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THE SURGICAL TREATMENT

OF

TUMOURS AND OTHER OBSCURE  
CONDITIONS OF THE BLADDER.

BY  
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WITH  
APPENDIX OF CASES.

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THE  
SURGICAL TREATMENT OF TUMOURS AND OTHER  
OBSCURE CONDITIONS OF THE BLADDER.

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A PAPER read by Sir H. Thompson at the meeting of the Medico-Chirurgical Society on the 11th April, 1882, and further supplemented by a communication on digital exploration of the bladder, which appeared in the *Lancet* of May 6; and his more elaborate contribution to the Medico-Chirurgical Society on the 23rd January, 1883, entitle him to the credit of having popularised an operation which had previously been confined to the practice of a few surgeons, and which hitherto had not been recognised in any of the standard works on surgery. This operation, having now received the sanction of a surgeon of such unquestionable authority and such unrivalled experience as Sir H. Thompson, promises to open out a fresh field for cultivation in surgery, and a new sphere for affording relief in cases which hitherto have remained unrecognised and unrelieved.

The operation of opening the urethra in the membranous portion in cases of impassable stricture and cases of retention is an operation long familiar to all practical surgeons; but when it is performed for the simple purpose of investigating obscure diseases of the bladder, and with the prospect that some condition may be discovered amenable to operative relief, we recognise an idea, the full valuable significance of which does not appear to have been fully realised by anyone before.

With the object of contributing to this important subject, we propose to record a number of cases which have come within our immediate knowledge in public and private practice, and to draw attention to certain points which have forcibly arrested our attention in the study of these cases.

Previous to relating the cases, it has seemed advisable to



give a brief *resumé* of the more salient pathological features of bladder tumours, and shortly to refer to the means at our disposal for arriving at a diagnosis of their presence and nature.

Tumours of the bladder may originate primarily in its walls, or may extend to them secondarily from neighbouring parts, such as the uterus, rectum, or pelvis.

With the secondary growths we are not at present concerned.

As regards primary growths, the bladder, we must remember, being developed from hypoblast and mesoblast, is, according to the blastodermic theory of tumours, able to originate epithelial growths as well as those of the connective tissue, muscle, nerve, and vessel types.

The bladder is constructed of connective tissue, and muscular walls, and is lined internally by a stratified epithelium, developmentally sprung from hypoblast. The mucous membrane has no papillæ on its surface, but it contains, particularly towards the neck of the bladder, some racemose glands.

Each of these tissues, theoretically, may be the seat of tumours common to them in other situations. The connective tissue may give rise to growths of adult or embryonic connective tissue (fibroma, myxoma, enchondroma (?), and sarcoma); the muscle to myoma, the epithelium to epithelioma, and the gland epithelium to carcinoma. Experience fully bears out these theoretical considerations.

Enchondroma is added to the list on the authority of two cases, one published in the *Gazette Médicale de Paris*, 1836, the other communicated to the *Société Anatomique* (*Soc. Anat.*, 1861, p. 191); but it is considered probable by Cornil and Ranvier that in the latter case the bladder was secondarily implicated, the tumour having originated primarily in the pelvis.

In this enumeration the most common tumour is omitted, that is the so-called villous tumour. The villous tumour consists of numerous simple or branched processes springing from the submucous connective tissue; each process is composed of connective tissue in very small quantity, supporting fine blood-vessels, and is covered with a thick layer of epithelial cells; the submucous connective tissue from which it grows does not show the least trace of pathological tissue.



The term villous has been derived from the naked-eye appearance of the growth, and has, of course, no pathological significance. These tumours have from time to time received various names; but of these the term papilloma appears to us the best. This view is open to the criticism that there are no papillæ normally in the mucous membrane of the bladder, and that these villous tumours spring from the submucous connective tissue, and that consequently they have more affinity with fibromata; but in their typical form they consist simply of vascular loops supported by connective tissue and covered by epithelium—a structure exactly corresponding to normal papillæ—and therefore to be regarded as a true papilloma of new formation.\*

On the other hand, all tumours with a papillated surface are not papillomata; the point of distinction in these cases is found in the base of the growth; if, for instance, the base be distinctly fibrous, the tumour is most correctly termed a papillary fibroma; if, on the other hand, it be sarcomatous or epitheliomatous, the tumour is a papillary sarcoma, or a papillary epithelioma.

So common is the papillation of the surface of all bladder tumours that this feature alone is of no importance in deciding the true nature of the growths.

In connection with this great tendency of the bladder to form papillæ, it is interesting to recollect its origin from the allantois, and to bear in mind that it is from the latter that the vascular portion of the chorionic villi are produced, for we have in the chorion the most typical papilloma, occurring as a physiological structure.

So great is the tendency for blood-vessels of the submucosa to shoot out in a papillated form, that in sarcomata springing

\* Virchow (die Krankhaften Geschwulste, Bd. III., Berlin, 1865) does not recognise papillomata as a special kind of tumour, and contends that they are nothing but papillary fibromata, or outgrowths of the connective tissue. Rindfleisch (Pathological History: English transl., Vol. I., page 454, London, 1872), however, states that in the villous growths of mucous membranes the loops formed by the ascending and descending capillary vessels are *mostly* covered by one or several layers of epithelium without *any* connective tissue intervening.



from this situation it is sometimes possible to detect a strikingly arborescent arrangement of the blood-vessels in their substance.

The term polypus has often been applied to bladder tumours; indeed Hutchinson proposed to call these villous tumours villous polypi, from the fact that the majority were pediculated, but a title based on such a feature would be very unsatisfactory, as the polypoid condition has no pathological significance, and all forms of bladder tumour may take on the polypoid formation.

True cystic growths in the bladder are, so far as we are aware, unknown; but in our "tables" there is a reference to a cyst of false membrane which was removed by Liston.

The following list shows eight histological varieties of tumours which have been recognised as having their origin in the human bladder:—

- |             |                 |
|-------------|-----------------|
| 1. Fibroma. | 5. Enchondroma. |
| 2. Myxoma.  | 6. Epithelioma. |
| 3. Sarcoma. | 7. Carcinoma.   |
| 4. Myoma.   | 8. Papilloma.   |

Villous growths (papillomata) rarely exceed the size of a hen's egg. They may either be sessile or pediculated, round or ovoid. They have a soft consistency and a rosy, sometimes yellowish, appearance. Immersed in water, they swell and send out floating filaments and branches resembling a sea-anemone. The branches sometimes exceed two inches in length.

The most common locality in the bladder for these growths is within the trigone, and the vicinity of the urinary orifices their most favoured site—situations which render them very liable to become impediments to the flow of urine, and, by causing repeated attacks of obstruction, lead eventually to hypertrophy of the muscular coat of the bladder, dilatation of the ureters, and ultimately hydronephrosis.

The epithelial covering of villous growths being thin, friable, and easily removed, and, being subjected to the varying conditions of the bladder, it can readily be conceived how the contained vascular loops become exposed and injured, and, in consequence, give rise to hæmorrhages of varying intensity—hæmorrhages which, in the past, have almost invariably cost the patients their lives in from three to four years.



The urine of patients suffering from villous growths within the bladder is neither influenced in quantity or specific gravity, but almost invariably contains blood either constantly or at infrequent intervals. As may be supposed, the presence and quantity of blood is governed by certain circumstances, amongst which may be mentioned violent exercise, when the blood will be fairly evenly distributed in the urine, and give it a uniform red colour, straining at stool, and at the termination of micturition, in which case the urine may be free from blood at the commencement of making water, but deeply tinged at the conclusion. The introduction of catheters is also frequently followed by hæmaturia.

The principal aids to the diagnosis of tumours within the bladder are as follows:—

1. The detection in the voided urine of minute tufts which from time to time become accidentally detached from the parent growth. These tufts can be microscopically identified as branched villi, with central capillary loops covered with one or several layers of epithelium.

2. Catheterisation with the intention of entangling in the eye of the instrument fragments of the villous growth.

3. Exploring the surface of the bladder by means of a sound, in order to detect any irregularity in the surface of the vesical wall.

4. Bimanual palpation.

5. Digital exploration of the bladder.

The urine at times contains coagula and occasionally detached fragments of the villous branches may be recognised. The latter, when detected and examined under the microscope, afford the most conclusive and satisfactory evidence of the nature of the case.

In Mr. Berkeley Hill's case, published in the Univ. Coll. Hosp. Reports for 1880, it is stated that bits of tissue, showing the nested arrangement of epithelium characteristic of epithelioma, were detected in the urine; any observation of this nature of course renders the diagnosis of epithelioma a certainty.

Beyond the information afforded by an examination of the urine additional knowledge may be gained by the use of a full-



sized metal catheter, provided with large eyes. The bladder should be examined when fully distended with urine, and the growth freely floating in its contents—the branches follow the flow of the urine, and becoming entangled in the openings into the catheter, are torn off during the removal of the instrument.

It is necessary to offer a word of caution against the indiscriminate, or rough use of catheters for diagnostic purposes in suspected cases of villous growths. In the first place, septic contagion may be introduced into the bladder and cause troublesome catarrh. Fatal hæmorrhages have followed the use of the catheter in such cases. Examples are mentioned by Cruveilhier, Leudet (*Bull. Soc. Anat.*, 1852, p. 301), Tufnell (*Dub. Quart. Jour. Med.*, 1865, V. 59, p. 470), Rendu (*Bull. Soc. Anat.*, 1869, p. 543), Langlebert (*Bull. Soc. Anat.*, 1876, p. 256) and Guyon (*Du Cancer, de la vessie par Ch. Féré*, Paris, 1881, p. 74).

In addition to the value of the catheter in procuring fragments of the growth for purposes of diagnoses, further knowledge may be gained by its use. A sensation is conveyed by the catheter as though the end was moving through a mass of floating hair, or in a spongy substance, or on a velvety or woolly surface (Féré, *l. c.* p. 80 & 122).

