

to the incision is the strictured point which is believed to have caused all the difficulty. I now introduce a narrow probe-pointed bistoury and divide the stricture on the superior wall of the canal completely, as shown by the easy passage of a full-sized bulb through the canal and out of the perineal opening.

Reëntering the canal through the incision, I pass the instrument readily back into the bladder, thus clearing up any suspicions of stricture in this locality. The after-treatment in this case will be very simple, and will consist in: first, raising and supporting the testicles by a broad band of adhesive plaster laid upon the upper surface of the thighs. This is placed so as to form a sort of shelf upon which the testicles may rest and the scrotal tissue be free from any danger of urinary infiltration. Secondly, in keeping the parts clean and well disinfected, by syringing the wound gently with a 1 to 60 solution of carbolic acid about three times a day. The introduction of a small soft-rubber catheter through the wound and into the bladder serves to draw off the urine without discomfort to the patient, and prevents its contact with the freshly wounded tissues. The catheter may be retained for the first 48 hours, or even four or five days, to advantage, and the urine directed into a suitable glass vessel—a female urinal for instance—which not only conveniently retains the urine, but allows the attendant to see at once whether the flow of urine continues, or if the tube is stopped; in the latter case the tube should be cleared at once and the bladder washed out with a little tepid water; after the removal of the tube or catheter the patient may void his urine, at will, upon a large sponge provided for the purpose, or into an ordinary bed-pan. A pledget of lint soaked in the carbolic solution and changed after each urination will be all the dressing required. In all operations on the deep urethra I am in the habit of following them by the introduction of a suppository, composed of 10 grains of quinine and $\frac{1}{4}$ grain of morphia, in order to counteract the nervous shock likely to be occasioned by the operation, also to prevent the accession of urethral fever.

LESSON XLIV.

Another case in illustration of follicular ulceration and urinary extravasation—Operation for relief in this case—Secondary hæmorrhage occurring—Mode of procedure in such accident—Extravasation of urine into the tissues of the groin and abdominal walls—Treatment of such accident—Manner in which extravasated urine finds its way into tissues at a distance from the point of urethral rupture—Anatomical relations of the deep and superficial faciæ explained as accounting for the direction an extravasation of urine may take—Another case in illustration of the accident of follicular ulceration and consequent urinary infiltration—Mode of treatment—Necessity of opening into the urethra in such cases—Another case in illustration of the various accidents which may result from urethral perforation through an antecedent folliculitis.

CASE VI.—*Illustrating the same form of trouble, and the treatment necessary in case of urinary extravasation.* The patient, a young Irish laborer of 27 years, presented himself with a well-marked swelling in the perineum, which had been coming on slowly for several days. It was painful on pressure. The tumor was quite hard and resilient, but no fluctuation could be discovered. The scrotum was quite œdematous, bright pink in color, and almost translucent. The coincidence of this condition with perineal swelling indicated to me that an extravasation of urine, from rupture of the urethra, was the most probable cause of the œdema. Recognizing that the probable cause of the trouble, was a follicular rupture of the urethra, with extravasation of urine, I advised immediate operation. This the patient would not consent to, although the danger of delay was pointed out to him, and he was urged, with an earnestness born of the consciousness of his peril, to embrace perhaps the only chance for life remaining to him. The chief of staff, also, deeply impressed with the certainty of a fatal result, if the extravasation was allowed to continue, pleaded with the patient and appealed to his common sense, and love of life, but in vain. I was obliged

to leave him in this dangerous condition, believing that the operation without the consent of the patient was not justifiable under the circumstances. I pointed out to him grave troubles that would probably ensue unless the bladder was kept empty, and introduced a soft catheter. The patient withdrew it, however, during the night, and the infiltration as a consequence had extended to the suprapubic and inguinal regions, and the swellings in the perineum, the scrotum and adjacent tissues were still more conspicuous, although no fluctuation could be made out. Consent to operation was now readily obtained.

The patient having been etherized, I introduced a steel sound into the urethra, freely opened the perineal swelling down to and into the urethra, with a bistoury, and made several incisions into the œdematous scrotum. The discharge of fetid pus and decomposed urine that followed, clearly showed the correctness of my diagnosis. I evacuated by pressure as far as was possible, the pus and serous fluid from the œdematous tissues, inserted a rubber catheter into the bladder through the perineal incision, to secure drainage, and maintained it there by securing it to a T bandage.

