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A Contribution to the Surgery
of the Bladder.

BY

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NEW YORK.

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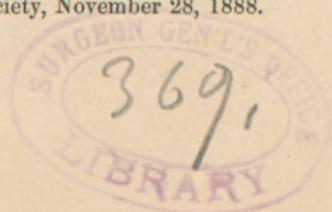
BY WILLY MEYER, M. D.,

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THE great interest that has been taken in the diseases of the bladder by surgeons of all countries for many years past has not yet relaxed. The question is still under discussion, Which is the most preferable operation of opening the bladder for the removal of stones or tumors? Surgeons have not yet agreed in regard to the best method of the after-treatment of epicystotomy, the operation lately so much more favored. The operative treatment of hypertrophy of the prostate is still in the early stage of its development. The improvement of the old cystoscope has created a perfectly new branch of surgical diagnostics.

At such a time the experience of a single man, gained even from a comparatively small number of cases, may be of interest to others, and I am of the opinion that it is the duty of all surgeons to publish their operative cases of diseases of the bladder, whether the result may have been good or bad. Only in this way can the important questions mentioned above reach a definite solution.

* Read before the New York Surgical Society, November 28, 1888.



I do not hesitate, therefore, to put before you my experience in regard to the diagnosis and operative treatment of diseases of the bladder, which I have derived from a few cases in this line, coming under my treatment since I have been a resident in this country.

I shall not consider the question of the most preferable method of incising the bladder, whether above or below the pubes. Although I do not deny the great value of the median section in proper cases, I follow the views of my highly esteemed former chief, Professor F. Trendelenburg, director of the Surgical Clinic of the University of Bonn, and prefer suprapubic cystotomy, as not being in itself a dangerous operation. I adopt it, therefore, wherever I can, on account of its many great advantages—the easy manipulation inside of the vesical cavity, and the perfect view to be obtained by it of the interior of the bladder in the posture of the patient that has been advised by Trendelenburg.*

The points I propose to consider to-day, in reporting my own six cases of epicystotomy, are:

1. The best after-treatment of this operation; whether it be drainage of the bladder, † or whether we should prefer suture of the bladder.
2. The great value of cystoscopy in the preliminary examination of the patient.

* Willy Meyer, "Ueber die Nachbehandlung des hohen Steinschnittes sowie über Verwendbarkeit desselben zur Operation von Blasenscheidenfisteln," von Langenbeck's "Archiv," xxxvi, 3, p. 514.

† Drainage of the bladder has been tried in different ways (Willy Meyer, *l. c.*, p. 494). I consider drainage with the T-tube in latero-abdominal position and open-wound treatment (as proposed by Trendelenburg) the simplest and safest, and therefore the best. It has been combined with an antiseptic dressing of iodoform gauze around the tube (Assendelft, von Langenbeck's "Archiv," xxxvi, p. 170). Although the real effect of an antiseptic dressing naturally is illusory in most of these cases, it may be handier now and then, especially in private practice.

Of the six suprapubic cystotomies recently performed by me, four were done for tumor of the bladder (one for recurrent cancer), one for stone, and one for foreign bodies. I shall report them chronologically.

CASE I. *Papilloma and Multiple Villous Growths of the Bladder*.*—M. G., a native of Germany, a merchant, fifty-two years old, had been a healthy man up to March, 1886, when, without any previous warning, he suddenly passed bloody urine for two days. Four weeks later a more serious hæmorrhage from the bladder set in. Since that time the patient had suffered from frequent hæmaturia, especially at the end of micturition, catarrh of the bladder, pains in the glans, and now and then sudden stoppages in the flow of urine. His family physician had treated him for chronic catarrh in the usual routine way without any material benefit. On one of the first days in October retention of urine occurred. The catheter was introduced and the bladder washed out. A chill, with consequent high fever, pains in both lumbar regions, and aggravation of all the symptoms, resulted. The patient then consulted Dr. A. Jacobi, who advised an operation, and sent him to me for that purpose.

When I saw the patient first, October 26, 1886, he was very weak and still feverish. He passed his water about every fifteen minutes with great difficulty and excruciating pains. There was tenderness on pressure in both lumbar regions. The beak of a large-eyed silver catheter was caught in a soft mass immediately upon entering the bladder; moving the instrument caused bleeding. On withdrawing the same, a large shred of tissue was found in the eye, evidently torn off from a larger growth. On macroscopical examination and under the microscope I found this to be a piece of a villous papilloma. This was, most probably, growing at or near the trigonum, and pedunculated, as it sometimes closed the internal urethral orifice in urinating. The chemical and microscopical examination of the urine showed symptoms of pyelonephritis besides those of chronic catarrh of the bladder.

* Cf. "New York Medical Journal," 1888, No. 16, p. 431.