The examination of the bladder by bimanual palpation is frequently of great value as a diagnostic agent. Simon (Volkman, *Sammlung Klinischer Vorträge*, N. 88) recommends in female subjects the introduction of the index finger into the previously dilated urethra and the middle finger into the vagina, whilst the other hand depresses the vertex of the bladder downwards towards the index finger, by this means a complete exploration of the bladder can be made in the majority of cases. Volkman recommends that in male subjects, when they are under the influence of chloroform, one finger of the left hand in children and two in adults should be introduced as far as possible into the rectum, whilst an assistant presses both his hands flat above the symphysis in the hypogastric region, forcing the bladder towards the surgeon's fingers. By this means, in lean persons, with empty bladders, and without enlarged prostate the vertex of the bladder may be fully examined.



When the surgeon detects any pathological change, he glides his right hand below those of his assistant, and by this means he transfers the morbid part of the bladder entirely between his own hands, which permits a more trustworthy opinion to be formed.

Digital exploration of the bladder is the final and most certain method of arriving at the diagnosis; in the female there are no difficulties in the way, for the short and easily-dilatable urethra offers but little impediment to a thorough exploration of the interior of the bladder with the forefinger.

It is with the idea, as Mr. Lund stated at the meeting of the Medico-Chirurgical Society, of approximating the anatomical condition of the male to that found in the female, that the operation of opening the membranous urethra has been advocated in these cases, as by this means the same facility in exploration of the bladder is obtained for the male as that which exists in the female. Certainly in a number of cases this is perfectly true, but it is also a fact that in others it is by no means so, for there are at least two anatomical conditions that facilitate the digital exploration of the bladder in the female—they are the absence of the prostate, with its frequency of enlargement, and the wider pelvic outlet. It has been stated by Sir H. Thompson that digital exploration of the male bladder through an opening in the membranous portion of the urethra is always possible if the patient be thoroughly anæsthetised and the bladder be emptied; this is a statement which we consider requires qualification, for there are at least three conditions which may prevent such a complete exploration; they are: 1. Stoutness of the patient, by which the depth of the perinæum is much increased. 2. Enlargement of the prostate, by which the bladder is pushed further from the surface. 3. Considerable narrowing of the pelvic outlet, which prevents the hand being well pushed into the perinæum.

Case III. is an instance of the mere corpulence of the patient preventing an exploration of the bladder; but when, in addition to stoutness of the patient, the prostate is also enlarged as in case No. IX., a thorough examination is quite impossible. In this case the patient was deeply under the influence of chloroform,



and the suprapubic pressure rigorously employed, yet three surgeons, with forefingers of quite the average length, pronounced exploration of the bladder to be absolutely an impossibility.

In the absence of these conditions, however, a complete exploration of the interior of the bladder can unquestionably be made by the tip of the forefinger introduced through an opening from the perinæum into the membranous portion of the urethra.

Exploration of the bladder is warranted in all cases in which there is hæmaturia presumed to arise from the bladder, accompanied by pain and increased frequency of micturition, where no rational diagnosis can be formed by the more ordinary methods of examination. In such cases there is a reasonable probability that some new growth may be discovered. It is also called for in cases, equally inexplicable, in which hæmaturia is the only symptom. The beneficial result of opening the urethra under these circumstances is most strikingly shewn in case No. IX., in which there had been persistent and considerable hæmorrhage for three months before operation. Mr. F. Heath opened the membranous urethra and passed the finger through the præstatic portion, but it was found impossible to reach the bladder, owing to the stoutness of the patient and enlargement of the prostate; an indiarubber tube was passed into the bladder, and the urine allowed to drain away continuously. There was a slight trace of blood in the urine on the day following, but after that the hæmorrhage completely ceased. In this case the two conditions produced by the operation were (1) some dilatation of the præstatic portion of the urethra, (2) a thoroughly empty and contracted state of the bladder. In this particular case there was some enlargement of the prostate, but it was not tender on pressure, and did not interfere with the emptying of the bladder. It seems most probable that the cause of the hæmorrhage was a varicose state of the vessels at the neck of the bladder, and that the success of the treatment was owing to the subsequent constant contraction of the bladder, the result of the operation.

There are cases in which pain connected with the bladder, and altogether unaffected by medical treatment, is the only symptom complained of; in case No. VII., there was pain at the end of the



penis on passing water; but there was no stone or new growth in the bladder. As this symptom did not yield to medical treatment, the bladder was explored, but nothing was found; the patient had an attack of cystitis from which he recovered; three months after the operation the pain had disappeared, and the patient had gained 14lbs. weight.

The operations which have been performed of late for the removal of tumours from the male bladder are: 1. Lateral cystotomy, an operation identical in detail with lateral lithotomy; this was done by Humphrey (Med. Chir. Trans., 1879, Vol. lxii.), Berkeley-Hill, Davies-Colley (Lancet, Dec. 18, 1880), and Kocher (Brit. and For. Med.-Chir. Rev., Vol. lviii., July-Oct., 1876, p. 210; Lancet, Jan. 19, 1877), and the patient recovered in three of the cases; the other was one of malignant disease. 2. Suprapubic cystotomy, by Liston (Lond. Med. Times and Gaz., Aug. 2, 1862), and Marcacci (Lond. Medical Record, May 15, 1880), with recovery in the one and death in the other case. 3. A combination of these two in Billroth's notable case (Brit. and For. Med.-Chir. Rev., 1876, p. 225). 4. A combination of perinæal urethrotomy and suprapubic cystotomy, in Volkmann's case (Arch. f. Klin. Chir., Bd. ix., p. 682), which ended fatally; and 5. The more modern operation of median perinæal urethrotomy by Thompson and by Whitehead, in a total of fourteen cases, with six recoveries and six deaths, whilst in one case very serious hæmaturia was cured, and in another the symptoms were relieved.

Successful cases have occurred by each method, yet there can be little doubt that median perinæal urethrotomy is by far the least serious, and in fact may be looked upon as quite safe if the parts at the neck of the bladder be not torn in the manipulations required for the removal of the growths.

It is very difficult to formulate a short and expressive term for the operation; it is not a cystotomy, because the bladder is not, or should not be, *cut* into; strictly it is simply perinæal urethrotomy, but undertaken with a different purpose from that usually associated with the term; it is a median perinæal urethrotomy, followed by some dilatation of the prostate with the forefinger.



The operation is performed as follows :—A grooved staff is passed along the urethra into the bladder, with the patient in the lithotomy position. The left forefinger is now placed in the rectum in contact with the apex of the prostate; by this means the rectum is protected and a guide for the direction of the incision obtained; the knife held in the right hand, with the cutting-edge upwards, is now passed into the perinæum exactly in the median line till its point lies in the groove of the staff just in front of the apex of the prostate; an opening into the urethra of just sufficient size to admit the tip of the forefinger is now made, and the external incision enlarged as the knife is withdrawn. A probe catheter is next passed along the groove in the staff into the bladder and the staff withdrawn; the forefinger well anointed with carbolic oil, or vaseline, is then insinuated into the urethra along the probe and gradually pushed and rotated through the prostate into the bladder. With first the right and then the left forefinger in the bladder, whilst forcible suprapubic pressure is made with the other hand or by an assistant, the best possible examination of the interior of the bladder is effected. In cases complicated with stricture of the urethra this plan has to be modified. Instead of the staff, which it may be impossible to pass, a fine straight probe must be substituted and constitute the sole guide for the perinæal incision. After the point of the probe has been cut down upon, it is thrust out of the wound and another director is passed backwards through the perinæal opening into the bladder, and the operation completed in the usual way.

Pedunculated tumours may be removed by the forceps or *écraseur*, but in some cases in which this has been done it has been found necessary to use either the finger nail, or a sharp spoon to scoop out the base of the growth. In broadly pedunculated or sessile growths removal by this means is impracticable, and in these cases the growth may be fearlessly, so far as hæmorrhage is concerned, torn away or removed piecemeal by the finger and forceps, or sharp spoon, for any bleeding that might be feared under such circumstances is easily controlled by the injection of undiluted *Liq. ferri perchlor.* into the bladder. This treatment has now been frequently employed



with the best results as regards the hæmorrhage, and has not caused any untoward results—another proof of the power the bladder possesses of tolerating strong irritants.

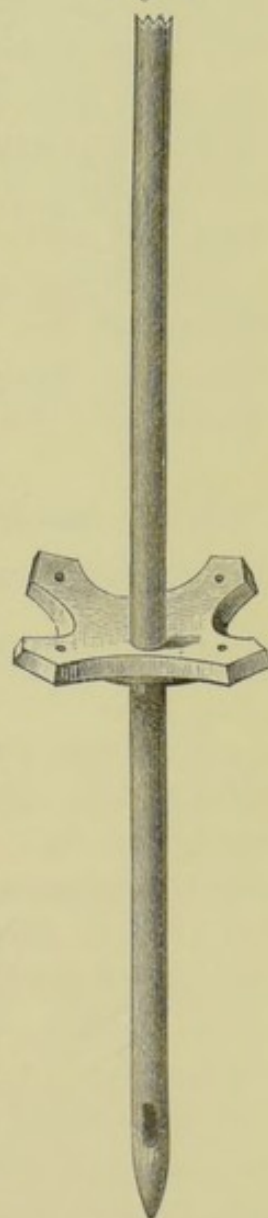
After the operation we are in the habit of retaining in the bladder a soft elastic tube (*Fig. 1*), through which it can be thoroughly washed, and through which the urine can be continuously drained away into a vessel placed beneath the bed; this tube has generally been very easily borne and retained.

In females the examination is more easily accomplished by rapidly dilating the urethra by the successive introduction of œsophageal bougies, of consecutive sizes, constructed with tapering extremities, until the apex of the forefinger can be insinuated and gradually passed along into the bladder. It is interesting to note that in the only case of tumour removed in this way in which subsequent incontinence was met with, it is mentioned that the urethra was slowly dilated by a sponge tent (*Boston Med. and Surg. Journ.*, Aug. 25, 1870, p. 120).

