

very sensitive, as it is not in these later stages, which cannot heal, then the method of skin grafting, and especially the more modern method known as Thiersch's, by laying on thin slices of cuticle and protecting the whole by a water-proof covering of thin rubber, is extremely useful and extremely comfortable; and this treatment may be used in the latter stages of burns with great success.

When called to a burn, we are to allay pain, and give stimulants, at once. Be excessively careful how the clothing is got off. If a child is burned badly, put it to bed under a cradle; and apply the dressing you need. Apply warmth at once. Keep up the bodily temperature; for, strange as it may seem, while the first suffering is from the intense heat of the burn, the subsequent suffering is from collapse and coldness; and you want to restore the circulation and the natural warmth of the body. Give opium and stimulants and warmth. Get the clothing off carefully, and dress the burn temporarily, at any rate, with the first bland agent which is at hand, which will cover it in from the air. Subsequent dressings are to be made infrequently. Watch for complications of the brain, or chest, or abdomen; and treat them as well as you can; and, in the later stages, when the exhausting period of suppuration comes on, the patient must be treated precisely as in other cases of hectic; and tonics, stimulants, etc., used, to try to make up for the great waste of this suppurative process.

Unfortunately this is not all that is liable to follow. Unfortunately this exuberant granulation of the burn, this peculiar form of ulceration and reluctant healing, is followed by an unusual deposition in the scar of elastic or fibrous tissue, and by intense contractions; and that is the thing you must guard against all the time. The fingers, the elbow-joint, the knees, the neck, all are the seat of disastrous, contracting cicatrices. The same condition also affects burns about the orifices of the body; the mouth, or nose, or vagina; the mouth and the nose especially, which are frequently burned, subsequently heal in such a way that the mouth may be drawn down into a puckering ring where it is impossible to use the lips well, or the nose contract so that the patient cannot breathe through it with comfort. Also we must be on our guard lest contiguous surfaces contract adhesions and grow together. This is especially true of the fingers; which, if they happen to be badly scalded and lose their cuticle, the whole cuticle coming off like a glove, subsequently will heal with adhesions across, and tie the fingers together in a web, if we are not extremely careful. This is doubly true of a little child, where they are intolerant of treatment, and cannot understand what we are trying to do. It is of vast importance, in treating burns of the hands and of parts contiguous, that they should be kept strenuously open to prevent subsequent contractions and adhesions between the fingers. To prevent the contraction of parts, pulling up of the knee, etc., we have to have recourse to mechanical means, and apply splints to keep the parts well straightened, while healing is going on. On the hand, for instance, a dorsal splint and the fingers strapped back as firmly as possible, if there is danger of contraction; or an outside splint may be made of tin, to keep the arm straightened at the elbow.

If the skin is badly burned in the neck, the consequence is, first, pulling on the chin; then on the angles of the mouth; then on the eyes; so that, in some ex-

treme cases, the patient has the chin drawn down nearly to the sternum; cannot close the mouth; cannot close the eyes; and is, of course, a horrible object, and very miserable for the rest of his life.

Here I would like to call your attention to a treatment, which has been successfully used in Vienna, and some other places, in cases of bad burns in the state of cicatrization, by hot water; keeping the part, if it is a limb, constantly immersed in hot water, kept at the temperature of the body. Baths have been contrived for this, with a little grating on which the patient can lie, and the part be nicely submerged; or else a little tank has been constructed in which the arm can lie, and the temperature be kept steady; and there is a little feeder of warm water to supply the waste by evaporation. No dressing is needed on the burn whatever, except the water. The burn heals in the water nicely; and it is claimed that it heals with a soft and supple scar. This treatment certainly is worth following out.

Provided we are left, after all our efforts, with distortions and cicatrices, what can be done? We have spoken of the means of skin grafting to enable a large ulcerated surface to heal. I think the method of Thiersch is the best. Now you must bear in mind that skin grafting by taking minute points as large as a grain of wheat from the epidermis has been used fifteen or twenty years, and is successful, but slow. Thiersch's method is more rapid. The cicatrices, however, after they have contracted, have to be treated in another way; and that is by section, and transplantation of flaps of skin, if possible, into the diseased surface. This sometimes can be done with great advantage in the palm; especially in the elbow; care being taken to cut out all the cicatrix, and match the new flap to skin which is sound. It is extremely difficult to make cicatricial tissue unite to sound skin without suppuration, and without giving way, and without a new ulceration; so that, if possible, a part must be selected where the whole scar is cut out, and a nice bed of sound skin left all around; and a large flap of sound skin taken and turned in, with a nutritive pedicle left. I would emphasize this point, that you must cut away all of the scar; and, also, that when you want to make a flap to turn in, you must make it a great deal larger than to fit the bare spot, for it shrinks to one-half the size.

