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NEW SERIES.

TO CORRESPONDENTS.

COMMUNICATIONS for the Journal may be addressed to 37, Russell Square, as formerly, till an Editor is appointed.

THE EDITOR has not on hand a single "Original Communication" for the Journal. Members are requested to forward contributions at once, as by their present apathy the value of the Journal may be impaired. Letters on the York Meeting form a thin and acid food for the many: but if nothing else be received, what can we give?

DR. SANDWITH's letter on "the crisis" is in type.

BOOKS RECEIVED. [** An Asterisk is prefixed to the names of Members of the Association.*] 1. SCHACHT (Dr. Hermann), and CURREY (F., M.A.) *The Microscope and its Application to Vegetable Anatomy and Physiology*. Second Edition, considerably enlarged, with numerous Illustrations. pp. 202. London: 1855. 2. *COPLAND (James, M.D., F.R.S.) *Dictionary of Practical Medicine. Symptomatology, Tubercular Consumption*. London: 1855. 3. BRANNON (Philip). *The Illustrated Historical and Picturesque Guide to Bournemouth*. pp. 55. Poole and London: 1855.

ORIGINAL COMMUNICATIONS.

INJURY TO THE PERINÆUM: RUPTURE OF THE URETHRA, WITH EXTRAVASATION OF URINE: WITH REMARKS.

By JOHN SHEPHERD FLETCHER, Esq., Lecturer on Practical Anatomy at the Chatham Street School of Medicine.

ON the 27th December, 1852, I was called to Mr. Smith, aged 29 years, of nervous and bilious temperament. On returning from a committee meeting a short time previously, he had gone into his own yard to micturate, when, passing over a trapdoor, having one foot on the door and the other on the flag on which it rested, it gave way, and let him down, falling with his perinæum on the edge of the hard flag. I saw him in fifteen minutes after the accident. He had then passed a large quantity of blood and urine, and was still bleeding very freely from the urethra; he was faint on standing, and had some pain in the perinæum, but no swelling, and but little tenderness, without any desire to pass urine. I made an attempt very gently to pass the catheter, but could not succeed, as it was obstructed near the prostate. I withdrew it, and ordered tepid fomentations, with an opiate; and saw him again in about two hours. The bladder was now much distended, causing considerable pain, and strong desire to pass urine. He had no swelling in the perinæum. I again tried to pass the catheter, and succeeded, by using a large instrument with the utmost gentleness, keeping it in the median line, and against the upper wall of the urethra. I could distinctly feel, however, that it passed through a long track of apparently torn passage. The bleeding had continued very free. I drew away twelve ounces of normal urine, unmixed with blood. The patient was ordered to allow the catheter to remain in, and to continue to use fomentations and opiates.

December 28th. He had slept moderately. Urine had passed freely by the instrument, free from blood. There was the slightest possible swelling and tenderness in the perinæum; the scrotum was free from both. A small quantity of blood passed by the side of the catheter. The pulse was 78, with slight pyrexia. He was ordered to retain the instrument, and to take salines with an opiate.

December 29th. He had a somewhat restless night. Urine passed in normal quantity by the catheter, free from blood. There was some pain at the seat of injury, and tenderness on pressure over the hypogastric region; but not the least swelling in perinæum or scrotum to indicate extravasation. The pulse was 98, and feeble; the bowels had not been moved; the surface was warm and moist; the

tongue rather dry. He was ordered to continue the saline mixture, and to take a pill, consisting of one grain of calomel and a third of a grain of opium, every four hours; to use hot fomentations to the abdomen; and to have an enema.

8 P.M. He had been restless through the day; and, when in the act of turning on his side, he displaced the catheter, after which the bleeding returned rather freely; and he had now a desire to pass urine, but could not do so. I again passed the catheter, but not without considerable difficulty; and only succeeded by observing carefully the same course as before, as there was evidently, close to the prostate, a considerable laceration of the urethra and parts around. On this occasion, I could not get the instrument beyond the prostate, without passing my finger into the rectum, to direct it, when I found this gland normal in every respect. I drew away about six ounces of clear healthy urine. During the time of passing the instrument, blood passed in a stream almost amounting to a jet, and of a bright arterial hue, clearly indicating the wound of some large artery. There was no swelling in the perinæum. The bowels had been moved by an enema.