The hemorrhage during operation was slight and recovery from the immediate effects of operation and the anæsthetic, good.

I made no section of the suprapubic and inguinal tissues, hoping the extravasated urine in these parts would drain off through a rubber drainage tube inserted through one of the scrotal incisions.

I ordered nutritious diet for the patient, and he was committed to the care of the house staff, the house surgeon being instructed as to the accidents to be apprehended.

I saw the patient the following day; the scrotum had then greatly decreased in size and there was no destruction of integument. The inflammatory flush which had covered the right side of the abdomen and thigh passed slowly off.

On a day, nearly a week subsequent to opera-

tion, I was suddenly called to the hospital to see the case, which had developed secondary hemorrhage. This is one of the accidents to be apprehended in perineal section. By the time I reached him the patient had lost 15 or 20 ounces of blood, which was a great deal for a man in his condition. He was pale, with rapid pulse, and was being freely stimulated. Superficial plugging had been resorted to, and ice applied, but the blood continued to flow from the bladder and penis. The abdominal muscles were rigid as a board, from the intense straining of the patient to evacuate the bladder, which was filled with clots of blood.

I passed in a large catheter, to which I attached a syringe, withdrew the clotted blood and washed out the bladder. I then introduced through the wound and into the bladder a *canula-a-chemise*. This consists of a catheter over which a piece of linen cloth about ten inches square is passed, a hole being cut for this purpose just large enough to make the cloth fit the catheter snugly. The cloth is then tied on about an inch from the eye of the catheter and turned forward. We thus have made a sort of umbrella. It is not easy for the patient to have this introduced through the sensitive wound, and it is all important that it be made as smooth as possible. In this case it occurred to me to thoroughly smear the cloth with hard soap, until the shoulder at the junction of the cloth with the catheter should be effaced, having done this, on wetting it, it slipped into the bladder very readily.

Sometimes even this pressure will stop the bleeding; if not, open out the folds of the umbrella you have thus made, and pack it round the catheter with lint or cotton. By this means you are able to exert as much pressure as you require. On the following day I again saw the patient and found a swelling in the right inguinal region, with crepitus indicating decomposition of the tissue, the canula had stopped the exit of the pus, and pus and gas had distended the tissues. I therefore removed the canula, evacuated the fetid pus material, passed up my director and with a sharp-pointed bistoury made an incision two inches long. I washed out the wound

with a 1 to 100 solution of carbolic acid and inserted another drainage tube.

Now the question you would naturally ask is, How did the pus and urine get up into this region? I will try to make clear to you the relation of the parts and the situation of the fascia, and how infiltration may involve the penis without involving the scrotum, or the scrotum and not the penis, and how the urine works its way up in the pubic and inguinal regions.

The arrangement of the superficial and deep perineal fasciæ is such as to separate completely from each other the parts anterior and posterior to the membranous urethra, or that portion of the canal included between the anterior and posterior layers of the triangular ligament. The anterior layer is continuous with the superficial fasciæ which, including the bulb of the urethra, extends forward on the penis, to its insertion in the glans, completely investing it in a membranous sheath, and separating the corpus spongiosum from the corpora cavernosa by a membranous septum, continuous with the superficial fascia, enveloping the body of the penis. Superiorly this fascia is attached to the symphysis pubis, and is lost in the aponeurosis of the suspensory ligament of the penis and in the surrounding cellular tissue. The posterior wall, or layer of the triangular ligament, is continuous with the prostatico-peritoneal aponeurosis, which, joining the pelvic fascia extending forward to its attachment on the inferior surface of the pubis, thus encloses the lower part of the bladder and prostate. This enclosure has received the title of the superior or prostatic chamber. While those parts enclosed by the superficial fasciæ, extending forward from the anterior layer of the triangular ligament, and attached superiorly to the suspensory ligament and the tissues of the pubis, are known as the inferior penile chamber. It will thus be readily seen that extravasations of urine, occurring through rupture of the urethra anterior to the anterior wall of the triangular ligament, find easy access to the tissues of the penis, and may readily ascend through the interstices of the fascia at its pubic attachment to the groins and abdominal

walls, and also by the same route gain access to the cellular tissue of the scrotum. Accidents to the urethral walls behind the triangular ligament are exceedingly rare, and thus we seldom meet with urinary extravasation into the superior or prostatic chamber. When occurring, however, its localization will be understood by appreciating the fascial boundaries of this region; and the knowledge that through ulceration or rupture it may gain access to the cavity of the peritoneum will suggest early incision through the rectum.