Original Articles.

A CASE OF CALCULOUS PYELITIS, WITH COMPLETE SUPPRESSION OF URINE FOR SEVEN DAYS; RELIEVED BY OPERATION.¹

BY A. T. CABOT, A.M., M.D.,
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IN cases of calculous pyelitis we may have suppression of urine brought about in several ways.

It may be induced by the presence and irritation of the calculi in the pelves of the kidneys, without any stoppage of the ureters. Kidneys which contain stones often undergo inflammatory changes which gradually disable them, and thus a diminution and final cessation of function may be brought about. Even when the pathological changes have not progressed very far, such kidneys may not be able to bear any extra work that is put upon them. In one calculous patient, I

¹ Read before the American Association of Genito-Urinary Surgeons.

have seen immediate suppression follow an operation for appendicitis, with moderate peritonitis. The kidneys showed interstitial changes which were not considerable, and yet their power for work had been so diminished that they were overcome by the ether, and by the increased elimination required by the absorption of inflammatory products from the wound and from the peritoneum. Although the calices were occupied by many stones in this case, there was no obstruction to the flow of the urine.

The way, however, in which calculi more commonly cause suppression, is by obstructing, or occluding the ureters. The condition under which this occurs, and the mechanism by which the suppression is induced may vary considerably, as follows:

- (1) Both ureters may be simultaneously obstructed.
- (2) One kidney having been previously destroyed or disabled, the ureter leading from the remaining kidney may be stopped.
- (3) One ureter only being occluded, the irritation of the stone may by some inhibitory effect lead to a cessation of function in both kidneys.

There may be some doubt whether the case that I am about to report belongs in the first or second category. From the observations I was able to make, it seemed probable that the right kidney was more seriously affected than the left, that its ureter had been blocked for a longer time, and that finally it was the obstruction of the left ureter that caused the total suppression.

E. A. P., a strong man of sixty, was seen by me in consultation with Dr. G. K. Sabine of Brookline, Mass., on December 12, 1892.

His previous ailments had not made a great impression on him, and it was therefore difficult to be sure of his accuracy in his observation of his symptoms. His history was as follows:

He had always been subject to rheumatism. Seven years ago he had an attack of renal colic in the left kidney and passed two stones. He then was well until two years ago, when he had an attack of pain in the right side and passed a stone that was larger than the previous ones. The pain in this attack was thought to be due to rheumatism, and was not so severe as is usual in renal colic, so that its origin was not suspected until the stone was passed.

He was then free from trouble until November, 1892. Early in that month he had some twinges of pain in the right side, which were thought to be due to rheumatism. They passed off. Then a similar pain came in the left side on the 19th of November. He sent for Dr. Sabine on the following day. The pain in this attack was not severe, but was recognized as similar to that which he had had two years before, when he passed a stone. He gradually got better, and on December 5th he went to his business in town, but was seized while there with such an acute pain in the back that he went directly home again. This attack was so severe as to throw him into a profuse perspiration, and the pain was felt through the abdomen as well as in the back; and was distinctly referred to the left side.

On December 6th it was noticed that he was not passing any urine. The anuria continued through the 7th, 8th and 9th. On the latter day a catheter was passed, but only a drachm of turbid urine was obtained. From that time there was no water, up to the time that I saw him on the evening of December 12th.

At my examination he looked quiet and easy, not at all like a sick man; he had no nausea, no headache, no drowsiness, — in fact, he said he felt perfectly well. I made an examination, but could detect nothing, either in the abdominal or lumbar region. There was no tenderness anywhere, even to forcible pressure. I advised that he should take considerable water, should have a mustard poultice over the kidneys, and that sugar of milk should be administered freely through the night.