Having by these examinations established the diagnosis, I proposed to remove the growth by suprapubic cystotomy, then to drain the bladder, and in doing so to drain also the pelves of the kidneys. The operation was performed on October 28th. About thirteen ounces of warm water were thrown into the rectal colpeurynter and almost seven ounces of warm three-percent. boric lotion into the bladder. After the vesical wall had been incised to the extent of three inches the patient was placed in Trendelenburg's posture and I found a soft pedunculated growth of about the size of a medium-sized apple, its pedicle being about as large as the thumb, inserted a little above the trigonum, near the orifice of the right ureter. The greatest portion of the tumor was then cut off with the curved scissors. The hæmorrhage, in no way alarming, was controlled by small pieces of ice put into the cavity of the bladder. Then I pulled the posterior wall of the bladder forward with the help of Muzeux's forceps, and burned off the pedicle with the Paquelin cautery, cauterizing at the same time the wall of the bladder at this spot down into the muscular layer. (An arterial hæmorrhage from this spot was stopped by inserting under it a strong catgut ligature by means of a sharply curved needle.) A further careful examination of the bladder revealed a second tumor of the size of a cherry, a little to the right of and above the one just removed; and, furthermore, the fundus of the bladder was found to be covered with a great many velvety villosities. They were all easily removed with the sharp spoon, and the hæmorrhage was again checked by ice. (I do not know of any better styptic than ice in vesical hæmorrhage after having opened the bladder; but hot water may have the same good effect.) Now Trendelenburg's T-tube was inserted and the prevesical space loosely packed with iodoform gauze. The abdominal and vesical wounds were left open for the sake of establishing in this manner a thorough drainage for the secretion of the septic pyelonephritis—latero-abdominal position. The effect of this procedure soon became apparent. The same night there was still a slight fever, but on the following day the temperature was normal and never rose again. The septic symptoms quickly disappeared and the patient made a quick recovery. The tube was

removed on the eighth day after the operation. Twelve days later the first urine was passed by way of the urethra. After five days more it came in a strong stream, nothing escaping by the abdominal wound. The patient got up and soon was outdoors. During the next few weeks a fistula established itself in the lower end of the abdominal cicatrix that induced me to make an incision and cut away the mucous membrane of the bladder that was lining the canal. This was done on January 4, 1887.

On the 29th of March the wound was firmly closed. The patient was able to work, and enjoyed life. He had gained considerably in weight, and passed his urine every three or four hours. I then lost sight of him. Six months later I saw him again. A ventral hernia had developed and the capacity of the bladder decreased. He urinated every two hours, and had slight tenesmus. He refused further treatment, but went around to consult other doctors. About a year after the operation I examined him again. He had then incontinence but no hæmaturia. There was about 50 per cent. of albumin in the filtered urine. I proposed an incision in the cicatrix, to establish a permanent fistula. He refused. As far as I could ascertain by inquiring, he died in May of this year (eighteen months after the operation) of dropsy and suppurative bilateral nephritis.

CASE II. *Medullary Carcinoma of the Bladder.*—H. T., sixty-five years old, waiter, a native of Switzerland, had suffered from frequent attacks of painful, difficult micturition during the last six years. These attacks came on at intervals of about two weeks. In the mean time he felt comparatively well and strong enough to attend to his work. About a year ago hæmaturia was first observed. Since that time the vesical symptoms have been permanent. Not infrequently he voided particles of the tumor, sometimes as large as a medium-sized oyster, during an act of painful micturition and accompanied by a serious hæmorrhage. Vesical incontinence supervened six months ago. The patient was confined to his bed and became very emaciated. He lost forty pounds of flesh during this time.

On admission to the German Hospital, patient is very weak and extremely anæmic. The pulse is small—120; afternoon

temperature about 102° F. There is a round elastic protrusion above the symphysis, reaching up to the middle between it and the umbilicus. The spot is dull on percussion. Bimanual palpation reveals a large semi-solid mass filling the bladder. The left lumbar region is painful on pressure. Examination of the urine shows symptoms of catarrh of the bladder and pyelonephritis. (Albumin five per cent. in urine which had been filtered.) The capacity of the bladder was barely three ounces, even in deep narcosis. Cystoscopy was practiced, but the field of vision remained dark, although the mignon-lamp was fully incandescent before introducing the instrument. I did not expect much from cystoscopy in this case, especially as the capacity of the bladder was so extremely small. But I believe that a negative result of cystoscopy of this kind, provided the fluid in the bladder is clear and the window and prism of the cystoscope are not found to be covered by a coagulum at withdrawal, justifies the diagnosis of a growth of large size.

Epicystotomy was performed on April 24th, of course with no other intention than to relieve the patient's deplorable condition somewhat and to establish a vesical fistula. The rectal colpeurynter did not hold more than about four ounces; the bladder held less than three. The tumor proved to fill the entire bladder. It was impossible to remove it otherwise than piecemeal. The growth was attached a little above the mouth of the left ureter with a broad base. The latter was well scraped with the sharp spoon and then destroyed with Paquelin's cautery in Trendelenburg's posture. The hæmorrhage, not being alarming, was easily controlled with ice. After thorough irrigation of the wound and the bladder, and dusting with subnitrate of bismuth,* the upper part of the abdominal wound was closed with four silkworm-gut sutures, the prevesical space loosely packed with iodoform gauze that had been thoroughly washed in Thiersch's lotion to remove as much of the drug as possible, and the T-tube inserted.

* I am very careful with iodoform in operations on the bladder of old patients, having seen poisoning even after the use of minute quantities. No patient has died, however.

April 25th.—Patient comfortable. Rectal temperature 99·5°. Drainage-tube worked nicely.

May 7th.—The T-tube is removed and a simple straight rubber tube of medium size introduced in its place. The bladder is frequently washed.

