

BURRAGE (W.L.)

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Howard Kelly's New Method of Direct
Inspection with Large Endoscopes.*

BY

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A CASE OF PRIMARY TUBERCULOSIS OF THE FEMALE BLADDER DIAGNOSED AND TREATED BY HOWARD KELLY'S NEW METHOD OF DIRECT INSPECTION WITH LARGE ENDOSCOPES.¹

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THE case I have to present to-night is of especial interest, both on account of the rarity of the disease, and, as illustrating the successful employment of a new method of investigating and treating diseases of the bladder and ureters in women, a method that is, in my opinion, as much superior to all former methods as the electric cystoscope was to digital exploration.

Our ability to see and treat all parts of the bladder interior directly, as I am about to describe, is destined to revolutionize diagnosis and treatment in bladder, ureteral and kidney diseases in women. We must see as well as feel ulcerated areas and new growths, and define their limits. The diagnosis, for instance, of urinary tuberculosis will no longer be deemed sufficient. We must be able to say whether or not the disease is confined to the bladder, or is located in one or the other ureter or kidney, or in all.

Before reporting the case it is my purpose to say a few words as to the usual methods of bladder exploration, and then briefly describe the new method, and show you the instruments.

The previous recognized methods of exploration of the female bladder have been,

¹ Read before the Boston Society for Medical Improvement, April 9, 1894.



(1) Bimanual examination, with the uterine sound in the bladder, the finger in the vagina, and the other hand on the abdomen ; or, without the sound.

(2) Digital exploration, the urethra being first dilated to not more than twenty millimetres by means of graduated dilators and the finger.

(3) Endoscopy, by means of a straight tube of hard rubber about seven centimetres long and ten millimetres in diameter, open at its inner end and carrying a glass-tube closed at its inner extremity. The glass-tube projects a little beyond the hard-rubber sheath and has in it a little mirror inclined at an angle of one hundred degrees. The mirror being attached to a long handle may be moved forward or backward and turned around. Light from an Argand burner, or direct sunlight, is reflected from a head mirror to the little mirror in the tube and thence into different parts of the bladder wall. The rays of light pursue the same path back to the operator's eye at the focus of the head mirror.

(4) Cystoscopy, by means of an instrument made on the same plan as the endoscope, except that the source of the light is an electric lamp in the end of the instrument in the bladder.

(5) We must enumerate also examination of the interior of the bladder through a vesico-vaginal fistula or opening made by supra-pubic cystotomy.

Examination by touch has been of great use, and will continue to be ; but it cannot rival in value, either from a diagnostic or therapeutic point of view, examination by sight. With the endoscope and cystoscope the bladder has to be partly filled with a perfectly clear, transparent fluid in order to be inspected. In most bladder affections the urine is cloudy, and the walls can be cleaved with difficulty ; besides, the urine constantly coming into the bladder from the ureters may tend to render it cloudy ; and also only

a portion of the bladder interior can be inspected, owing to the necessary obliquity of the mirror in the instrument. We must add, as a further objection to endoscopy and cystoscopy, the distortion of the image, due to errors of refraction of the fluid media through which the light passes. Our knowledge of the appearance of the interior of the living bladder both in health and disease is largely due to the investigations of Mr. E. Hurry Fenwick, of London, with the electric cystoscope.

Catheterization of the ureters has been practised more or less extensively ever since Prof. G. Simon published his work on the subject in 1875. He dilated the urethra; then, passing his finger into the bladder, located the ureteral orifice by touch, and passed the catheter along his finger into the ureter.

Professor Pawlik, later on, improved on this method by demonstrating landmarks in the vagina which serve to locate the ureters; then passing the catheter into the bladder he observed the play of its tip on the anterior vaginal wall and directed it into the ureteral openings. He also improved the catheter. By Pawlik's method the dilatation of the urethra, with the attendant danger of subsequent incontinence, was done away with, and the seriousness of the operation lessened.

Professor Sanger at this time demonstrated that the ureters in their lower course can be palpated per vaginam.

Prof. Howard A. Kelly of the Johns Hopkins University published two valuable papers in the *Annals of Gynecology and Pediatrics* for May and August, 1893, in which he gave the results of his researches on the anatomy of the ureters and formulated exact rules for catheterization. He presented a new catheter.

It was not until January of this year that Howard

Kelly published in the *American Journal of Obstetrics* his article on "The direct examination of the female bladder with elevated pelvis. The catheterization of the ureters under direct inspection, with and without elevation of the pelvis." I hand you a reprint of this article, which is the basis of my work. As you see the very good illustrations do away with the need of much explanation.