I saw him again the following day. He had passed no urine. Dr. Sabine thought he was a little more dull. His tongue was very dry, but he had no pain, except that occasioned by a slight flatulence. His pulse was 76 and of fair strength. He said that he had some relish for food, and no nausea. I again examined his abdomen, and thought there was a little more resistance in the right renal region than in the left. He also at one time thought that he felt a tenderness there during my examination. The rectal examination showed a prostate of moderate size, but nothing above the prostate, either of tenderness or hardness, in the region of the ureter.

The evidence seemed to show that the function of the kidneys had been interfered with by some mechanical obstruction, probably a stone, and an operation was advised for its removal.

In view of the total suppression of urine, accompanying the attack of pain in the left side, it was thought probable that the right kidney had previously been rendered useless, either by destruction of its secreting portion, or by blocking of its ureter, and that now a calculus had shut off the secretion of the remaining kidney. There was no evidence to indicate the seat of the calculus, and it was designed to open the abdomen by a median incision, to examine both kidneys and their ureters, and then to proceed, in the best way possible, to the correction of whatever condition was found. This plan was agreed to, and the patient having been removed to a private hospital, the operation was performed on the morning of December 14th, between seven and eight days after the establishment of complete anuria.

On the morning of the operation he had begun to show evidence of constitutional disturbance. The pulse and temperature had risen decidedly, and there was some commencing mental hebetude.

The operation was done under ether. The hand was introduced into the abdomen through a median incision between the umbilicus and pubes. The right kidney was felt to be enlarged to perhaps three times the normal size; its surface was irregular and divided into large lobes. Careful palpation of the ureter was difficult, on account of the abundance of fat in the post-peritoneal tissues, but no hardness suggesting a stone could be felt anywhere in that pelvis or ureter. The left kidney was of normal size, and its pelvis was not distended with fluid. The ureter on this side was followed down with great care, from the kidney to the bladder, but nothing like a stone could be detected. The bladder was contracted in the pelvis. The condition of things thus far confirmed the previous opinion, that the right kidney was previously disabled, and it also strengthened the belief that the stone which caused the final suppression was blocking the left kidney.

With the object of more carefully palpating this organ, which was deeply buried in fat, I made an ob-

lique incision in the left loin and uncovered that kidney. With one hand in the abdomen and the other in the wound in the loin, very careful search of the pelvis of the kidney and of the upper part of the ureter was possible, but the result was negative.

The operation was now abandoned, as there was no light by which further action could be guided, and the abdomen was closed; the wound in the loin being drained and partly closed. The opinion was expressed to the friends that possibly our thorough manipulation would be found to have dislodged the obstructing body, but that failing in this we had accomplished nothing.

The patient recovered from the ether well, and about three hours later, when I saw him, there was a slight escape of urine through the urethra, and on passing the catheter, thirty-seven ounces of light-colored urine were drawn. This flow continued, so that partly by the natural efforts and partly by catheter, two gallons of urine were obtained in the first twenty-four hours. In the second twenty-four hours, the amount fell to about five quarts, and after that there was a steady, gradual diminution, until the daily amount had reached the neighborhood of seventy ounces, at which it held.

Convalescence was satisfactory, and about a fortnight after the operation I washed out the bladder with a litholapaxy pump, obtaining a few grains of calcareous matter, thus completing the evidence that the ureter had been stopped by a calculus, which had been displaced by my manipulations.

In this case the condition of the left kidney is to me of especial interest. The fact that the pelvis was not distended with urine seems to show that the function of this organ was stopped at once by an inhibitory action due to the irritation of the calculus in that ureter, and was not due wholly to the obstruction to the flow of urine and to the back pressure exercised by this obstruction. This cessation of the secretion of urine in this kidney would explain the short duration of the pain when this ureter was blocked. Had the urine continued to be excreted, the internal pressure in the kidney would probably have caused a longer duration of pain, and it would have been much more severe in character.

A laparotomy for the determination of the site of a calculus in the ureter is no new thing, and its importance has been alluded to by me in an article upon "The Surgery of the Ureter," read before this Association, and published in the *American Journal of the Medical Sciences*, for January, 1892. In cases previously reported, this exploration succeeded in locating the position of the stone and in making its removal possible.