14th.—Temperature normal. A small amount of urine escapes by the urethra, the most part by the fistula, which has been well established at this time. Measured quantity of urine passed in twenty-four hours, two pints. Patient has picked up somewhat.

21st.—Now and then particles of tumor are thrown out of the bladder in washing it. The urine shows blood.

June 1st.—*Exitus lethalis.*

The autopsy disclosed a recurrence of the growth within the bladder to a marked degree; suppurative pyelitis in the left kidney and a great distension and thickening of the left ureter. In the abdominal cavity about three ounces of pus were found between the coils. No symptoms of peritonitis having been present during life-time, I am inclined to think that the pus perforated from the left kidney shortly before death. The internal organs were free from suppuration. Hence we can not think of pyæmia as the cause of the abscess. No secondary deposit in other parts of the body.

CASE III. *Foreign Bodies in the Bladder; Nephrolithiasis (?)*.—B. v. P., forty-one years of age, a native of Germany, artist, was admitted to the German Hospital as a private patient, May 22d, this year. He had always been a healthy, stalwart man. Three years ago he was suddenly attacked by left renal colic and hæmaturia. Since then the latter had been intermittent. Frequently the first drops were mixed with blood during micturition; then the urine was clear. Now and then he passed pure blood. He had been examined and treated by the most eminent surgeons of Berlin without a diagnosis having been strictly established and without any remarkable benefit in regard to his troubles. According to the advice of one of the gentlemen, he had his bladder washed out with a mild solution of permanganate of potassium for a long time. Eight weeks ago a severe catarrh of the bladder set in. Now and then small particles of

a semi-solid substance were pressed through the urethra. In passing water the flow of urine was frequently interrupted. The patient suffered greatly; he became emaciated and subject to the opium-habit.

Although the patient exhibited more or less the symptoms of stone, I was unable to find any on careful examination. There also were no traces of a vesical new growth. The urine, muddy and of alkaline reaction, contained three per cent. of albumin. Under the microscope, red blood-corpuscles, pus, and mucus were found in it, but no casts. A thorough bimanual palpation of both lumbar regions of the anæsthetized patient revealed a tumor of about two fists' size in the left hypochondrium, of the presence of which the patient had not the slightest idea. It had a smooth surface, and evidently belonged to the left kidney. Being convinced that the latter organ was the cause of the whole trouble, I intended to tap it for the sake of the differential diagnosis, to ascertain whether we had to deal with a tumor or with nephrolithiasis. But, as all the subjective symptoms pointed to vesical trouble, recourse was first had to cystoscopy. It had to be done under chloroform, the bladder being extremely irritable. The examination was a great surprise to all present. As soon as the instrument entered the bladder and the light was turned on I saw a few (four or five) curiously shaped, more or less flat, bent bodies of black color and covered with a deposit of white salts, tumbling over each other, but evidently of soft consistence. They frequently touched the beak, but gave no sound of stone. Besides these bodies, there was no stone, no tumor, only evidence of catarrh.

To establish a diagnosis in regard to the nature of these bodies from this cystoscopic picture was entirely impossible. None of us had ever seen anything like them. The most probable supposition seemed to be that of coagulated blood which had descended from the left kidney. But in that case the semi-solid condition and peculiar shape of the bodies remained unexplained. Nevertheless, the result of cystoscopy was highly satisfactory. We had seen, at least, the cause of all the *vesical* troubles, of the presence of which no searcher, no bimanual palpation ever had given or could give the slightest trace. It

is worth mentioning that no vesical hæmorrhage set in during all these manipulations, but that a bimanual palpation of the tumor in the left hypogastrium caused immediate abundant bleeding, which lasted for nearly twenty-four hours. In view of this accident and of the result of cystoscopy, the plan of operating was:

1. Epicystotomy for the removal of these bodies, and catheterization of both ureters, if possible, to gather the excretion of each kidney separately for the sake of a distinct diagnosis.

2. Nephrotomy or nephrectomy, according to the result of tapping, or, if the latter gave no positive result, exploratory incision.

On May 28th I opened the bladder above the pubes. (The peritonæum reaching far down near the symphysis, its prevesical fold was opened by mistake to the extent of about a third of an inch. This wound was immediately closed by a continuous catgut suture, and covered with a pad of iodoform gauze during the rest of the operation. There was no bad result whatsoever.) I removed about eight bodies of various sizes. They were of a semi solid substance, flexible, of black color, and covered with white salts, just as we had seen them through the cystoscope. Chemical analysis showed that they consisted of 60 per cent. organic substance (fibrin), and 40 per cent. permanganate of potassium. (The specimen was presented to the society.) The bladder proved to be healthy. The attempt at catheterizing the ureters was unsuccessful on account of the lack of proper small rubber catheters. The mouth of the ureters was well visible in Trendelenburg's posture and with illumination of the bladder by electric light. In pressing the tumor on the left side *now*, we did not succeed in producing a hæmorrhage. The wound in the wall of the bladder was then closed from above and below by several iodoform-catgut sutures up to an opening of about three quarters of an inch, through which the T-tube was introduced. The abdominal incision was also stitched up in its upper two thirds. Dressing as described above. Patient made a quick recovery. His temperature was normal all the time, except on the first and fourth days after the operation, when the thermometer registered 101°.

June 2d.—Removal of the iodoform-gauze tampon in the prevesical space. Patient doing very well.