In two cases (*Trans. Clin. Soc.*, May 9, 1879), Mr. A. T. Norton has removed the entire tumour, together with the portion of the base of the bladder from which it sprang. He made an incision through the urethro-vaginal septum, dissected the vagina from the bladder, and removed the growths with the scissors; the vesico-vaginal fistula, which was left, was subsequently closed by the ordinary method.

It has been considered a debatable question whether operation is advisable in malignant disease. As a means of permanent cure removal of the growth will certainly be unsuccessful, but as a palliative measure it is worthy of further trial. The danger in these cases would appear to be that of hæmorrhage; but it is an unrecognised fact that the tendency to bleeding is far greater

*Fig. 1.*





from the superficial ulcerated surface of the growths than from their base; and on this fact is founded one great argument in favour of operation in these cases, for if only a portion be removed and the base from which the growth springs left, hæmorrhage is diminished. This beneficial result is unquestionably shewn in cases No. V., III., and II., one in a female and the other two in males; in these cases the growths were removed by tearing and scraping, and, though the removal was not complete, it had the effect of lessening the hæmorrhage, which had previously been the most serious element of danger.

The following ten cases have come under our own immediate observation, and bear testimony to the value of digital exploration of the bladder, and the facility afterwards afforded by the operation for the removal of tumours from the bladder.

CLASS I.—WHERE A TUMOUR WAS FOUND AND REMOVED.

(A.) IN MALES—BY PERINÆAL URETHROTOMY.

*Case I. Numerous small villous growths on trigone; removal by spoon; recovery.*

T. F., age seventy, a hard-working surgeon in a hilly and rural district, gives a history of an attack of acute cystitis nine years ago; since that time he has had irritability of the bladder and occasional hæmaturia during the last two years. On the 7th July, 1882, he had some difficulty in micturition, and passed about half an ounce of clot, with considerable relief to his trouble. Since that date he frequently passed clots, and always blood, with the urine; at times the amount of blood in the urine would vary in quantity, but clots were always passed at the end of micturition. The symptoms continued the same, and towards the end of August, 1882, some shreds resembling the villi of a villous tumour were detected in the urine. Patient gradually became more and more exhausted, and indicated symptoms which warranted the gravest apprehensions.

On the 26th August, Mr. Whitehead, with the sanction and assistance of Mr. Lund, opened the urethra on a staff, passed the finger through the prostate, and detected a number of small villous tumours situated on the trigone. These growths were



principally detached by means of the finger-nail; others were removed by a Volkmann's spoon opposed to the finger-end placed at the other side of the tumour.

The hæmaturia ceased completely and at once after the operation. The following notes show the progress of the case:—

Sept. 3. Pain and slight swelling in the left testicle.

Sept. 28. Perinæal wound is quite healed. Urine is quite clear, and passed without difficulty by the natural passage. Takes solid food. Testicle less painful and reduced in size.

Oct. 20. Gets up at 7 a.m., and goes to bed at 10 p.m.

Oct. 29. Looks better than he has done for years. Rather more pain in the testicles, particularly the left.

Nov. 11. Testicles much better. A good deal of mucus from the urethra.

Nov. 25. Is now attending to his practice.

Jan. 2. Passed No. 10 catheter without difficulty.

Jan. 28. Bladder irritable; frequent micturition; No. 12 bougie passed; urethra very sensitive.

Feb. 1. Quite well, with the exception of some vesical irritability attributable to an enlarged prostate.

July 17. Remains perfectly free from hæmaturia since the operation, and conducts his practice without any assistance.

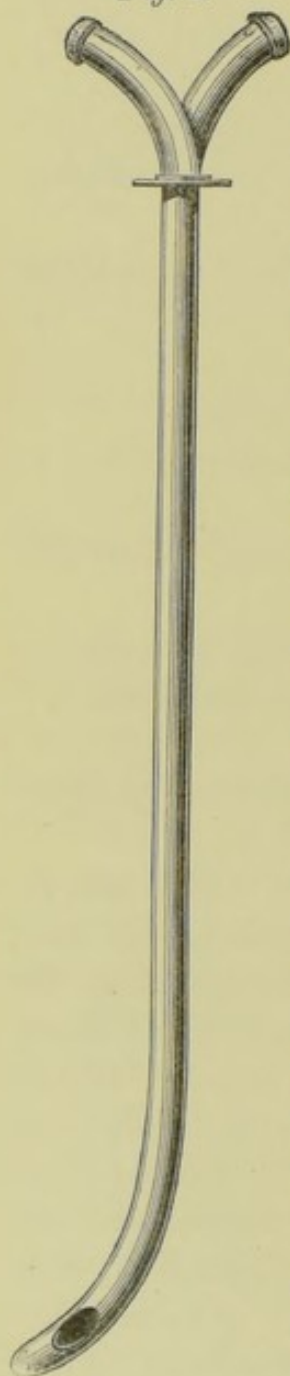
*Case II. Villous epithelioma behind pubes; removal by finger nail; temporary relief; death.*

J. H., æt. fifty-seven. On the 13th May, 1882, Mr. H., on returning from a visit to a friend, who singularly was then dying from hæmaturia, observed, when in the urinal at the railway station, that he passed a stream of bright red blood, attended with slight difficulty in micturition, but no pain. He had previously had some inconvenience in passing water, but had not suffered from any other symptoms. The hæmaturia ceased for four days after treatment, but then re-appeared after a slight exertion. Trifling though constant hæmaturia continued till June 27, when the bladder was explored with a sound, and "a something" was detected. After a short cessation the hæmorrhage became excessive, and the clots interfered so much with the micturition that the catheter was often required. Various styptics were tried,



some as medicine and others injected into the bladder; Ruspini's styptic in large and frequent doses was the most effectual, though not permanently so. A weak solution of perchloride of iron was then used as injection, and by this means the hæmorrhage was completely stopped for a considerable time.

*Fig. 2.*



In the early part of July the patient began to suffer from irritability of the bladder, as evidenced by frequent and painful micturition.

On the 6th of October the hæmaturia returned after an absence of three months; on the 11th Mr. Whitehead examined the patient with his medical attendant Mr. Edwin A. Sutcliffe and Dr. Leech; on the 13th he explored the bladder through an incision in the perinæum into the membranous portion of the urethra, and with the finger detected a growth just behind the pubes; this growth was papillated and situated on a hard flat base about the size of a florin; the papillated surface was easily removed by the finger nail, leaving a somewhat depressed area, with hard and elevated edges. There was no hæmorrhage during the operation.

For the first four days after operation an ordinary lithotomy tube was tied into the bladder through the perinæal opening; on the fourth day a fresh tube was substituted; the urine flowed entirely through the tube, but it had occasionally to be freed from mucus, and at first from small pieces of the growth. On the 22nd of October, *i.e.*, nine days after the operation, the bladder was irrigated by means of a (*Fig. 2*) double-current catheter introduced through the perinæal opening, and the irrigation was continued through the subsequent course of the case night and morning.

The lithotomy tube was replaced by one of soft indiarubber (equal in size to a No. 12 English catheter), with a number of



lateral holes to facilitate the discharge of mucus, which at this time was secreted in large quantities. At first a saturated solution of boracic acid was used to wash out the bladder, and later on a mixture of weak Condly's fluid and boracic acid, but no improvement resulted in the state of the bladder. The use of an injection of a solution of nitrate of silver of a gradually-increasing strength (from 1 to 8 grains to the ounce) was however found very effectual in lessening the secretion of mucus; the urine nevertheless continued very offensive, and with the view of remedying this an injection of sulphate of quinine was substituted with apparent advantage for the boracic acid.

There was no return of spontaneous hæmaturia after the operation, although blood was frequently noticed after introduction of the catheter for purposes of washing out the bladder. Beyond the cystitis the only local trouble that remained was the formation of an abscess near the perinæal incision.

Paroxysms of pain above the pubes and at the extremity of the penis were severe after the operation, and continued for three weeks; after that time they diminished, and by the early part of December the patient would be free from them for several hours together.

December 12. Patient had a violent convulsion of a clonic character, and lay in a semi-conscious state; this passed off and left him in a state of irritable mania. Hyoseyamine administered hypodermically, in small doses, was found at this time most effectual in allaying pain and excitement.

8th January. The patient became drowsy and disinclined for food, and on the 16th January coma supervened and the patient died.

Post-mortem examination of the urinary organs was not granted.

*Case III. Deep pelvis; digital exploration impossible; removal of growth with scraper; recovery.*

Mr. B., æt. sixty-three, a corpulent gentleman, weighing eighteen stone.

In 1877 the patient was alarmed one day by noticing a blood stain on his shirt, but nothing further of this character arrested



his attention till the month of August, when, after being at a race meeting, he passed a quantity of blood, the urine being first clear, then bright red, and finally clear. After this he was confined to bed for ten days with this attack. Sometime in the following year he was seen by Dr. Renaud, who is stated to have passed a catheter, which caused pain and bleeding.

There is no material family history, and he himself had always enjoyed capital health. Mr. Whitehead first saw the patient in consultation with Mr. Sutcliffe on November 1, 1882, in consequence of a sharp attack of hæmaturia, apparently induced by hard shooting in a hilly district, with frequent walks of twenty miles during the day; the bleeding was accompanied by pain and confined to the end of micturition.

Nov. 14, 1882. Patient is now passing large quantities of bright blood; the urine also contains pus, is alkaline and foetid. He has never noticed any shreds in the urine, and has not lost flesh. Ruspini's styptic checks the bleeding.

On the 17th of Nov., 1882, an operation similar to that described in the former case was performed by Mr. Whitehead, and although the patient was thoroughly under the influence of an anæsthetic, the bladder entirely empty, and firm vigorous pressure was made above the pubes, the finger could only just enter the bladder, and consequently a perfect exploration was impossible.