The case which I have reported illustrates another way in which this operation may be of use, by enabling us to assist the passage of the stone along the ureter, and thus to relieve the dangerous suppression caused by its presence there. The calcareous matter pumped from the bladder in my case, was so small in amount that, put together in the form of a consistent stone, it would not make a mass which one would expect to recognize by palpation through the walls of a ureter surrounded by thick layers of fat, as they were in this instance. The accidental efficacy of the kneading which was given to the kidney and ureter during my thorough examination of them, would suggest the importance of this massage being systematically car-

ried out in a similar case, where a calculus could not be discovered.

Shortly after the occurrence of my case, I found in the *Annales des Maladies des Organes Genito-Urinaires* for January, 1892, the report of a case by M. Duffau-Lagarosse, which in many respects would seem to be very similar to the case which I have reported.

The patient, a man of fifty-nine, had not urinated for eight days. Three weeks before he had been seized, without appreciable cause, with a severe pain in the right lumbar region. This was accompanied by vomiting and scanty and bloody urine. After this there were fifteen days of comfort, and then the complete anuria appeared.

A calculus being suspected, an incision was made into the right kidney through the loin. Nothing was found, and the patient died the following day. At the autopsy the left kidney was found to be completely destroyed, while the right ureter was stopped by a calculus of the size of a grain of rice, which was lodged in the lower part of the canal.

The reporter draws two conclusions, first, that anuria induced by reflex action is a rarity; and, second, that the diagnosis of the seat of the calculus is very difficult, and indeed impossible.

In this case the small size of the calculus and its lodgement in the lower part of the canal, would probably have made its discovery difficult or impossible. Had the kidney continued to secrete urine behind so small a stone, its passage onward into the bladder would probably have been assured. In the absence of this pressure from behind, it would seem as if this were distinctly a case in which a median laparotomy and massage of the ureter from above downward might have accomplished the escape of the calculus and the recovery of the patient.

I cite this case simply to show that this condition is one which we must be on the lookout for.

The subsequent history of the case I have reported, is interesting in some particulars.

Not long after the patient had gone from the hospital, while he was moving about the house freely, he had another attack of discomfort in the left side of the abdomen, accompanied by a chill and high temperature. I saw him after this had persisted for a good many hours, and found him passing an abundant quantity of water, but still suffering from discomfort through the lower part of the abdomen on the left. Careful examination detected nothing abnormal in that region.

Remembering the experience of the previous attack, I made considerable massage through the abdominal wall, down along the course of the ureter and as deeply into the pelvis as I could reach. When I saw him a day or two later, he told me that from the time of my examination he was comparatively comfortable, and had no more of that seriously uncomfortable pain from that time. A week or two later a stone was passed that was decidedly larger than the calculous bits that were obtained by pumping after the operation. I have not seen the patient since, but have heard that he has had still another attack of pain, with again the passage of a stone.

The conclusions which I should draw from the experience gained in this case, and by a study of the literature that I have made, are:

(1) That in a calculous patient, or in a patient with a distinct attack of renal colic, the suppression of urine should be regarded as directly due to the stone,

and that in the majority of cases, both kidneys will be found to be disabled; for the cessation of the function of a healthy kidney, due to the irritation of a stone in the opposite ureter, must be very rare.

(2) These cases should be treated by operation as soon as it is evident that the function of the kidney has come to a standstill, as there is little chance of the stone being pushed along the ureter when the kidney is no longer excreting urine behind it.

(3) In the absence of any evidence as to the location of the calculus, the first step in such an operation should be a median laparotomy, with the hope of discovering the whereabouts of the calculus, in order to proceed intelligently for its removal.

(4) If by this examination no calculus can be found, so that further operative procedure cannot be decided upon, a steady massage of the pelves of the kidneys, and of the ureters, from above downward, should be practised, in the hope of dislodging or breaking up a small calculus, if such exists.

LONG-CONTINUED BLADDER DRAINAGE.¹

BY PAUL THORNDIKE, M.D., BOSTON.

THE employment of absolute rest has long been recognized as an essential in the treatment of most forms of inflammation which affect the genito-urinary organs and especially the bladder, it being a comparatively common procedure to drain the latter organ for a few days either through the urethra or perineum, in order to obtain for it as complete a rest as possible under certain conditions. The long continuance of such drainage is less often carried out.