The main steps of the procedure consist in emptying the bladder with a catheter; in elevating the patient's hips from eight to twelve inches, so that the residual urine will run up to the fundus, and the weight of the abdominal viscera being removed the bladder is distended with air; in the gradual dilatation of the urethra and the employment of large, straight, open endoscopes, which, by the way, are fitted with handles for ease of manipulation; and in the use of a strong light from an Argand burner or electric lamp held near the pubes, and reflected into the bladder by a head mirror. The graduated dilators are passed until sufficient calibre has been obtained. Kelly says many take No. 16. I have found Nos. 12 and 14 to pass easily in most cases. Suppose a No. 12 dilator passes, then introduce the speculum of the same size and remove the obturator. Thus by means of a simple speculum and proper posture all parts of the air-distended bladder are rendered visible. To inspect the upper and anterior zones the patient is placed in the knee-chest position. If there is a pool of urine in the bladder it is removed by a simple suction apparatus. Applications may be made to all parts of the bladder and urethra. Small quantities of urine are removed by pledgets of cotton held in delicate mouse-toothed forceps, and applications are made with a cotton-wound applicator. The ureteral openings are seen as little slits in the mucous membrane, and if watched urine

may be seen issuing from them. A probe with a long handle bent at an obtuse angle is of use in verifying the position of the orifices. The ureters are catheterized with Kelly's catheter, the patient in position with hips raised, or flat on the table.

The necessary instruments are, four specula with obturators, Nos. 8, 10, 12 and 14; and four dilators, Nos. 7 and 8, 9 and 10, 11 and 12, and 13 and 14; mouse-toothed forceps; ureteral searcher, or long, bent probe; ordinary applicator; and one ureteral catheter. The dilators and specula are calibrated in millimetres; for example, No. 10 is ten millimetres in diameter, No. 12, twelve millimetres, and so on; a good light held near the pubes, is essential to success in this field of work.

I show you my set of instruments. I find two ureteral catheters more convenient than one, because the operator does not always care to spend the time to clean one catheter before catheterizing the second ureter.

While house-surgeon at the Woman's Hospital in New York I had the opportunity of following Dr. Nathan Boyeman's work on the bladder and ureters. In cases of cystitis and ureteritis he made a vesicovaginal fistula, and irrigated the bladder and catheterized the ureters through the openings so made. It was his routine treatment to irrigate the ureters and pelves of the kidneys by means of small English gum-elastic catheters. With a catheter in the pelvis of each kidney it was a part of my duty to catch the urine as it came drop by drop from the catheters — note the rate of flow on each side — and finally analyze each specimen chemically and microscopically. Today this work is done without cystotomy, and with nearly as great facility.

Mrs. J. F., twenty-six years old, married seven years, and sterile, was referred to me October 17th, 1893, by Dr. N. K. Noyes, of Duxbury.

From Dr. Noyes's notes and from conversation with the patient the following history was obtained: Grandmother died of heart-trouble; mother and father and two sisters living and well; uncles and aunts of father died of consumption. There was consumption on the mother's side a generation back. The patient was not very strong as a child, being subject to coughs and colds. At nineteen years of age she had whooping-cough and later in the same year rheumatic fever. At twenty-one she had pneumonia, and three years ago had the grip. Husband is living and well. She suffered with inflammation of the bowels when she had rheumatic fever, and has had an attack each year for the last three years, being sick in bed for two or three months with each attack; the abdomen during these attacks would be swollen and tender. She had absolutely no trouble with her urine until August, 1893, not even with the attacks of inflammation of the bowels. A short time before the beginning of Mrs. F.'s urinary difficulty she spent the night at a house where her sister's husband was dying of general tuberculosis, and she was in and out at the house a good deal at that time.

Dr. Noyes first saw the patient September 5, 1892, when she was suffering with an attack of what he diagnosed as subacute peritonitis. The abdomen was tender, very slightly swollen, and she had a temperature of from 99° to 101° for five or six days. She was in bed for a month, the pain and soreness being very persistent.

In December, 1892, she complained of a "bunch low down in front passage" and pain in the back. Dr. Noyes diagnosed retroversion, and treated her for it for three months by packing and then fitted a pessary. The pessary failed to keep the uterus in good position, however. She wore it until August.

August 30, 1893, Dr. Noyes was called to see patient, and found her suffering from severe pain in lower part of abdomen, associated with swelling and great tenderness. Temperature 103° . Large doses of morphia relieved the pain, and in two or three days the temperature declined to normal. Patient took a vaginal injection of a pint of hot water just after the beginning of this attack. Two or three hours after, she began to have painful micturition, and has had it ever since. Pain near the end of micturition, which was every hour or two; urine cloudy and often bloody. After a time the pain became nearly continuous, and the frequency of micturition was at times as often as every few minutes. The bladder was irrigated every few days with some relief. She was catheterized for the first time in September.