Ring forceps carefully introduced and cautiously manipulated withdrew quantities of a substance resembling granulation tissue and produced profuse hæmorrhage. The masses removed had entangled in their substance quantities of earthy matter. Sims' uterine scraper, with flexible stem capable of being bent at any angle, was then gently applied to the surface of the bladder, and further quantities of tissue brought away.

The bladder was washed out with tepid water and then injected with Liq. ferri fort. (1 part to 4 of warm water); for this purpose an elastic bottle was used, and the fluid was conveyed into the bladder through a catheter passed through a glass drainage tube previously introduced into the bladder through the wound. The fluid was retained in the bladder two minutes and then allowed to escape through the glass tube by with-



drawing the catheter. The bladder was finally again washed out with tepid water in order to remove as much of the iron and altered blood as possible.

A large and unusually long lithotomy tube was required and inserted into the bladder through the wound and retained.

9 p.m. During the day the patient had a fair amount of sleep, but was disturbed about every half hour by a scalding sensation down the penis, accompanied each time by a flow of urine down the tube, each paroxysm lasting about two minutes.

Nov. 19. Still troubled with scalding down the urethra about every hour, and lasting about two minutes. These attacks have not, however, interfered much with his sleep.

The draw-sheets were stained with distinct areas of clear urine, blood-clot, and mucus.

Nov. 20. Patient is much better to-day, and considers that he is no worse than immediately previous to the operation.

After this the patient found great benefit from drinking Bethesda water, and the washing out of the bladder twice daily with a solution of nitrate of silver (4 grs. to the ounce).

Nov. 26. The patient is enabled to walk out and enjoy himself, and only suffers from such hæmorrhage as may be reasonably attributed to the raw surface of a perinæal sinus which still remains.

July 16, 1883. The patient is convalescent and free from hæmorrhage, and able to go about much as usual.

*Case IV. Villous growth near fundus; removal with spoon; temporary relief; death.*

L. S., a man, æt. thirty-three, was admitted under the care of Mr. Whitehead, to the Royal Infirmary on the 7th October, 1882.

At the age of sixteen years he had an attack of gonorrhœa followed by orchitis, which went on to suppuration. Three years ago he had a second attack of gonorrhœa, which lasted seven weeks.

During the last sixteen months he has suffered from a frequent desire to micturate, accompanied by a scalding pain along the urethra.



Three months later stricture of the urethra was detected. Since that time he has had a catheter passed frequently. During the last four months he has passed a number of small calculi from the size of a pin's head to that of a small bean, altogether about fifty or sixty in number.

Since the first catheterisation, thirteen months ago, patient has noticed blood in the urine, and this symptom has continued more or less constantly up to the present time; and a few days before admission he passed an alarming quantity of blood in the urine.

At the time of his admission he had a constant desire to make water, and there was a tingling sensation along the urethra while passing it. He had a slight pain above the pubes, which was relieved after micturition. He had also an itching pain at the end of the penis. The pain was not influenced by movement. He had also much pain in the perinæum during defæcation. Hæmorrhage was often increased at the end of micturition, but there was not and never had been hæmorrhage independently. There was no pain or tenderness in the loins. The urine was acid, Sp. G. 1018, normal in quantity, contained blood and pus, and consequently albumen. No casts detected by the microscope. Oxalate of lime crystals seen under the microscope.

An examination with the sound reveals nothing but a little roughness at the base of the bladder.

Nothing unusual was detected by rectal examination.

Oct. 16. The urethra was opened on a staff, and the finger passed into the bladder; by this means it was found possible to explore the whole of the bladder except the highest part of the fundus. The surface of the trigone was rough, but no distinct growth could be felt there; the tip of the finger however discovered a growth springing from the fundus, which was scraped away.

A soft indiarubber tube was placed in the bladder through the perinæal wound.

Oct. 19. The urine is free from blood, but still contains pus.

Oct. 27. Urine still free from blood. Perinæal tube removed.

Nov. 1. The urine again contains blood.



Nov. 11. Hæmaturia continuing. The perinæal incision was opened up and the bladder injected with Liq. ferri perchlor.

Nov. 14. Hæmaturia continues. Bladder injected with solution of nitrate of silver—gr. i. ad ʒj.

Nov. 30. Hæmaturia has continued off and on since the last note.

Dec. Blood and pus have continued in the urine almost constantly during this month.

Jan. 8. Patient improving; no blood in the urine; temperature normal; sent to the Convalescent Home at Cheadle.

Dr. Grant's report states that on arrival at Cheadle the patient's temperature was 100°, and that on the following morning it rose to 104°. He complained of severe abdominal pain and tenderness, and suffered from great dyspnœa. There was slight dulness and abundant fine crepitations at the bases of both lungs. The dyspnœa was greater than would be accounted for by the condition of his lungs. Urine passed freely, but was loaded with albumen.

In a day or two the temperature sank to normal, but the other symptoms and physical signs remained unchanged. On the second morning before his death patient had a severe convulsion. After this his asthenia rapidly increased and he died on the morning of the 17th of January.

P.-M. exam.: The left kidney was enormous, weighing sixteen ounces; capsule smooth, not adherent; surface very pale and mottled. The section showed the organ to be a typical and extreme example of the "large white kidney." The pelvis was not dilated.

The right kidney was converted into a mere bag of pus. All traces of renal structure had disappeared and nothing was left but a sac with hard, almost cartilaginous, wall about  $\frac{1}{2}$  inch thick and containing 6 or 8 oz. of pus. Both ureters were pervious.

The bladder was greatly contracted and the coats thickened. The interior was rough though not distinctly fasciculated. The site from which the tumour had been removed was perfectly healthy and free from the least vestige of new growth.



## (B.) IN FEMALES—BY RAPID DILATATION OF THE URETHRA.

*Case V. Sarcomatous growth on trigone; removal with spoon; recovery; recurrence; removal; recovery.*

A. F., a widow, æt. fifty-eight, states that about seventeen years ago she first suffered pain in passing water, and that her urine was then occasionally coloured with blood. She was treated with buchu, which alleviated her symptoms for some time. Of late years she has experienced much pain in passing water; the urine has at times contained large quantities of blood, and has constantly been more or less stained. She has noticed that her attacks of severest pain have been followed by the passage of many clots of blood, and that afterwards the pain has been much relieved.

During the greater part of this period she has been subject to menorrhagia, and latterly the menstrual intervals have been getting much shorter.

In April, 1882, she suddenly became much worse, and the urine was loaded with pus and blood.

In May she was admitted to the Infirmary, under Mr. Whitehead, with the symptoms stated above, but much aggravated. The urethra was rapidly dilated, and the bladder explored by the finger; several masses of growth, some sessile and some pedunculated, were detected at the right of the trigone and the right side of the bladder. These masses were rounded and nodular, and the largest of them was the size of half a walnut. These growths were removed by the finger and a Volkmann's spoon.

After the operation the patient gradually improved in every respect, and in a month afterwards she was discharged with no blood in the urine and micturition unattended with pain.

She was re-admitted on the 11th September, when she stated that for the first month after her discharge she continued well, but since then the pain had returned; the urine had been generally milky-looking and occasionally had contained blood.

When re-admitted the urine contained blood and pus; she suffered much pain in the lower part of the back, and about the pelvis, chiefly caused by motion.



Oct. 5. The pain has disappeared since resting in bed, but there has been a deposit of pus, and frequently blood has been passed. The bladder is washed out twice daily with a saturated solution of boracic acid.

Nov. 6. The hæmaturia has been treated latterly by the injection of solutions of perchloride of iron. The hæmorrhage is less, though it still occasionally occurs.

Dec. 11. Patient has been much better lately. The urine has been free from blood, and the amount of pus less.

Patient left the Infirmary on the 21st of December, 1882. There was at that time some hæmaturia, but the amount of blood was decidedly less than at an earlier period.

Jan. 14, 1883. Patient again re-admitted. She has continued much the same during her absence. She is now very anæmic. There is pus and blood in the urine, the latter varying in quantity from day to day, and sometimes disappearing.

Feb. 9. Patient was anæsthetised, and Mr. Whitehead again rapidly dilated the urethra and examined the bladder with the finger. A broadly-pedunculated tumour about the size of a hen's egg was felt at the left side of the bladder near to the trigone, and higher up on the same side was a mass of infiltrated new growth; that side of the bladder was fixed. A considerable quantity of the growth was pulled and scraped away by the finger and Volkmann's spoon. The bladder was then syringed out with warm water. There was no hæmorrhage of any moment during the operation.

Feb. 10. Patient had a rigor last night, but is quite comfortable again. Temperature normal.

Feb. 19. The urine is much clearer; there is no blood, a very little deposit consisting of mucus and pus. There is very little pain during micturition.

March. 15. Still no blood in the urine. The urine is faintly acid and contains a little pus. Micturition is altogether unattended with pain. Patient was discharged to-day.

April 12. Patient declares herself better in every way. There has been no return of the hæmaturia.

August. Patient is able to walk out.

The portion of tumour removed on the second occasion was



found on microscopical examination to be finely papillated. It was a sarcoma composed mainly of large spindle cells and in parts of round cells, and having a number of vascular projections ramifying in its substance.

*Case VI. Papular growth on trigone; removal with spoon; recovery.*

M. F., an unmarried female, æt. thirty-two, was first seen by Mr. Whitehead on the 3rd January, 1883. She stated that about two years ago she first noticed blood in the urine, that twelve months later irritability of the bladder supervened, pain and frequency of micturition being intensified by movements such as in riding or walking. She had passed small fragments of calculus from time to time, but had not preserved a specimen. Of late the desire to pass water was almost incessant. The urine was offensive, contained a deposit of ropy mucus, and almost invariably blood in larger or smaller quantities.

On the 6th January, 1883, Mr. Whitehead rapidly dilated the urethra and explored the bladder with the finger; no calculus was detected, but two small papular growths were detected at the base of the trigone, and removed by a sharp scraper attached to a flexible stem; some flocculent detached mucous membrane encrusted with phosphatic matter was also withdrawn by the scoop.