The late Dr. Gurdon Buck was the first to discover and utilize the arrangement of the superficial perineal fasciæ, in explanation of the different accidents of urinary extravasation, and this fascia has hence received the title of Buck's fascia. A full and admirable account of it, with its practical relations to the subject we have here cursorily considered, will be found in the fourth edition of Bumstead and Taylor on Venereal Diseases, p. 253 *et seq.*, and also in an elaborate article on the same subject, by Dr. Robert F. Weir, in the *N. Y. Medical Record* of Nov. 15, 1879, p. 457 *et seq.*

Cases of perineal swelling may arise in this way: A certain amount of irritation is caused by stricture of the urethra; folliculitis results, and through the small opening thus made the urine gets into the tissues. For a while by natural processes the urine effused is absorbed, but finally the opening enlarges, and results in urinary abscess, and infiltration. . . .

Dittel's experience would point to the fact that many cases of perineal swelling, such as this, have a follicular origin.

When you meet with perineal swelling, do not wait for fluctuation: incise it at once.

Mr. Z., aged twenty-seven, a patient of the well-known and accomplished surgeon, the late Dr. Julius Thebaud, was seen by me in consultation in February, 1875, with the following history: Gonorrhœa twelve years previous, recurring gleet for four years, urethral stricture recognized, treatment by steel sounds, size No. 24, passed with some pain. This was repeated at intervals of several days for a month; dilatation not well borne,

pain and increase of discharge following. A few days previous some uneasiness in the perineum was complained of and a slight swelling was detected in that locality. Circumference of penis $3\frac{1}{4}$. Strictures defined, one at 2 and another at 3 inches, 24 F., one at 4 inches, 28 F. It was my opinion that a follicular ulceration had occurred behind the deepest and largest stricture (size 28 F.); that in this manner the urethral wall had been perforated; and that extravasation of a limited amount of urine had taken place (an accident similar to that described by Dittel in Pitha and Billroth's Handbook of General and Special Surgery, 3d volume, 2d division, 6th Book. In this case immediate external perineal section was imperative for security against possible sub-fascial extravasation. A general consultation was at once called, consisting of three more surgeons. After careful examination the presence of pus was considered probable, but doubts were expressed as to the origin of the abscess in the urethra. After a brief discussion it was decided to pursue a medium course by operating at once and thus avoiding the danger of a possible grave urinary infiltration, but to limit the incision to the peri-urethral tissues. The requisite operation was performed by Dr. Thebaud. A little bloody serum exuded from the engorged deep tissues, but no pus was found. The case went on for a week without much diminution of the swelling or of the aching in the testicles after urination, which had been a source of complaint previous to the operation. Another general consultation was called; consisting of the same gentlemen previously associated in the case. Before convening some 48 hours had elapsed, during which, without apparent cause, a favorable change had taken place; the swelling had begun to decline and the perineal wound presented a more healthy aspect. The improvement being fully recognized, it was deemed best to avoid interference. At the end of a fortnight the perineal opening had healed completely, when there was a sudden accession of discomfort and the swelling was found to have reappeared. The case was again seen by me in consultation with Dr. Thebaud and Dr. Rey-

nolds (Dr. Thebaud's partner), some 48 hours after the discovery of the recurrent swelling. External perineal urethrotomy was again advised and promptly done by Dr. Thebaud, and the stricture at 4 inches (just anterior to the perineal incision) was divided with a blunt-pointed bistoury. An ounce or so of pus and grumous blood was evacuated. Immediate relief of pain succeeded and the wound healed kindly and perfectly. The aching in the testicles previously spoken of as occurring after urination did not entirely disappear. This was attributed to the presence of the anterior strictures at three and two inches from the meatus. These were thoroughly divided with the dilating urethrotome to 32 F., the previously ascertained normal calibre of the canal. A slight *spongio-corporitis* followed the operation, which delayed the progress of the case about a week; after which, recovery was steady and rapid, resulting in a complete cure of all trouble. A re-examination three years after showed complete freedom from any trace of stricture. This case appears to me to demonstrate the occurrence of urinary infiltration behind a slight stricture, though in quantity so slight that a slowly forming abscess only resulted. The persistence of the trouble until the urethra was laid open, and the prompt recovery after that was effected, served to clear up any doubts that might had been entertained in regard to the urinary origin in trouble.