8th.—T-tube removed. Abdominal wound healed by first union.

11th.—Patient out of bed.

16th.—Urine passed *per urethram* for the first time.

21st.—Wound closed. Only slight catarrh of the bladder. Patient sleeps without morphine; gains in weight constantly. Discharged at his special request, not wanting a second operation performed on himself right away. As far as I could ascertain lately, patient is doing very well. Whether hæmaturia returned I am unable to say.

CASE IV. *Stone in the Bladder.*—B. H. D., fifty years of age, merchant, was admitted to the German Hospital as a private patient, June 18th, this year. For several years he had been troubled with chronic gastritis; otherwise he had been healthy. Returning from his summer resort in the mountains, he was seized with symptoms of stone, June, 1887. A thorough examination, which was made at that time, failed to detect any stone, and he was advised to take proper drugs. But, his condition getting steadily worse, his family physician courteously sent him to me for cystoscopy, June 11th. The patient's bladder being extremely irritable, and examination with the searcher having been accompanied before by great agony, I yielded to the patient's demand and immediately introduced Leiter's cystoscope. Having turned the instrument 180°, I saw at the first glance, as clear as in perfect daylight, an oval-shaped, brownish body, covered with white spots, of the size of an almond, lying in a groove behind the swollen prostate gland. It threw a very marked shadow upon the opposite wall of the bladder. Having turned off the light, I touched it with the beak of the instrument, and got the sound of stone.

June 19th.—Epicystotomy. Stone easily removed. Shape and appearance confirmed as diagnosticated with the cystoscope. Treatment as usual. Temperature in the first seven days constantly somewhat above the normal; general condition good.

26th.—T-tube removed.

July 2d.—Urine passed by way of the urethra for the first time.

20th.—Patient discharged. Wound superficially granulating. Since two days no urine escapes above the pubes. Patient leaves soon for the mountains.

When seen again, September 21st, he relates that the rest of the wound was entirely closed about the middle of August. At this time a flat, painful swelling had formed on the right side of the symphysis. It suddenly disappeared when he passed a quantity of pus with his urine on the 27th of August. (Most probably a pericystitic abscess had formed and perforated into the bladder.) To-day patient is all right.

CASE V. *Recurring Cancer of the Bladder.*—N. B., fifty-five years of age, merchant, was operated on by Dr. F. Lange, of this city, in his private hospital, for cancer of the bladder, October 13, 1886. Epicystotomy had been performed, the tumor removed by an ellipsoid incision, which included a part of the muscular layer of the wall of the bladder, and the latter wound closed by stitches. The bladder then was sewed up by an interrupted iodoform catgut suture and drainage obtained through a Nélaton catheter, passed by the urethra. The bladder healed by first intention. Patient left the hospital on October 30th, cured. He had very much improved and attended to his business, when, eight months later, a new hæmaturia with irritability of the bladder set in. Dr. Lange, as well as other surgeons who were consulted, refused to perform a second operation, there being no hope for a radical extirpation of the growth. But the establishment of a permanent vesical fistula was thought of as soon as the operation seemed to be urgent. It was decided to defer it as long as possible. On July 14th, this year, Dr. Lange being out of town, the patient came under my observation through the courtesy of Dr. J. H. Asch. I found him in a deplorable condition. Every ten to fifteen minutes he urinated with great agony, passing each time also a small amount of thin, very offensively smelling fæces. Prolapsus ani and tenesmus increased his sufferings. A hard, uneven tumor filled the space above the pubes, fully four fingers in width; it was ad-

herent to the symphysis and pubic bones, and gave dullness on percussion. There was a slight ventral hernia in the cicatrix. Pressure in the lumbar regions, especially in the left, caused great pain. The urine was scarce and muddy. Its analysis showed catarrh of the bladder and pyelonephritis. Frequent chills, tongue dry, stomach rebellious, not retaining any food; temperature 105°, pulse 156.

Although the patient's condition was not very encouraging for operative interference, I proposed, after consulting with Dr. Asch, suprapubic cystotomy to the family, not concealing the risk that death might be expected on the operating table. On July 16th I performed the operation. No colpeurynter in the rectum. Bladder filled with three ounces of Thiersch's solution. On account of the ventral hernia and in order to have ample room, I used the Günther-Trendelenburg cross-incision.*

Making my way down to the bones, by an incision three inches in length, I found the cicatrix in front of the symphysis well provided with blood, and saw the prevesical peritoneal fold about half an inch above the symphysis, entirely adherent to the tumor. But I failed to feel the bladder distinctly. The patient then was put in Trendelenburg's posture and a small-bladed knife deeply thrust into the tissue just in front of the symphysis. Blood rushed out of the wound in large amount, but not a drop of the injected water escaped. It was evident that I had incised the tumor. The bladder had to be looked for somewhere else. I loosened the elastic temporary ligature around the penis; the water escaped. I injected again and was able to throw in the same amount as before—about three ounces. The hæmorrhage from the tumor having been checked by ice and loose packing with iodoform gauze, I went to search for the bladder. Strictly following Trendelenburg's rules† as to how to get down even to the empty bladder in epicystotomy without the help of the rectal tampon, I peeled the tumor off

* Eigenbrodt, "Ueber den hohen Blasenschnitt," "Deutsche Zeitschrift für Chirurgie," xxviii, p. 66 *et seq.*

† Eigenbrodt, *l. c.*, p. 70.

the posterior aspect of the symphysis and pubic bones with the second and third fingers of my left hand, turning the pulps toward the abdomen. I succeeded in loosening the growth, and there, down in the depth, *below the tumor*, I felt the gently distended bladder, of the size of a pear, pressed against the rectum and perinæum. I fixed it between the left second and third fingers, and incised it to the extent of about an inch and a half. Now the water poured out. After thoroughly scraping the bladder the T-tube was put in, the bladder well irrigated with a mild boric-acid lotion, the wound sewed up on both sides of the tube and drained in the angles with iodoform gauze, which also loosely filled the wound. Latero-abdominal position; stimulants.