The after treatment consisted in washing out the bladder twice daily with a concentrated solution of boracic acid.

Feb. 19. Patient is quite well; water quite clear; not a single symptom remaining.

CLASS II.—WHERE NO TUMOUR WAS FOUND, BUT WHERE THE SYMPTOMS WERE RELIEVED AFTER PERINÆAL URETHROTOMY HAD BEEN PERFORMED.

*Case VII. Constant pain at the end of the penis; perinæal urethrotomy; recovery.*

P. T., a man, æt. fifty-three, admitted to the Manchester Royal Infirmary, under the care of Mr. Whitehead, on the 31st October, 1882. He had previously been twice in hospital for stricture of the urethra. He complains of intense



and constant pain at the end of the penis—a condition which has existed for five years, marring the enjoyment of his life, destroying his peace of mind and disturbing his general health; he has been under many forms of treatment, both instrumental and medical, without deriving any benefit whatever. The urine flows slowly in a small stream, and is at times split; it is clear and acid; there is no hæmaturia. Instrumental examination detected neither stricture of the urethra, calculus in the bladder, nor any new growth. He was treated by rest in bed, milk diet, and mild aperients, without any improvement.

Nov. 5. The membranous portion of the urethra was opened on a staff, and the finger was introduced into the bladder, with some dilatation of the prostate. No unusual condition of the bladder was detected.

Nov. 9. As the urine ceased to flow either through the wound or by the urethra a soft catheter was introduced through the perinæal incision, and the urine evacuated.

Nov. 11. Urine alkaline and purulent. Bladder washed out with weak Condy's fluid, at first once a day, and later on twice a day.

Nov. 14. Lately the urine had been passed without the catheter, but to-day it was again required. Patient looks very pale and weak; has latterly suffered much pain, both in the perinæum and at the end of the penis.

Nov. 21. Pain and general condition much the same as mentioned in last note. Urine passes by the perinæal incision. Patient is taking Inf. of *Triticum Repens*.

Nov. 30. The same state of things mentioned in previous notes has continued up to date, there being pus in the urine, in variable quantities, daily. To-day there is more pus in the urine, and a great deal of pain over the region of the bladder. Bladder washed out with a solution of nitrate of silver (gr. x. ad ℥j).

Dec. 1. A catheter could not be got into the bladder through the perinæal wound, so it was passed along the urethra and the bladder washed out through it.

The washing of the bladder with the solution of nitrate of



silver was continued twice a day up to the time of his discharge, with the result of diminishing the amount of pus and albumen in the urine. There was no further complication in the case, and on the discharge of patient on the 23rd December it was noted that there was no pus in the urine and only a trace of albumen; temperature normal. Urine continued to flow through the perinæum as well as by the urethra. *The pain at the end of the penis was quite cured.*

May 27. Patient has gained considerably in weight, and considers himself decidedly benefited by the operation. A few drops of urine occasionally flow through the perinæal incision.

*Case VIII. Obscure bladder symptoms and periprostatic abscess; perinæal urethrotomy; recovery; death subsequently from phthisis.*

Mr. C., æt. forty-two, married, a patient of remarkably phthisical appearance, was seen by Mr. Whitehead at the request of Dr. Guest, who stated that his lungs were considerably affected; his voice also suggested laryngeal phthisis; his left testicle was atrophied—a result of an abscess in that situation.

He complained of a fixed and gnawing pain in the region of the bladder, constant desire to pass water, and violent straining after micturition. Patient was examined under chloroform, but no foreign body could be detected in the bladder by means of a sound. Both vesiculæ seminales were ascertained to be enlarged by an examination per rectum.

Jan. 13, 1883. The membranous urethra was opened on a staff, and the bladder explored by the finger with a negative result so far as the bladder was concerned but a periprostatic abscess was opened during the operation; an indiarubber tube was introduced into the bladder and retained there.

The operation was most successful in relieving his sufferings, and gave great satisfaction to the patient. He remained free from bladder symptoms to the time of his death, making no further complaint other than annoyance at wearing the perinæal tube.

He died of phthisis on the 19th April, 1883.



*Case IX. Hæmaturia ; perinæal urethrotomy ; recovery.*

E. S., a man, æt. seventy-three, was admitted to the Infirmary on the 15th February, 1883, under the care of Mr. F. Heath. He stated that he had passed blood in the urine for five weeks. At first the hæmorrhage was only slight in amount and at the end of micturition, but it soon became much more abundant and uniformly mixed with the urine. On admission, the urine, which was freely passed in large quantities, had a bright red colour due to blood. Patient complained of pain in the lumbar regions, but there was no tumour to be detected there. The urine was of low specific gravity and acid. The prostate was much enlarged. Nothing could be detected in the bladder by means of the sound.

Mar. 11. The hæmaturia has been persistent since admission, and the patient is getting feeble and anæmic from loss of blood ; the lumbar pain has disappeared. To-day Mr. Heath opened the membranous portion of the urethra on a staff, and passed the finger into the urethra, but owing to the stoutness of the patient and the large size of the prostate it was impossible to explore the interior of the bladder, even when all the urine was allowed to escape, the patient profoundly under chloroform, and the combined pressure of two assistants concentrated over the pubes. A tube was introduced into the bladder and retained.

On the day following the operation the urine was slightly blood-stained, but since then the hæmaturia has completely ceased. The tube was retained in the bladder for about a fortnight.

By the end of March the urine had ceased to flow through the perinæal incision, and remained free from blood. Patient was discharged, considering himself quite well.

Patient was seen a fortnight later, when there had been no return of the hæmaturia.

*Case X. Hæmaturia ; perinæal urethrotomy ; temporary relief ; recurrence of hæmaturia ; death.*

J. H., a man, aged sixty-four, was admitted to the Infirmary, under Mr. Whitehead, on the 16th of March, 1883.



He states that about five years ago he had a "low fever," and that during and after that he noticed small clots of blood in his urine. About three years ago he passed a stream of what he considered to be pure blood, and since then he has from time to time, with intervals of a month or so, passed blood and clots; he has suffered pain at the end of the penis, which has been relieved when he passed clots of blood; he has also been subject to pain in the lower part of the back, a symptom which has been relieved by micturition. Micturition has been frequent both by night and day. Latterly he has noticed, in addition to blood, a white tenacious substance—most probably mucus—in his urine. He has lost flesh considerably of late.

For the last two years he has been frequently incapacitated for work owing to pain and weakness, and completely so for the last three months.

On admission he had frequent and occasionally uncontrollable micturition. The pain at the lower part of the back was still relieved by micturition; he also complained of a pain, which he localized at about the neck of the bladder, just at the commencement of micturition; he had neither pain nor tenderness in the loins, and no enlargement could be detected in the region of the kidneys. There was no pain above the pubes; his urine was alkaline and contained blood and a considerable quantity of pus. No stone was detected by the sound, but the bladder seemed to be much contracted.

March 19. Mr. Whitehead opened the membranous urethra on a staff and passed the finger into the bladder; no calculus or new growth was detected, but the bladder was rough and contracted. A soft indiarubber tube was placed in the bladder through the perinæal opening in the urethra.

On the evening of the operation, the temperature, which had been previously normal, rose to  $102^{\circ}$ , and on the following morning it reached  $102.6$ , and the tongue was coated and dry. The bladder was washed out with a saturated solution of boracic acid.

March 22. Temperature normal; general health improving; the reaction of the urine is slightly acid. The washing of the bladder with solution of boracic acid is continued.



March 27. Urine acid, but contains pus, and there have been clots occasionally since the last note.

April 9. The discharge of blood and clots from the bladder has ceased, but the deposit of pus in the urine is as large as ever. The bladder is now injected with two ounces of a solution of nitrate of silver (gr. v. to ʒj), which is allowed to remain in the bladder for three minutes, and is then neutralized with a saturated solution of common salt, and the bladder freely washed out with the boracic acid solution.

May 2. The nitrate of silver solution, being well tolerated, has been gradually increased, and now thirty grains to two ounces is used; this injection is repeated every other morning, and the boracic acid alone used on the other days. The deposit of pus in the urine is now greatly diminished; the reaction of the urine is neutral. There has been no return of the hæmaturia.

May 17. Slight hæmaturia.

May 22. The hæmaturia has continued and patient is becoming exhausted; a solution of the perchloride of iron has been injected into the bladder.

May 25. There has been no return of the hæmaturia since the injection of the perchloride of iron; but the patient has become more and more exhausted, and died to-day.

P.-M. exam.: The bladder was very small and its walls greatly thickened; the mucous membrane had a dark slate colour, with here and there, and particularly about the neck, a very bright vascular point. Both ureters were dilated to the thickness of the forefinger. The pelves of both kidneys were dilated, and in the left one there was a quantity of sabulous phosphatic material. Both kidneys were firmer than natural; there was no suppuration in their substance.

We have collected from different sources twenty-eight cases of tumour of the bladder, of various kinds, occurring in the male, which were subjected to operation and removal; of these sixteen recovered from the operation and remained well for considerable periods, and twelve died within three months. Of the recoveries three have suffered from recurrence of the growth at periods of four, four-and-a-half, and six months after the operation.



The cause of death in the fatal cases can in only three of them be certainly attributed to the operation, viz., from peritonitis in two cases, and in the third from free and continuous bleeding. In four of them death is attributed to exhaustion; in two cases death took place from uræmia three months after the operation, and in one of these all spontaneous hæmorrhage was checked. In the remaining case death occurred a few days after the operation, but the cause of it is not stated.

The above statistics refer to operations of all kinds and tumours of all natures; but in estimating the value of operations in these cases, it is well to consider, apart from the others, the results of the operations performed fourteen times by Sir H. Thompson and by one of ourselves. All operations may be looked at from two points of view:—1. The risks attendant on the operation itself; 2. The success of the operation in removing, or relieving, the condition for which it was undertaken.

