular. The walls of the sac were soft and smooth. A very large vessel was felt beating on the upper and outer wall. There seemed to be a very little tissue between the posterior portion of the sac and the anterior rectal wall. Several phosphatic fragments were removed. The sac was less than half its original size.

The two greatly hypertrophied prostatic lobes were removed flush with the bladder wall by means of cutting forceps. Hæmorrhage was very free, but was checked by firm pressure of pads soaked in liq. ferri perchlor. fort., applied through a caisson. A good deal of oozing occurred during the day, but it ceased in twenty-four hours. On the following day some urine was passed *per urethram*, the first for many months.

The progress of the case was uneventful from this date until his departure from the home. The sac was washed out as before until the abdominal wound contracted. It was then flushed by filling the bladder *per urethram* and by posture (the prone position), emptying it like a bottle into the bladder.

The patient went to Brighton on August 3rd, the urine then being acid, with a small deposit of pus from the sac, and mostly passed through the supra-pubic sinus, though some came by the urethra. He was in Brighton under the care of Dr. E. Gordon Barker until November 1st. Dr. Barker reports that by careful daily washing of the bladder, with posture exercises (*i. e.* rolling from belly on to back and *vice versa*, knee-elbow position, &c.), the sac was kept sweet, but on September 13th he passed *per urethram* a small square piece of phosphatic stone.

He reported himself in London during the first week in November on his way to Leamington, where he proposed to spend the winter. He had then gained many pounds in weight, and had been swimming and walking. There was still a fistula above the pubes admitting a fine probe. Urine drawn off by catheter was acid and without a trace of pus. Since November he has been under the care of Dr. Olive, of Leamington, who writes (January 20th, 1899): "Mr. R.'s condition is much the same as when he arrived here. The thing which troubles him most is the quantity of water which escapes through the supra-pubic sinus the urine remains turbid but is free from albumen one small calculus about the size of a large pin's head has been passed since he came to Leamington."

The Clinical Research Association reports that the calculi consisted of tricalcic phosphate, carbonate of lime, and magnesium ammonium phosphate, principally of the first.

In bringing these two cases before the Society, I am conscious that the means adopted for the relief of the patients fell short of what was desired. Apart from the unusual position the calculi occupied relative to the bladder, there was nothing, so far as these were concerned, in their nature, number, or size, which should have offered any obstacle to their successful removal. Nor was there any difficulty experienced in their withdrawal from the sacs containing them. It was in the delay, I may say the im-

possibility of obliterating the saccules containing the stones, which eventually led to the death of the patient in one instance and incomplete recovery in the other. I think, however, I may say the latter promises to do well, though the use of the catheter may, as in other instances of urinary disease, prove to be necessary.

When we consider that these sacs are of considerable size, and probably, judging from others that may be examined in museums, of very irregular shape, though their orifices are small, that by reason of their structural formation, they possess no power, either of voluntary or involuntary contraction, and that they are situated between two viscera, the bladder in front and the bowel behind, which are constantly on the move, we cannot fail to recognise the difficulties connected with any surgical attempt to effect their obliteration.

Writing after he had seen the second patient whilst at Cromer, and in reply to a letter which described what had been done, my friend, Mr. Cadge, says, "You seem to have done the right thing very thoroughly, but how can you expect to complete the cure? I suppose all you can do is to keep the sac well washed out daily. It is, in my experience, exceptional for stones to find their way into sacculi, but in this case, in which small round multiple calculi came down from the kidney, they easily got into the narrow opening which was near the ureter and at the bottom of the bladder which trapped them."

The experience gained from the first case recorded, led me to think, on reopening the abdominal wound in the second case, that it might be found feasible to attempt to substitute a more efficient mode of sac-drainage. This suggested itself, partly by a case read before this Society,¹ where a large hydatid cyst, situated between the bladder and the rectum, was successfully drained from the perineum, and partly by another case not recorded, which appeared to bear more directly upon this point. True,

¹ 'Med.-Chir. Trans.,' vol. lxxviii.

the hydatid case had no direct communication with the interior of the bladder, yet it showed, from one aspect, the feasibility of the proposal.

The other instance was that of a patient who had a sacculated bladder, where the sac spontaneously opened into the bowel, and for some time discharged urine in this way as well as stones. After discharging for some weeks the recto-vesical fistula completely and spontaneously closed, and the patient's condition, so far as his bladder was concerned, has since considerably improved. It appeared to me that if this process had been anticipated by the insertion of a tube into the bottom of the pouch by a perineal incision, it would have prevented the bowel being used for urine-drainage purposes, whilst the result would probably have been equally satisfactory.

Guided by this experience, it was my intention, when I reopened the bladder in the second case, and had removed the hypertrophied portion of the prostate, to have explored the sac, and ascertained whether it was not possible to drain on these lines without interfering either with the urethra in front or the rectum behind. With a pair of forceps in the sac, or any other similar instrument as a guide, there would have been no great difficulty in accomplishing this. However, on exploring the sac with my finger it was obvious that the proposal was not applicable to this case. There was one very large artery, probably an iliac, passing downwards, which could be felt beating from within the sac, whilst a smaller one took a course downwards and outwards. With such relations as these the part could not have been safely approached either with knife or drainage-tube. Though the proposal was abandoned in this instance, I have ventured to refer to it, as the principle might be applicable to other instances. The contractile nature of the neck of some of these sacs, giving the feel to the finger not unlike an elastic band, in conjunction with direct drainage of the pouch below, might bring about a closure of the orifice, as doubtless occurred in the instance

referred to. The original mode of sac drainage through the bladder was therefore reverted to.

There is another point of much interest which I will only mention. Whence are the calculi contained in these sacs derived? Are they primarily of renal or vesical origin, or are they indigenous to the part in which they are found? It is remarkable in both of these instances that there were no symptoms observed which would appear to indicate that the patient had ever suffered from renal colic, though a considerable number of stones were found in each. I am disposed to think they were formed in these sacs.

In concluding these remarks, I would add that I have not intended to include a reference to the pouches or depressions made up of the whole thickness of the bladder wall, but to those herniated protrusions of the mucous membrane between the interstices of the muscular coat, to which the term sac or saccule is now generally applied. The former condition relative to stone has been well illustrated by Mr. Buckston Browne.¹

In an article on vesical stone, based on 110 consecutive cases which I have recently published,² the two instances here recorded were not included, as not being strictly examples of stone in the bladder.

¹ 'Transactions of the Medical Society of London,' 1891.

² 'Lancet,' Nov. 12th, 1898.

(For report of the discussion of this paper, see 'Proceedings of the Royal Medical and Chirurgical Society,' Third Series, vol. xi, p. 87.)