The patient stood the operation remarkably well. On the next day the pulse went down to 108 and the temperature to 99.8°. The tongue was less dry. The bladder was washed out three times daily with a mild boric-acid solution. The septic enteritis alone gave some trouble. But it was overcome, too, after a short time by antiseptics frequently administered by the mouth. The sutured portion of the wound, although being entirely without reaction, did not unite, however. When the stitches were removed the wound gaped, but the granulations showed a healthy appearance. On the twelfth day after the operation the T-tube was changed for a straight one. On the 7th of August (the twenty-second day after the operation) the patient was out of bed for the first time. Meanwhile a slight œdema of the left lower extremity and left side of the scrotum had developed. The tube in the bladder worked very well. There never was any leakage in the fistula, except when a piece of tumor occluded the internal opening of the tube. Frequent flushing with a strong current then always removed the obstruction in a few days. Without any fever or new septic or uræmic symptoms, patient died from marasmus, September 20th, nine weeks and a half after the operation.

Post-mortem Examination (involving only the uropoietic system): Medullary growth (cancer) of about the size of a baby's head above and in front of the bladder. Peritonæum all around adherent but nowhere perforated. A portion of the tumor pro-

jects into the bladder. The latter is very small, attached to the growth, its mucous membrane hæmorrhagic in many spots. Both ureters, greatly distended and thickened, pass through the tumor in a curved line. They can be probed without difficulty. Left kidney represents a large sac filled with pus, that breaks at the attempt of removal. Only a small zone of its glandular tissue is left. The rest is in chronic inflammation, as also is the right kidney, which exhibits a less destructive appearance. The posterior wall of the growth is firmly attached to the sigmoid flexure. It compresses the large vessels below, especially the common iliac vein. Small metastatic cancerous growths in both kidneys only; nowhere else. [The specimen is demonstrated to the society.]

CASE VI.—A. D., sixty-five years of age, a native of Russia, was sent to me through the courtesy of Dr. A. Jacobi for hæmaturia. For two years he had had frequent pains in the glans; three months ago hæmaturia set in and has not stopped up to the present time. In washing the bladder at my office, it was found that the lower portion of it was very irritable. Water and catheter were speedily pushed out on attempts at slowly throwing in a very small amount of water. But, by conducting the instrument gently forward and depressing the handle, I succeeded in filling the bladder with about three ounces of water, the patient not being under ether. It seemed as if the bladder was divided into two parts, the lower being more diseased than the upper one. The prostate gland was very much enlarged in its entirety. Urine was scarce—about twelve to thirteen ounces in twenty-four hours. It contained a great deal of blood and some albumin. It was slightly sour. Microscopic examination showed blood and pus cells in great quantity. With Nitze's cystoscope I detected a sessile growth of about the size of a small hazel nut in the upper part of the left side of the bladder. It had apparently a broad base (as it did not move on shaking the lower portion of the abdomen) and showed a few big papillæ. A small coagulum was adherent to its surface; the latter had a grayish-white color. About an inch lower down two more slender growths projected into the cavity of the bladder, floating up and down in the water. I concluded from the picture

that all three growths probably were inserted on the same base, although their different appearance was strange and the mucous membrane between them appeared not to be materially changed. During the first examination the water became bloody, but I did not see the blood dripping down from the tumor. The mouths of the ureters I had no time to search for, the patient being in great agony to get rid of the injected water. On account of the result of cystoscopy, I proposed epicystotomy, not being quite sure that the tumor was the only trouble. Perhaps the *constant* hæmaturia was partially due to kidney disease; but, if so, I hoped to see bloody urine spurting out of one of the ureters during the coming intravesical manipulations.

On November 16th (twelve days ago) I performed the operation at the German Hospital. Before it was begun, cystoscopy was once more performed, the patient being under the influence of chloroform. I again saw very plainly the sessile growth as described above, and so did all the gentlemen present. But those two slender tumors were found lower down on the right side of the trigonum. I have no doubt that they had been detached from their base by the water that was repeatedly thrown into the bladder with some force by means of a syringe to get it clean, and then fallen down upon the trigonum. This explanation also reveals why they could not be found afterward when the bladder was incised. The outpouring water evidently threw them out. Again the mouth of the ureters could not be detected. But I must confess that I did not take sufficient time to search for them, the patient being under chloroform. In regard to the operation itself I used again the cross-incision three inches long. (There were about four ounces of warm water in the rectal colpeurynter and five ounces of Thiersch's solution in the bladder.) After dividing the insertion of the fascia, recti muscles, and the flat lower portion of the linea alba, the prevesical fat came into view. Now the patient was put into Trendelenburg's posture, the peritonæum pushed up with two fingers of the left hand, and between them the bladder incised about two inches and a half in length. The searching finger felt a small infiltrated spot at the location made out with the cystoscope. But, in looking at it, the bladder being held open by broad retractors, only