The writer offers these remarks on a few cases of long-continued drainage in the hope that they may serve as a basis for such a discussion as will demonstrate the views which different gentlemen present may hold on this subject.

There are unquestionably cases of prostatic and vesical disease of obstructive origin where the condition of the bladder demands drainage as a means of relief. In this way is provided rest from the bladder's irritable contractions and also from the pain and discomfort which catheterization frequently repeated for long periods of time, almost inevitably induces. Such cases are common enough, and the relief obtained by proper drainage is prompt and sufficient. Drainage may be afforded through a catheter tied into the bladder and removed only to be cleaned, or through a perineal wound, with or without a drainage-tube. In many cases the catheter drainage suffices, as was true in a case to which I will ask your attention in a moment; and in others the perineal outlet is preferable, because the operation is rendered necessary for diagnostic or therapeutic purposes aside from the question of drainage, or because the mental condition of the patient is such as to render it very difficult to keep a catheter of any sort in his urethra. It is the writer's belief that perineal drainage is a more effective way of keeping the bladder empty than drainage through the urethra can be, and should be the method chosen if the conditions are such as to warrant its use. That these methods of drainage may often be continued for a long time with the greatest advantage to the patient is unquestionably true, and that a permanent drainage

of the bladder adds many years of comparative comfort to many lives is doubtless also true. The following case well illustrates the efficiency of long-continued drainage through a catheter in the urethra:

C. C., a man of sixty-six years, came under the care of Dr. Watson and myself with an obstructive prostatic hypertrophy of four years' standing. Had had an overflow bladder for months. In spite of the utmost care [he was put to bed and his bladder emptied with a soft catheter, a week being employed in completely emptying the organ] he developed a subacute cystitis, with coated tongue, high temperature, restlessness, anxiety, marked lassitude, etc. Did not improve. Became worse, and at the end of a week or ten days was critically ill. Specific gravity of urine 1,009. Soft rubber catheter tied into bladder and left in for three weeks, during which time patient was kept in bed and the catheter was removed only for a few moments at a time to be cleaned. On the second day improvement began. Temperature became normal, and at the end of two and a half weeks the urine which had been full of pus became clear, with specific gravity 1,017; and in three weeks patient was up and began a regular catheter life. Since then he has remained well. It is the writer's firm belief that this patient would have died if the continuous drainage had not been instituted.

Let me make brief mention of two other cases of Dr. Watson's and my own, where the drainage was through the perineum, and was kept up for a much longer time.

G. T., age sixty-seven years, had had an obstructive prostatic hypertrophy for seven or eight years, and an overflow bladder for two months before beginning to use a catheter. Had an attack of retention which he relieved for himself by the passage of a catheter. This was followed by loss of voluntary urination and a subacute cystitis. Specific gravity 1,009; trace of albumen; no casts found. For four years he did well with regular catheterization. Then began to have pains along course of urethra and frequent and painful micturition, which became unbearable; and patient's physical condition became very bad. Also had recurrent attacks of epididymitis. Operation, November, 1891. Perineal section for purposes of exploring and draining bladder, which was found coated with phosphatic deposit. This was curetted thoroughly and soft catheter tied in. For two and a half months it was left in continuously, being removed only for cleaning. Then it was provided with a stopcock, and has been worn constantly for the nineteen months since the operation. Two months after the operation the urine had cleared up; specific gravity was 1,015; and patient's physical condition was completely transformed. He now wears the tube without inconvenience, holds his urine for four hours comfortably, and says he feels ten years younger, and can work as well as ever.

In this case absolute relief of most distressing symptoms, including recurrent attacks of epididymitis, was attained. These symptoms had arisen during a well-conducted and regular use of the catheter. In this case a suprapubic prostatectomy would probably have proved fatal as the comparatively trivial operation which was performed was the cause of great shock.

A similar case was R., age sixty years, who had had prostatic symptoms for five years, and for three years had been obliged to use a catheter regularly. Soon after beginning its use he started up a urethritis, which

¹ Read at the Annual Meeting of the American Association of Genito-Urinary Surgeons at Harrogate, Tenn., June 14, 1898.