Previous to the occurrence of the urinary difficulty she had made arrangements to enter St. Elizabeth's Hospital for operative treatment for retroversion and supposed peritonitis. She entered the hospital October 17, 1893. I saw her on the following day and found a well-developed and nourished woman of large frame, and of dark complexion. The uterus was retroverted in the third degree, replacable, two-and-three-quarters inches deep; ovaries and tubes not felt because the vagina was very long and roomy and the abdominal walls thick and tense. She was put on salol, gr. v., t. i. d., and prepared for exploratory abdominal section and ventral fixation. Urine slightly cloudy; no albumin. Heart and lungs negative.

Operation, October 25, 1893. Ether. Curretting the uterus brought away very little tissue. On opening the abdomen with a three-inch incision the uterus was found on the floor of the pelvis in the third degree of retroversion. Ovaries and tubes normal to feel and sight. No adhesions anywhere. The bladder

wall felt thickened universally. Both ureters were palpated from the broad ligaments to the pelves of the kidneys, and nothing abnormal felt. Uterus anchored to abdominal wall by two stitches of fine twisted silk (No. 1) passed through each round ligament at a point one inch from the uterine cornu, and then through the parietal peritoneum and overlying fascia one and a half inches from the median line and at right angles to the incision. Toilet of peritoneum, and wound closed in usual manner.

Patient developed a mural abscess and an attack of bronchitis. Temperature not above 100° at any time. The painful micturition was a prominent symptom soon after the operation, and the bladder was irrigated daily with a one-half-per-cent. solution of boracic acid, and the salol was continued. Urine slightly alkaline, and containing a trace of albumin and much pus.

November 2d, the bladder was injected with glycerine (3i) and iodoform (3ss), and this was continued every other day until November 24th, with some temporary relief of pain. She was then convalescent from the bronchitis; the wound was healed; the uterus was in good position, where it has remained since. There was no special tenderness over bladder at any time. Urine alkaline when not taking benzoate of ammonia or benzoic acid; cloudy and containing a small amount of pus; specific gravity generally about 1.012; a trace of albumin.

Endoscopic examination November 24th showed injection of upper urethra and bladder above trigonum. The bladder neck and upper urethra were swabbed out with nitrate of silver, 1 to 60, every third day for two weeks, with relief for twenty-four to thirty-six hours after each treatment. Various diluents for the urine were tried, and a large variety of drugs to relieve the pain, but with only temporary benefit.

She was discharged December 22d, and instructed to take citrate of potash and buchu. Repeated examinations of the chest failed to reveal evidence of anything but bronchitis.

Mrs. F. entered the hospital for the second time January 31, 1894. She complained of the frequent and painful micturition about as before. The urine was cloudy; of specific gravity of 1.010; slightly alkaline; albumin absent; twenty-four-hour amount only 12 to 14 ounces.

February 5th. Endoscopy by Howard Kelly's method. Not having Kelly's new specula at that time the examination was made with a Skene endoscope tube 10 millimetres in diameter, the patient's hips being raised. I made out a reddened area that bled easily, situated in the right posterior inferior zone of the bladder. It was studded with little grayish, glistening, translucent bodies the size of the head of a pin and raised above the surrounding surface. They looked like the miliary tubercles seen in peritoneal tuberculosis. The upper urethra was injected also. Ether was then given, and the urethra was dilated to admit my forefinger, which is 13 millimetres in diameter at the largest joint; and the patch was scraped with my finger-nail, and then touched with a ten-percent solution of nitrate of silver. Dr. J. M. Jackson examined the urine two days after the operation and found very numerous tubercle bacilli in a urine typical of cystitis. The bladder was irrigated twice daily with a warm solution of boracic acid and later with a very weak solution of tinct. myrrh. The myrrh gave more relief from pain than any other local treatment except the late effects of the nitrate of silver applications. She took oil of sandal wood by the mouth for two weeks without benefit, and later belladonna, hyoscyamus and citrate of potash and buchu. Bromide of

potash in 20-grain doses, frequently repeated, gave as much relief as any medicine that was taken internally.

February 21st, I made an examination of the bladder with Kelly's instruments, having failed a few days before because of the abundant flow of urine following the administration of citrate of potash and buchu. No anesthetic was necessary in this or subsequent examinations. No. 14 endoscope was easily passed. With the hips elevated and with the patient in the knee-chest position the entire interior of the bladder was inspected. The ureteral orifices were found as slits in the slightly elevated papillæ. No evidences of inflammation about either orifice. In the posterior inferior zone of the bladder, and situated one centimetre above the right ureteral orifice, was a reddened area, circular in shape, and one and a half centimetres in diameter, easily bleeding with slight touch, and studded here and there with the glistening, grayish bodies before described. I picked off one of these and gave it to the pathologist. He said it was too small for examination. I catheterized each ureter, and obtained what appeared to be normal urine from each. Examination by Dr. Jackson failed to reveal the presence of tubercle bacilli in either specimen. Although negative evidence in cases of urinary tuberculosis is not conclusive, I felt that the risk of carrying contagion up the ureter on my catheters was good reason for not obtaining further specimens.