the infiltrated bleeding base could be plainly detected; there was no projecting growth. It had evidently been of the same soft tissue as the other two, and my finger had unintentionally pushed it off. No more growths could be found, the bladder being illuminated by electric light, but on the opposite (right) wall of the bladder there was a flat infiltrated spot of a more yellowish color of about the size of a five-cent piece. The mouths of the ureters even now could not be seen. But the trigonum Lieutaudii and the anterior wall of the bladder formed a kind of funnel which led to the internal urethral orifice, and out of it ran blood, whether at intervals I can not say. I regret very much not having gathered some of this blood, as I am nearly sure, in thinking of the case *now*, that it was bloody urine. The rest of the new growth in the wall of the bladder was destroyed by Paquelin's cautery, as also was the suspicious portion on the other side. Then I sewed up the upper third of the wound of the bladder with iodoform catgut, put in the T-tube, and partially closed the wound in the abdominal wall. Both angles were left open; they were passed by small long strips of iodoform gauze which loosely filled the prevesical space. Now the patient was put to bed, the pulse being fair—about 84 and of good quality. I was unable to see the patient within the next twenty-four hours. Then I found him in a comatose condition, in which he was said to have been since early in the morning. (The night before he had taken water several times and answered the nurse's questions in a reasonable way.) The abdomen was soft, tongue moist, wound without reaction. Pulse extremely weak, despite constant stimulation for twelve hours; pupils of medium size, not reacting. He had passed scarcely six ounces of urine slightly tinged with blood in twenty-five hours; otherwise the T-tube worked well. Water thrown into the bladder by means of a catheter introduced through the urethra escaped out of it perfectly clear. We continued to stimulate the patient, but he died the same night, at 11 P. M.

A post-mortem examination was refused by the relatives in spite of my earnest demands. I feel pretty sure that the cause of death was uræmic coma, as we find it sometimes occurring after somewhat protracted manipulations inside of the bladder

of older subjects, especially if the kidneys are diseased. It is not improbable that some serious trouble, perhaps a malignant growth, also would have been found in one of them by post-mortem examination, although I had not succeeded in feeling a tumor in one of the lumbar regions.

Certainly the fatal result was not due to the suprapubic incision. The wound was in perfect condition. I again found the cross-incision very advantageous. It was very easy to see and avoid the peritoneal prevesical fold, that reached here down pretty near to the symphysis, with the help of this method. There was ample room to operate inside the bladder. I should like to recommend the cross-incision very highly. I shall use it in future wherever I can.

It did not need this experience of successful after-treatment of epicystotomy, as described in my own practice, to convince me of the great value of Trendelenburg's method. During the time I was assistant surgeon to the surgical clinic of the University of Bonn I saw six patients* attended in this manner (three of them I attended personally). Although two of the patients died soon after the operation, the fatal result was not due to the mode of proceeding. A few months ago Professor Trendelenburg had published† forty-two cases (those six included) of epicystotomy for various troubles of the bladder. All of them were drained with the T-tube in lateral position for the first days. The result was, as far as this mode of treatment is concerned, always satisfactory. (The cross-incision that was proposed by Günther thirty-seven years ago and is now again practiced by Trendelenburg [cf. my Cases V and VI] is highly recommended in this treatise.) Others also have reported favorably upon it.‡ But, nevertheless, it is not

* Willy Meyer, *l. c.*

† Eigenbrodt, *l. c.*

‡ Assendelfft, "Chirurgische Erfahrungen eines Landarztes," Dorpat, 1883; "Archiv f. klin. Chir.," Bd. 36, Heft. 1; Rodziewicz, "St. Petersburger med. Wochenschr.," 1885, No. 8.

the *ideal* after-treatment. This is undoubtedly the suture of the bladder as soon as the intravesical trouble has been treated. If the results gained with it have not as yet been always satisfactory, the cause, it seems, has to be looked for in a failure to select suitable cases, and furthermore, probably, in the insufficient accuracy and technique of the surgeon. It seems that the latter is the main thing. This is proved by the statistics of van Iterson* (ten primary unions out of twelve cases of epicystotomy with suture) and those of Dr. F. Lange, of this city, who has been kind enough to allow me to mention his results in this paper. Lange had primary union seven times out of eight cases of suture of the bladder. (In the one case, patient of sixty years, where no direct union was obtained, slight leakage commenced on the fourth day on account of great restlessness of the patient. Otherwise the patient made a quick recovery.) Dr. Lange intends soon to publish the cases, † together with the details of the technique employed. Neither of the two surgeons used the funnel-shaped incision, as proposed by v. Antal ("Ctrlbl. f. Chir.," No. 17, 1885).

But, even in view of this wonderful and highly remarkable success of the two authors mentioned, I think suture of the bladder ought not to be practiced in all cases of epicystotomy. Undoubtedly Tredenburg's method of after-treatment is not only very simple and easily applicable, even without proper assistance, ‡ but it is *safe*. The free drainage of the bladder also drains the suppurating pelves of the kidneys. As long as the ureters are not obstructed, a retention of infectious material up there is utterly impossible.