1. In calculating the risks of the operation we shall analyse first those cases in which a tumour was found; and, secondly, the total number of cases in which perinæal urethrotomy has been performed, whether a tumour was detected or not.

Of the fourteen cases in which a new growth was removed, the patients recovered in eight cases; in two death took place so soon after the operation that it may be reasonably attributed to it directly. In the remaining cases, death occurred in fourteen days from exhaustion in one, in two months from secondary growths in another, and in three months, in the remaining two, from uræmia.

The total number of cases in which digital exploration of the male bladder has been performed is twenty-five, of which nine died, but seven of these recovered from the effects of the operation; so that, out of a total of twenty-five cases, the mortality of the operation is only two (eight per cent).

2. With regard to the success of the operation in the eight patients who survived the removal of the tumours, we find that four have remained well up to the date of the latest reports; that three, after a period of apparent cure varying from four to six months, have had recurrence of the growth; and that one is returned as being only relieved by the operation.



In the female the cases of bladder tumour submitted to operation number twenty-eight; of these the recoveries number thirteen, the deaths seven, and those whose symptoms have been relieved five.

From these figures it may be concluded that operations for removal of new growths from the bladder have been attended with results that will compare favourably with any other of the major operations in surgery; and when we consider the dangerous state to which many subjects of tumour in the bladder are reduced by hæmorrhage and pain, and when we further consider the number of pathological specimens of easily-removable tumours which exist, in which marked and sometimes fatal hæmorrhage has been the only symptom, there is ample justification for exploration in these obscure cases, and for the removal of any growth that may be detected.

The justification for exploration of the bladder in cases which baffle diagnosis by the more common means is obvious if we bear in mind that digital exploration has been made during the last three years in twenty-nine cases, and that a tumour capable of removal has been found in eighteen of them.

The same operation also offers certain advantages in the treatment of chronic cystitis, for we secure a constant draining away of the irritating urine, and we are enabled to introduce into the bladder an unusually large double current tube, through which strong and voluminous solutions may be injected. There is a most marked difference in the tolerance of the urethra and the bladder of strong solutions of the perchloride of iron or the nitrate of silver. The feeble absorptive power of the bladder has been frequently demonstrated by Sir H. Thompson at University College Hospital, but the great tolerance of this vicus of strong irritants has not been so much insisted upon. It is not the same with regard to the urethra; if a drop of these solutions should find its way into the urethra most excruciating pain is produced. By means of the perinæal opening a good opportunity is afforded of making applications to the bladder without the fear of the solutions leaking into the bulbous and spongy portion of the urethra.



Cases No. VII. and X. illustrate the beneficial results of the injection of nitrate of silver in cases of obstinate chronic cystitis.

As an ordinary antiseptic injection a saturated solution of boracic acid and solutions of the permanganate of potash have been found the most effectual; whilst solutions of the perchloride of mercury and of the nitrate of silver have remedial properties of great and special value in obstinate and protracted cases of cystitis.

In the following tables we have arranged all the cases of tumour of the bladder with which we are acquainted, in which the growth was removed by operation, as well as those cases where perinæal urethrotomy was performed, and the bladder explored, but no new growth detected.



**TABLE I.**  
**CASES OF REMOVAL OF TUMOURS OF THE BLADDER BY SURGICAL OPERATION.**

No.	Operator.	Sex, Age.	Nature of Tumour.	Site.	Symptoms.	Operation.	Result.	Cause of Death.	Reference.
1	Crosse ..... 1834.	m. 2	Polypoid tumours connected together like a bunch of grapes and probably myxomata.	Mucous surface generally, but mainly near left ureter and front of trigone.	Micturition frequent, painful, and accompanied by straining, and pain in the penis; something felt near the orifice of left ureter by the sound.	Median perineal cystotomy and removal of a portion with the scissors, but much of the new growth was left behind.	Death, 48 hours after.	Exhaustion.	A Treatise on the Formation, etc., of Urinary Calculi, 1835, p. 44. Crosse.
2	Dessault ..... 1830.	m. ...	Pedunculated growth.	.....	The tumour coexisted with stone.	Perineal cystotomy and tumour twisted off.	Recovery.	.....	Chopart, <i>Traité des Voies Urinaires</i> , T. II, p. 96. Cooper's <i>Surg. Dictionary</i> , Vol. i., p. 318.
3	Le Cat ..... .....	m. ...	Fungous tumours.	.....	Pain in back and loins; irritation and pain in bladder; considerable bleeding; some soft obstructive body felt by sound.	Incision into the bladder, and removal by crushing and evulsion by forceps at two sittings.	Death.	Violent pain and high fever.	Howship on the Urine, 1823.
4	Civiale ..... .....	m. ...	Two polypoid tumours	.....	.....	The first was seized by the lithotrite, and came away during the day; a second found, and removed between the blades of the lithotrite.	Recovery.	.....	<i>Traité des Maladies des organes genito-urinaires (Civiale)</i> , Vol. iii., p. 152.
5	Gersuny ..... 1871.	m. 49	Sarcomatous polyp, size of a hen's egg, attached by a long delicate pedicle to a diverticulum of bladder.	Base of bladder.	Vesical irritability and retention of urine, requiring the use of the catheter for five years (Gross, p. 147).	Perineal cystotomy; failed to reach growth.	Death.	Due to exhaustion from want of nourishment.	Langenbeck's <i>Archiv.</i> , 1872, Bd. xiii., p. 131.



No.	Operator.	Sex.	Age.	Nature of Tumour.	Site.	Symptoms.	Operation.	Result.	Cause of Death.	Reference.
6	Berkeley Hill... 1880.	m.	63	Epithelioma.	Pubic portion.	Hæmaturia for four months; frequent micturition; pain at end of penis during and after micturition; urine alkaline and offensive; shreds of tissue showing nested arrangement of epithelium.	Lateral cystotomy; a portion removed with forceps.	Death 48 hours after.	Exhaustion.	Univ. Coll. Hosp. Reports, 1880.
7	Liston .....	m.	...	Cyst of false membrane of the shape of the interior of bladder.	.....	Difficult micturition. Catheter impinged on a foreign body in the prostatic portion of urethra, displacing it as it was passed further.	Epicystotomy.	Recovery.	.....	Lond. Med. Times & Gaz., Aug. 2, 1862.
8	Covillard.....	m.	...	Tumour the size of a nut.	.....	.....	Grasped by forceps; tumour sloughed off in 8 or 10 days.	Recovery.	.....	Quoted by Crosse— A Treatise on the Formation, etc., of Urinary Calculi, p. 49, note. Obs. Iatrob Chir., p. 93.
9	G. M. Humphrey 1877.	m.	21	Fibroma, or fibro-sarcoma, with pedicle as thick as finger.	Near orifice of right ureter.	Pain at root of penis after micturition. Frequent micturition. Hæmaturia. Occasional obstruction. Tumour felt above pubes and from the rectum.	Lateral cystotomy on staff in urethra. Removal of growth by finger and forceps.	Discharged cured 2½ months after opera- tion.	.....	Medico-Chirurgical Transactions, 1879. Vol. lxii.
10	Billroth .....	m.	12	Myo-sarcoma, and myo-carcinoma nearly the size of a fist.	Post. wall of bladder.	Micturition painful, very frequent, and followed by pain in glans penis. Mucus and pus in urine. Tumour to be felt in the region of the bladder, both through abdominal wall and per rectum.	Lateral cystotomy; also suprapubic cystotomy; tumour torn through near the base with finger, and pedicle dissected out from the muscular layer; drainage tube passed out of suprapubic and perineal openings.	Discharged cured 1 mo. after opera- tion.	.....	Hosp. Gaz., 1874, July 15, p. 224. Brit. & For. Med. Chir. Rev., 1876, p. 225.



No.	Operator.	Sex.	Age.	Nature of Tumour.	Site.	Symptoms.	Operation.	Result.	Cause of Death.	Reference.
11	Sir H. Thompson 1880.	m.	29	Papilloma about the size of a chestnut.	The left side of the fundus of the bladder.	Symptoms of calculus; an oxalate of lime calculus was removed by lithotomy; very little improvement followed. A partially fixed body like a sacculated calculus was seized with the lithotrite.	Median perineal urethrotomy; the tumour was twisted off with forceps.	Pt. was perfectly well 19 months after the operation.	.....	Medico-Chirurgical Transactions, 1882, Vol. lxxv.; and Lancet, Feb. 10 and June 16, 1883.
12	Davies-Colley ... 1880.	m.	32	Papilloma, pedunculated.	Post. wall of bladder, 3 in. from neck and 1 in. from middle line.	Hæmaturia for eight years; frequent micturition; always a feeling of something left behind; no tumour could be discovered per rectum.	Lateral cystotomy. Tumour seized with forceps, and pedicle cut with scissors.	Perfectly well 2 mos. after operation.	.....	Lancet, 1880, Dec. 18, p. 980. Clin. Soc., London, Dec. 10, 1880, Vol. xiv. of Transactions.
13	Kocher ..... 1874.	m.	34	Villous cancer (?)	Post. wall of bladder.	Constant desire to micturate and incontinence of urine; burning pain; urine turbid; sediment of pus and blood; "intolerable" smell; rigors.	Urethra opened by T-shaped incision on grooved staff; tumour scraped off by sharp scoop bent at an angle.	Patient considered quite cured in 15 mos.	.....	Brit. & For. Med. Chir. Rev., Vol. lviii., July—Oct., 1876, p. 210. Lancet, 1877, Jan. 19. Centralblatt für Chirurgie, April 1, 1876.
14	Volkman ..... 1874.	m.	54	Myoma with pedicle the size of little finger.	Vertex of bladder.	Tenesmus; strangury; pain in glans penis during micturition. Hæmaturia. Tumour detected by bimanual examination.	Perineal and suprapubic cystotomy. Pedicle scratched through with finger, and tumour removed with forceps.	Death on the third day after operation.	Peritonitis.	Arch. f. Klin. Chir., Bd. ix., p. 682.
15	Marcacci ..... 1880.	m.	54	Villous tumour.	.....	Tumour diagnosed by the aid of the magnesium light.	Suprapubic cystotomy; the bladder was freely opened from the abdominal cavity.	Death 2 mos. after oper.	Extravasation of urine; pelvic abscess and peritonitis.	London Medical Record, May 15, and December 15, 1880.
16	Sir H. Thompson	m.	46	A large mass with whitish base. Fibrosarcoma (?)	The upper part.	Very frequent micturition. Blood in urine later. Phosphates. Semi-transparent material, consisting of nucleated cells, passed per urethram. Interior of bladder felt thick and soft to sound.	Perineal urethrotomy and removal of greater part by forceps.	Death.	Free and continuous bleeding causing exhaustion; probably some giving way of bladder at base of tumour.	Lancet, Feb. 10, 1883, and June 16, 1883.