Examination of the urine, March 2d, by Dr. Jackson, showed it to be cloudy, alkaline, 1.017, with a faint trace of albumin. In the sediment was a large amount of bladder and squamous epithelia, a few small round cells, much fresh blood, a considerable number of leucocytes, and a great number of bacteria and spores.

March 9th. She had an attack of pain and tender-

ness in the abdomen, associated with a cough. There was no temperature. Examination of the chest showed a few moist râles and high-pitched respiration in both backs, but nothing further.

March 14. I made another examination of the bladder with the No. 14 speculum, and confirmed my previous diagnosis. I curetted the reddened area with a Simon's spoon curette, and touched it with ten-percent. solution of nitrate of silver. There was moderate bleeding at the time.

Mrs. F. left the hospital March 20th.

Dr. Noyes writes, under date of April 7th: "At present she is in bed about all the time, because to be up causes more pain. The bladder is being irrigated twice daily through a soft-rubber catheter with four ounces of plain boiled and filtered water, and she is taking five grains of benzoic acid four to six times daily. I saw her yesterday, and she said she had very little pain except during and for a short time after urinating. She urinates only every three to four hours during the night, and every one and one-half to two hours during the day. She eats well, sleeps fairly well, and looks well."

The obstacles in the way of diagnosis have made the literature of primary tuberculosis of the female bladder somewhat meagre. Most of the work in the field of vesical tuberculosis has been done on the male. The text-books confine themselves to general statements. They give an unfavorable prognosis, though relatively more favorable than in secondary tuberculosis.

Pozzi says the duration of the disease may be estimated as from one to two years, but cases have been known in which it lasted from five to ten years without affecting the general health.

Fenwick said, in 1890, that most cases died in three years. But in 1892, in a paper on "The Mimicries

of Primary Urinary Tuberculosis," published in the *British Medical Journal* for May 28th, he made the following statement: "After having watched the progress of over a hundred cases of urinary tuberculosis, I have come to the conclusion that when it attacks the lower division of the tract, the bladder, prostate and urethra, and is wisely treated, it exhibits as marked a tendency to obsolescence, or even cure, as the same disease when situated in the lungs." He also said, that, even when the disease was situated high up, the prognosis was better than was generally admitted.

I have not time to go into the question of infection — whether the bacillus is introduced from below, and the process ascends from bladder to ureters and kidneys; or whether it is excreted by the glomeruli of the kidney and travels downward to the ureter and bladder. Both views are advocated by eminent authorities. Fenwick says primary vesical deposits first appear on the posterior wall of the bladder, as in my case.

The symptoms are frequent micturition, not relieved by rest, as is the case in stone; pain, especially at the end of micturition; and blood in the urine.

The object of treatment in chronic tubercular cystitis is to render the urine unirritating, and, if possible, germicidal by means of diet and drugs; and to remove mucus and uric-acid deposits as sources of irritation by irrigation; also to destroy the bacilli by the direct application of caustics and germicidal agents; and to relieve pain. The system should be built up by cod liver oil and tonics. A milk diet is of great benefit as a diuretic, also plenty of water. The drug that has the best reputation is benzoic acid. Tyson recommends it in the form of five-grain pills; at least thirty grains in the course of the day. The potash salts, especially the citrate and acetate are of great use. In a general way we employ the alkalies to dissolve

uric-acid deposits and to prevent their formation, and benzoic and boric acids to dissolve the phosphates. Other drugs that are well spoken of, are: buchu, triticum, repens, corn-silk, sandal-wood, copaiba, eucalyptus and resorcin. Salol has been found to prevent the growth of the staphylococcus in the bladder; but, by the statement of Rommelaere, the bacillus of tuberculosis resists it absolutely. It is certainly a valuable drug on empirical grounds alone.

As local treatment, the bladder should be irrigated at least once a day. Tyson says that tepid water, four to six ounces, is as good as anything, and relieves pain better than other injections. He also advises very weak bichloride, 1-26,000.

Other remedies that stand well are borax, one drachm to a pint of warm water; common salt in the same amount; salicylate of soda, one drachm to the pint; alum enough to give an astringent taste; nitrate of silver, twenty grains to the ounce; and creolin, one per cent. Guyon uses bichloride, 1-5,000 to 1-1,000, twenty to thirty drops at a time. Loumeau also uses strong bichloride.

Guyon and Reverdin have obtained excellent results by curetting and cauterizing the ulcerated area through an opening in the bladder made by supra-pubic cystotomy. With our new method the cystotomy will often prove unnecessary.

For the relief of pain morphine is to be avoided. Skene recommends bromide of potash, twenty grains every four hours. I have found it of great use in frequent and painful micturition in chronic cystitis.

— THE BOSTON —

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