The method provides also for an easy and convenient way

* "Centralblatt für Chirurgie," 1886, ix, ref.

† "Medicinishe Monatsschrift, Organ für practische Aerzte in Nord-Amerika," New York, Jan. 15, 1889.

‡ Assendelfft, *l. c.*

of washing out the diseased bladder thoroughly, since there remain two openings in it. This is of great importance.

In regard to the time of healing, only slight differences have so far been recorded. According to Kraske's advice, the abdominal wound is generally left open and loosely packed with iodoform gauze in suture of the bladder. If we succeeded in closing this wound in the granulating stage by secondary suture, as Lange proposes to do (about the fourth or fifth day), and leaving a drainage-tube in the lower angle of the wound, provided there is no leakage from the wound of the bladder, the time of healing would be materially decreased. Further experience is needed to decide this. Summing up, I should say on this question :

1. If there is no catarrh of the bladder, or only a slight one, the wound of the bladder ought to be closed by primary and eventually the abdominal wound by secondary suture.

2. If the catarrh of the bladder is serious and combined with septic suppurative pyelitis, the bladder ought to be drained.

3. In less serious cases both methods may be combined with advantage—*i. e.*, the greatest part of the wound of the bladder may be sewed up, and only a small spot in the middle left open for passing the tube.

In regard to cases of malignant growths of the bladder, which could not radically be removed with resection of the diseased portion of the vesical wall, I should like to raise the question whether it might not be better for the patient that we should always operate with the intention of establishing permanent fistula. V. Dittel's apparatus would greatly lessen the discomfort resulting from the fistula. If the growth returns, a second, usually more difficult, cystotomy will thus be spared.

One more word I should like to say in regard to the great advantages of Trendelenburg's posture, which, as it

seems, has not been sufficiently tried by American surgeons.

Every surgeon who has once employed this posture for intravesical operation has enthusiastically acknowledged*



Trendelenburg's posture. (From an article by the author in von Langenbeck's "Arch. f. klin. Chir.," xxxi, 3.)

* Küster, "Sammlung klin. Vorträge," Nos. 267, 268, p. 52; Keyes, "Suprapubic Cystotomy," etc., "Jour. of Cutan. and Genito-urinary Dis.," July, 1887; Lange, *l. c.*; Gerster; and others. Only Géza v. Antal has found "little advantage" in this posture in the removal of tumors of the bladder by means of the suprapubic incision. "Spec. chirurgische Pathologie u. Therapie d. Harnröhre u. Harnblase," Stuttgart, 1888.

its great advantages. It is by all means preferable to illumination of the inside of the bladder with an electric surgical light while the patient is flat on his back. The electric light ought to be used rather in that posture when the trigonum Lieutaudii, usually the most interesting spot within the bladder, is not covered by blood and urine, but, being the highest point in the bladder, may be sponged and kept dry. To be entirely satisfied with the posture, it should be kept in mind that the pelvis is to be raised sufficiently high (figure). Many fail in that respect. Eigenbrodt emphasizes the fact* that this elevation helps the surgeon to avoid the prevesical peritoneal fold at the time of incising the bladder.†

On the great value of cystoscopy I can not add much to what I had the honor to say before another meeting of surgeons a few months ago.‡ Since the improved instrument has been in the market, it has been applied wherever surgery of the bladder is practiced. A few favorable reports have been published already; more are to be expected.

In regard to the instrument of Nitze and Leiter itself, I should like to say this after a ten-months' experience: Nitze's cystoscope has one great advantage, namely, the short beak, as we find it in Mercier's prostate catheter (about half an inch shorter than in that of Leiter). As cystoscopy is and will usually be applied at the first examination of the patient without giving ether, and as the irritable bladder can sometimes only be distended to a very

* *L. c.*, p. 72. Cf. Lange, "Med. News," Dec. 4, 1886.

† This posture is of great advantage also in intra-abdominal operations where the seat of the trouble is in the true pelvis. The latter will thus be found very easily accessible even in its depths. (Mendes de Leon, "Ein neues Untersuchungsverfahren," "Ctrbl. f. Gynäk.," 1888, No. 21; Heyder, "Ctrbl. f. Chir.," 1888, No. 57, p. 939; Lange, *l. c.*)

‡ "New York Med. Journal," 1888, p. 426.

small degree* (although the use of cocaine may enable us to inject a proper quantity—five ounces), the tip of a short beak will not touch the wall of the bladder so often as a longer one. The touch nearly always causes a burning sensation. The second disadvantage of Leiter's cystoscope—the short shank—has lately been removed. The newest pattern has the same length as that of Nitze. A sufficient length is an absolute necessity. It once happened to me in a patient, sixty-four years of age, with tumor of the bladder combined with hypertrophy of the prostate, that Leiter's instrument (with a short shank) did not enter the bladder at all, the urethra being materially lengthened. I then tried Nitze's. I easily succeeded with it and saw the tumor.† But I saw in this case everything dark-red and somewhat indistinct. I thought the water was mixed with blood; but when the cystoscope had been withdrawn, the water came out clear. On further examination, I found a very thin coagulum of blood on the prism. This, I think, had tinted the rays returning from the wall of the bladder. It was as if I had looked through a red glass. I found these adherent coagula oftener when I first began to practice cystoscopy, especially in cases with hypertrophy of the prostate. I had the impression that the recesses of the cystoscope at the window (Leiter), or the lamp itself (Nitze), had something to do with it, glycerin having to be used as a lubricant. Since I have made it a rule first to inject glycerin into the rear portion of the urethra by means of a rubber catheter, I am rarely troubled in this respect. To buy a second cystoscope for the fundus is unnecessary. Up to date I have always succeeded in inspecting the fundus and trigonum with the

* In some cases I have had to satisfy myself with throwing into the bladder three to three ounces and a half. But even then I have usually had a satisfactory view.