No.	Operator.	Sex.	Age.	Nature of Tumour.	Site.	Symptoms.	Operation.	Result.	Cause of Death.	Reference.
17	Sir H. Thompson	m.	52	Polypoid growth. Villous papilloma.	Left side of bladder.	Hæmaturia for about 5 years, with long intervals of free- dom, but of late, persistent; frequent and painful mictu- rition; loss of strength. Shreds formed of fusiform cells in urine.	Perineal urethrotomy and removal with late- ral curved forceps.	Recovery, and well for 6 months; re- cently a second operation, since which no bleeding.	.....	Lancet, Feb. 10, 1883, and June 16, 1883.
18	Sir H. Thompson	m.	67	Rather firm and broad tumour with a wide attachment. Papilloma resembling structure of "soft warts."	Left side of bladder, near to the neck.	Hæmaturia 6 years ago. Often passed uric acid calculi. Lithotripsy, and 200 grains removed, but little relief; frequent hæmaturia. Shreds formed of fusiform cells in the urine.	Perineal urethrotomy and removal by for- ceps, with some trou- ble.	Recovery. Probable re- appearance 4½ months after operation.	.....	Lancet, Feb. 10, 1883, and June 16, 1883.
19	Sir H. Thompson	m.	67	Broadly pedunculated. Villous epithelioma.	Left side of bladder.	Hæmaturia 3 years ago. Con- stant and increasing for 4 months before operation, especially at end of micturi- tion; fragments containing spindle-cells and fibres passed in urine.	Perineal urethrotomy.	Recovery. Signs of re- appearance of tumour 4 months after operation.	.....	Lancet, Feb. 10, 1883, and June 16, 1883.
20	Sir H. Thompson	m.	63	Villous papilloma.	.....	Hæmaturia for 7 years; well- marked villous growth de- tected in urine.	Median perineal ure- throtomy.	Recovery.	.....	Lancet, June 16, 1883.
21	Sir H. Thompson	m.	64	Normal bladder tissue with villous struc- ture added; no struc- ture resembling ma- lignant growth found	.....	Hæmaturia for 1 year; no characteristic debris found in urine.	Median perineal ure- throtomy.	Death two months after operation.	Secondary malignant growth in thigh.	Lancet, June 16, 1883.
22	Sir H. Thompson	m.	53	Villous cancer.	.....	Frequent and painful micturi- tion for 2½ years; hæmaturia later; nothing characteristic found in the urine.	Median perineal ure- throtomy.	Death a few days after operation.	.....	Lancet, June 16, 1883.



No.	Operator.	Sex.	A. e.	Nature of Tumour.	Site.	Symptoms.	Operation.	Result.	Cause of Death.	Reference.
23	Sir H. Thompson	m.	65	Tissues like those of bladder, with some villous growth in small quantity on surface.	.....	Symptoms for 1 year; hæmaturia during latter part; numerous long cells and fibres in urine.	Median perineal urethrotomy.	Death 14 days after operation.	Exhaustion.	Lancet, June 16th, 1883.
24	Sir H. Thompson	m.	56	Hypertrophy of the submucous coat of the bladder; no villous growth present.	.....	Pain for 2 years; hæmaturia later.	Median perineal urethrotomy.	Living, and symptoms relieved.	.....	Lancet, June 16th, 1883.
25	Whitehead	m.	70	Villous tumours, all of small size.	Trigone.	Hæmaturia. Pain at fundus of the bladder. Shreds resembling the villi of a villous tumour detected in the urine.	Perineal urethrotomy and removal of growths by finger and sharp spoon.	Cured, and well 8 mos. after.	.....	.....
26	Whitehead	m.	57	Villous epithelioma.	Ant. surface just behind the pubes.	Hæmaturia. Frequent and painful micturition.	Perineal urethrotomy and removal by the finger nail.	Death, but cessation of all spontaneous hæmaturia.	Uræmia (?)	.....
27	Whitehead	m.	63	A soft, very vascular tumour resembling granulation tissue.	.....	Hæmaturia. No pain or loss of flesh.	Perineal urethrotomy and growth removed by ring forceps and Sims' uterine scraper; free bleeding checked by strong solution of perchloride of iron.	Recovery. Hæmaturia cured.	.....	.....
28	Whitehead	m.	33	A small growth at the fundus of the bladder.	Fundus.	Hæmaturia and Pyuria. Frequent micturition. Suprapubic pain before micturition; pain in the perineum during defæcation.	Perineal urethrotomy and the tumour scraped away.	Death.	Uræmia. Pyelonephrosis. Large white kidney.	.....
29	A. R. Jackson	f.	40	Fibrous polypus, weighing 8½oz.	The lower part of bladder, pressing against vesical orifice.	.....	Slow dilatation by spongentent, on removal of which the tumour appeared at urethra; it was seized and torn off at two attempts.	Recovery, and well four months after, except for some incontinence of urine.	.....	Boston Medical and Surgical Journal, Aug. 25, 1870, p. 120.



No.	Operator.	Sex.	Age.	Nature of Tumour.	Site.	Symptoms.	Operation.	Result.	Cause of Death.	Reference.
30	Simon .....	f.	70	Papillary fibroma pediculated.	At the front of trigone.	.....	Dilatation of urethra. Portion of tumour twisted off, and its base scooped out.	Recovery, and well five years after.	.....	Langenbeck's Archiv., Bd. xviii., p. 177.
31	Simon .....	f.	40	Papillary fibroma, filling $\frac{3}{4}$ of bladder sessile.	.....	.....	Dilatation of urethra. Scraping with sharp spoon under guidance of finger. Two operations with 14 days' interval.	Recovery, and perfectly well eight weeks after operation.	.....	Langenbeck's Archiv., Bd. xviii., p. 177.
32	Simon .....	f.	44	Papillary fibromata.	Over the whole int. surface.	.....	Dilatation of urethra, and scraping with sharp spoon.	Recovery, but a second operation required.	.....	Langenbeck's Archiv., Bd. xviii., p. 177.
33	Winckel .....	f.	39	Villous tumour.	Near orifice of right ureter.	.....	Dilatation of urethra, and removal by means of finger and forceps.	Recovery, and well two years after operation.	.....	.....
34	C. S. Bishop ...	f.	56	Fibrous polyp, pedunculated; nearly 3 inches in length.	Bas fond.	.....	Silver wire applied round the neck.	Recovery.	.....	Gross' Surgery, 5th ed., Vol. ii., p. 736.
35	Chris. Heath ... 1879.	f.	39	Villous sarcoma.	Right side of bladder.	Hæmaturia for 7 years; constant desire to micturate, but not accompanied by pain.	Dilatation of urethra; portion of growth torn away, but complete removal not attempted	Death.	Exhaustion. Secondary growths.	Med. Times & Gaz. Dec. 13, 1879.
36	Birkett..... 1858.	f.	5	Fibrous polypus.	Anterior surface of neck of bladder.	Pain in hypogastrium. Difficult micturition and finally retention. Blood in urine. Portion of the tumour protruded through urethra.	Ligation of the root of polypus.	Death.	Pyrexia. Suppuration of right kidney; dilated ureters and pyelitis.	Trans. Med. Chir. Soc., 1858, p. 314.



No.	Operator.	Sex.	Age.	Nature of Tumour.	Site.	Symptoms.	Operation.	Result.	Cause of Death.	Reference.
37	Warner..... 1747.	f.	23	Fibrous polypus, the size of a turkey's egg.	.....	Retention of urine. Hæmaturia. Tumour protruded through urethra.	Meatus urinarius incised. Patient strained and caused further protrusion of tumour, which was ligatured round the base.	Recovery.	.....	Cases in Surgery, 4th edit., 1784, p. 303.
38	Pleininger .....	f.	2 $\frac{3}{4}$	Papillary fibroma.	.....	.....	Dilatation of urethra, and removal by ligature. Other tumours were detected but not removed.	Death.	Emaciation; peritonitis.	Würtz, Med. Corr. Blatt, No. 23, 1834.
39	Theinemann ...	f.	45	Fibrous polyp, size of a hen's egg, with a pedicle $\frac{1}{2}$ inch thick.	.....	Painful and difficult micturition; hæmaturia; protrusion of polypus from urethra.	Pedicle ligatured.	Recovery.	.....	Amer. Journ. Med. Sci., July, 1845, p. 224.
40	Guillon.....	f.	...	Pediculated growth.	Neck of the bladder.	.....	Ligature.	.....	.....	.....
41	Senftleben .....	.	29	Sarcoma with broad base.	Post. and upper part of bladder.	Irritable bladder, incontinence of urine. Hæmaturia. Straining caused a red fleshy mass to appear at the urethra.	Urethra had been dilated by the tumour; removal piecemeal by forceps.	Death.	Peritonitis; the bladder had been perforated in the operation.	.....
42	Bryant..... 1864.	f.	...	.....	.....	.....	Removal by écraseur.	Recovery, and quite well eight years after.	.....	Trans. Clin. Soc., May 9, 1879.
43	Morris .....	f.	56	A large growth.	.....	Frequent micturition.	Removal by écraseur.	Immediate symptoms relieved.	Died eventually from hydro-nephrosis.	Trans. Clin. Soc., May 9, 1879.



No.	Operator.	Sex.	Age.	Nature of Tumour.	Site.	Symptoms.	Operation.	Result.	Cause of Death.	Reference.
44	Braxton Hicks	f.	60	Cauliflower-like mass, the size of a small orange.	Post. wall of bladder.	Frequent micturition; great pain in the region of the bladder; blood and mucus constantly in the urine; a tumour in the region of the bladder detected by vaginal examination.	Urethra dilated, and a considerable portion removed with forceps and écraseur; the base was swabbed with solution of perchloride of iron.	Restrained the bleeding and other symptoms for six months, when the symptoms returned and the growth had increased to former size.	.....	Lancet, Vol. i., 1868, p. 686.
45	Guersant ..... 1867.	f.	22 mos	Papillary fibroma, the size of a nut.	The right side of the neck of bladder.	Micturition frequent and difficult; pain only late on; something soft, though resistant, felt with the sound. Tumour projected from the urethra.	Urethra incised with scissors; ligature and écraseur; tumour expelled spontaneously in half an hour.	Death.	Exhaustion from diarrhoea and sloughing of soft parts.	Gazette des Hôpitaux, No. 23, 1868.
46	Berkeley Hill... 1881.	f.	40	Firm fibroma with a short pedicle.	The trigone 2in. from int. orifice of urethra.	Febrile onset of the disease. Cystitis and profuse hæmaturia at first, but did not recur later on. Pain and frequency of micturition.	Dilatation of urethra and removal by écraseur.	Cured and well 1 mo. after operation.	.....	Medico-Chirurgical Transactions, 1882. Vol. lxxv.
47	Sir H. Thompson	f.	30	Villous papilloma of considerable size.	The upper part.	Severe cystitis and hæmaturia for 5 years at intervals.	Dilatation of urethra and removal with forceps	Recovery.	.....	Lancet, Feb. 10, 1883.
48	Sir H. Thompson	f.	65	Villous papilloma.	.....	Hæmaturia for 7 years; large spindle cells found in the urine.	Median perineal urethrotomy.	Death three days after operation.	Suppression of urine; calculus in left kidney; both kidneys diseased; pyelitis.	Lancet, June 16, 1883.



No.	Operator.	Sex.	Age.	Nature of Tumour.	Site.	Symptoms.	Operation.	Result.	Cause of Death.	Reference.
49	Wm. Alexander	f.	44	The floor of the bladder was very rough and irregular; the growths, some two dozen in number, varied in height from $\frac{1}{4}$ inch to 1 inch.	Floor and left side.	Had been under treatment for eight years, without the nature of the disease being suspected; there was constant pain in the vesical region, particularly during micturition. Hæmaturia and masses of the growth found in the urine.	July, 1876.—Urethra dilated with anal speculum, and the growths, about 24 in number, were removed by écraseur, and finger nail. Bladder washed out with weak solution of perchloride of iron. Oct., 1877.—About a dozen small, soft growths were removed from the trigone by the finger nail. May, 1878.—A large mass of growths removed.	Recovery. Patient resumed her duties as cook 4 months after the operation.  Oct. 19. Urine clear, & pain on micturition gone. Recovery more rapid & perfect than before, and urine remained clear since. (Aug. 17, 1878.)	.....	Lancet, August 17, 1878, p. 209.
50	Godson.....	f.	60	Polypus the size of a walnut, pedunculated.	Fundus.	The growth was found protruding from the urethra, and the bladder was partially inverted.	Ligation and separation of growth by scissors.	.....	.....	
51	Norton..... 1879.	f.	34	Papilloma situated on an area of 1 square inch, and not much raised; it was coated with phosphates.	Trigone, about $\frac{1}{2}$ inch from the ant. angle.	Long-standing hæmaturia; constant desire to micturate; excessive pain.	Incision through the urethro - vaginal septum and the vagina dissected from bladder; the growths were seized and excised with scissors.	Death.	Severe vomiting up to 10th day, when she was considered out of danger; death from syncope on 12th day.	Trans. Clin. Soc., May 9, 1879.
52	Norton..... 1879.	f.	..	Fringed papilloma 1 inch long; $\frac{1}{2}$ inch wide, and $\frac{1}{4}$ inch above the surface of mucous membrane.	Front wall.	.....	Same as in the last case; the opening into the bladder was closed after a month by the ordinary method.	Recovery.	.....	



No.	Operator.	Sex.	Age.	Nature of Tumour.	Site.	Symptoms.	Operation.	Result.	Cause of Death.	Reference.
53	Lawson Tait ...	f.	...	Pedunculated myxomatous polyp.	Just within the neck of bladder.	Hæmaturia for some years.	Dilatation of urethra, and evulsion with forceps.	Recovery.	.....	Diseases of Women (L. Tait), p. 81.
54	Whitehead .....	f.	32	Two small papular growths.	Base of the trigone.	Hæmaturia for 2 years. Pain and frequency of micturition 1 year. Urine offensive, and containingropy mucus.	Rapid dilatation of urethra, and removal of growth by a sharp scraper attached to a flexible stem.	Recovery. and quite well 6 weeks after operation.	.....	.....
55	Whitehead .....	f.	50	Sarcoma.	The right side and involving the trigone.	Hæmaturia for many years; very abundant for some months; pus in urine; pain in the lower part of the back and during micturition.	Rapid dilatation of urethra, and removal with finger and forceps.	Much relieved; no bladder trouble for a month, and after that time not so marked as before operation. Five weeks after operation patient was free from pain and hæmaturia.	.....	.....
						Seven months later: Hæmaturia, pain and purulent urine.	Same as above.			



TABLE II.

CASES WHERE PERINEAL URETHROTOMY WAS PERFORMED AND THE BLADDER EXPLORED, BUT WHERE NO GROWTH WAS FOUND.

No.	Operator.	Sex.	Age.	Nature of Tumour.	Site.	Symptoms.	Operation.	Result.	Cause of Death.	Reference.
56	F. Heath.....	m.	73	None found.	.....	Profuse hæmaturia for 6 weeks; urine acid; prostate enlarged. Great anæmia of patient.	Median perineal urethrotomy. Exploration of bladder with finger impossible; soft indiarubber tube tied in.	Recovery. No hæmaturia on the second day after the operation, and he has remained free from it for a month.	.....	.....
57	Whitehead.....	m.	64	No tumour.	.....	Hæmaturia for 3 years; pain in the back and at the end of the penis relieved by micturition and after passing clots. Chronic cystitis of late.	Median perineal urethrotomy; soft indiarubber tube tied in; bladder washed out with a solution of boracic acid, and later on with strong injection of nitrate of silver.	Death, two mos. after. Cessation of hæmaturia, until 8 days before death. Cystitis greatly improved.	Chronic cystitis; contracted bladder; dilated ureters; interstitial nephritis.	.....
58	Whitehead.....	m.	42	No tumour.	.....	Pain in the region of the bladder; constant desire to pass water, and violent straining after the act.	Median perineal urethrotomy, and soft indiarubber tube tied in.	Symptoms relieved; death.	Phthisis.	.....
59	Sir H. Thompson	m.	48	No tumour or other special morbid condition.	.....	Painful and frequent micturition, with slight hæmaturia for several years.	Median perineal urethrotomy, and a tube retained for a week.	Much relieved.	.....	Lancet, Feb. 10, 1883.
60	Sir H. Thompson	m.	52	No tumour, but small phosphatic concretions closely adherent to inner coat.	.....	Hæmaturia and phosphatic deposits in urine.	Median perineal urethrotomy; a tube retained for a week.	Relieved.	.....	Lancet, Feb. 10, 1883.



No.	Operator.	Sex.	Age.	Nature of Tumour.	Site.	Symptoms.	Operation.	Result.	Cause of Death.	Reference.
61	Sir H. Thompson	m.	68	Nothing found, except a scale of phosphatic deposit.	.....	Hæmaturia. Prostatic retention of urine, which required constant catheterism.	Median perineal urethrotomy, and the phosphatic scale removed; tube for a week.	Recovery. Cessation of bleeding.	.....	Lancet, Feb. 10, 1883.
62	Sir H. Thompson	m.	60	.....	.....	All urine passed by the catheter 16 times in 24 hours.	Median perineal urethrotomy, and tube for one week.	Relieved; catheter only required six times in 24 hours.	.....	Lancet, Feb. 10, 1883.
63	Sir H. Thompson	m.	72	Encysted calculus.	Near the neck of the bladder.	Most of urine passed by catheter.	Median perineal urethrotomy, and removal of calculus.	Death; but symptoms relieved; no need for catheter.	Exhaustion.	Lancet, Feb. 10, 1883.
64	Sir H. Thompson	m.	83	Nothing detected beyond hypertrophy of the vesical coats.	.....	Unusually long and frequent micturition; almost empties his bladder and requires the catheter once a day only; the intervals between micturition rarely reach forty minutes.	Median perineal urethrotomy, & retained a tube in the bladder for twelve days.	Recovery; the wound healed rapidly and he held the urine from 2-3 hours.	.....	Lancet, Feb. 10, 1883.
65	Sir H. Thompson	m.	24	The whole of the mucous membrane was much thickened and rugose.	.....	Pain, frequent micturition, and hæmaturia for two years, the bleeding being often only at the end of micturition.	Median perineal urethrotomy, and tube in bladder for five days.	No improvement.	.....	Lancet, Feb. 10, 1883.
66	Sir H. Thompson	m.	52	Nothing unnatural detected.	.....	Painful and frequent micturition for one year; urine purulent but no blood.	Median perineal urethrotomy, and tube retained in bladder eight days.	Relieved; pain slight and urine much improved.	.....	Lancet, Feb. 10, 1883.

For Cases No. 5, 14, 29, 30, 31, 32, 33, 40, 41, 50 we are indebted to Stein and Gross.