† In practicing cystoscopy with Nitze's instrument it has to be kept in mind that its telescope magnifies.

mouths of the ureters by simply turning the instrument 180° and depressing the handle. The inconvenience to the patient is slight. But both instruments do not illuminate the *internal* orifice and its immediate neighborhood. As is known, Nitze constructed his cystoscope, No. 3, for this purpose and praises its great advantages. A few days ago I received a communication by Dr. Nitze, notifying me that, after many experiments and trials, this instrument was now also ready for sale, but would be improved further in the nearest future. I shall report on its supposed advantages as soon as possible. Leiter's electric battery, specially constructed for the purpose, has also been greatly improved. He now sells a smaller and very powerful one containing twelve elements, the cells to be filled or emptied in a few seconds. The whole case is made of hard rubber. A small six-cell battery of the Galvano-Faradic Company of New York answers the same purposes.*

How comparatively easily and yet distinctly we may succeed in clearing up obscure diseases of the bladder is plainly proved by my third and fourth cases. Even very experienced surgeons, who had examined the patients before, had been unable to come to a satisfactory conclusion.

I should like to report one more very interesting and, I think, quite rare case yet, where the diagnosis had been established by the cystoscope and proved to be right by treatment.

I. P., sixty-two years of age, merchant, was sent to me by a well-known physician of this city for cystoscopy on account of a foetid catarrh of the bladder consecutive to hypertrophy of

* F. N. Otis, "Papillomatous Tumor of the Bladder demonstrated by Means of Leiter's Electro-cystoscope," "Med. Record," 1888, p. 493. Whether this battery destroys the filament of the mignon-lamp easier than that of Leiter, which allows of regulating the strength of the current very exactly, I do not know.

the prostate. The patient had formerly been successfully treated with antiseptic irrigations of the bladder and proper drugs. During his stay at a sea-bathing resort near by (last July) he caught a cold, according to his story, and soon found his catarrh materially worse. He followed all the orders given to him as punctually as ever, but the trouble grew worse. Then he consulted his family physician, who sent him to me, presuming that a tumor or a stone might be at the bottom of the trouble. He had to introduce the catheter about every half-hour in the day and three or four times during the night. The urine was of a light grayish color and had an extremely fetid, gangrenous smell. Lately he had lost in flesh, although his appetite had always been excellent. I did not expect much of cystoscopy in this case. I resorted to it merely on account of the patient's and his doctor's request. But I was greatly surprised when I looked into this bladder. Although I had washed it out for nearly half an hour carefully until the water returned perfectly clear, I saw the whole mucous membrane of a grayish-black discoloration, more on the lateral sides and anterior wall than in the fundus and trigonum. Many long, thin coagula of mucus adhered to the wall and became fimbriated in the fluid. I most decidedly had the impression of "superficial gangrene" of the mucous membrane. This explained the terrible smell of the urine, such as I had never met with before. At first I did not know how to interpret this picture. I never had heard or read of gangrene of the mucous membrane of the bladder in cases of hypertrophy of the prostate. I therefore ordered rest and the continuance of the former treatment, in which I fully concurred, asking the patient to report in four or five days. I did not, however, see him again until ten days later. The catarrh was unchanged, rather worse; he had again lost several pounds of flesh, although having a fair appetite. This made me suspicious. I made the sugar test and found about four per cent. of sugar. Upon this a strict antidiabetic regimen was ordered, together with the administration of opium, etc. This caused decided improvement in a few days. Now the patient holds his urine for three or four hours, he gets up during the night only once, has gained in weight, and attends to his business.

I am inclined to look at this case as one of "diabetic gangrene of the mucous membrane of the bladder." The gangrene perhaps just affected the *bladder*, as it was the *locus minoris resistentiæ*. That the diagnosis is correct we may conclude *ex juvantibus*.

I could add many an interesting experience yet which I have had in the last few months. Unfortunately, I can not support all that I have seen in the various bladders by ocular inspection at the operation. A few of the patients refused the operative interference which I had proposed in order to effect proper treatment. Nearly all of them were examined at my office by myself alone, no colleague being present to verify my cystoscopic diagnosis. But, nevertheless, I may be allowed to mention in passing that I have seen in this time, among twenty more or less interesting patients (Cases III, IV, and VI included), five tumors of the bladder, two stones, once foreign bodies, and the case of gangrene of the mucous membrane as just reported.

There is no doubt, in my opinion, and no surgeon doubts it any more to-day, that cystoscopy has a great future. Of course we have to learn yet in many respects to recognize the disease in the picture, and may often be mistaken in explaining what we see, just as that occurs to the laryngologists, and very experienced ones, with diseases of the larynx. In many obscure cases of the uropoietic system the cystoscope will render great aid in arriving at a correct diagnosis. But, to be successful with it, it requires a close study and a great deal of personal experience.



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