December 30th. He had a sleepless and restless night. Urine had continued to pass freely by the instrument. His countenance looked anxious; the pulse was small, feeble, and 120. He had slight wandering delirium; the tongue was rather dry, with brownish fur; he had occasional hiccup. He had a slight rigor this morning. The perinæum, scrotum, and neighbouring parts, were entirely free from swelling; but the abdomen was slightly swollen and tympanitic. In each iliac region there was slight suspicious puffiness, dull on percussion, and separated by a slight central depression. The bowels had been freely relieved. He was ordered to take half a grain of solid opium every two hours, and to continue the fomentations.

4 P.M. I saw him in consultation with the late Mr. W. J. Wilson, the symptoms being much the same, except that the swellings in the iliac regions were larger. There was not the slightest swelling in the perinæum, or in the neighbourhood of the prostate, as felt through the rectum. We agreed to meet at 7 P.M., and open the perinæum, in the hope that we might be able thus to promote the escape of the extravasated fluid.

8 P.M. He had been much better the last few hours, having slept. Urine had passed very freely by the catheter, unmixed with blood. The swelling in the iliac regions was decidedly less; the pain and tenderness were both much relieved. He had less hiccup; the pulse was 108, and more full; the tongue moist; and he had less thirst. In consultation, seeing the great improvement within the last few hours, we thought it best not to interfere with the perinæum, as it was questionable, seeing the freedom with which urine passed by the catheter, whether or not we should relieve any extravasation there might be, as it was clearly behind the deep fascia of the perinæum. The patient was directed to continue the pills and fomentations, and to take beef-tea.

December 31st, 8 A.M. He continued better for some hours after we saw him last evening: he then again became restless, and had a very severe attack of delirium, in which he withdrew the catheter, got out of bed, and struggled hard with those around him. He had now constant wandering delirium, and complained of abdominal pain, and great tenderness on pressure. The swelling in the iliac regions was worse. The pulse was 120 or more, and very feeble; he had frequent hiccup. There was no swelling in

the perineum or the scrotum. I passed the catheter again without difficulty, and drew away six ounces of normal urine.

R. *Liquoris opii sedativi* ℞xl.
Essent. camphoræ,
Spiritus æther. nitrosi, aa 3ss.
Aquæ q. s. ad 3i. M.

Fiat haustus statim sumendus.

He was ordered to continue the pills, and to allow the catheter to remain in. His delirium was relieved by the opiate, but in every other respect he grew worse as the day advanced.

January 1st, 1853. He was in every respect worse. The swelling, pain, and tenderness, over the whole of the abdomen, had greatly increased; and the tumefaction had even extended around each side as far as the loins, having that peculiar doughy feel which is present in inflammation of the cellular tissue. The urine had continued to pass freely by the instrument, and, so far as could be ascertained, in normal quantity; this having been the case from the first. Mr. Wilson proposed an incision through the integument and fascia, to expose the external oblique tendon. This was made, without any of the extravasated fluid escaping. From this time, the patient rapidly sank, and died on the following day, January 2nd; no swelling having appeared in the perineum up to death.

EXAMINATION OF THE BODY, thirty-six hours after death. Putrefaction was rapidly going on in and about the pelvis. There were vesications and great swelling of the scrotum and neighbouring parts; but this was altogether the result of putrefaction since death, as not the slightest trace existed a short time previously. On cutting through the abdominal walls, we found, immediately behind the recti and other abdominal muscles, a large quantity of thin-looking pus, mixed with some blood; this extended upwards into the sheath of the rectus muscle on each side, and was contained between the posterior surfaces of the abdominal muscles in front and the transversalis fascia and peritoneum behind, on each side. It had, in extending backwards, separated the fascia and peritoneum from their attachment to the inner surfaces of the posterior portions of the transversalis muscle; hence the doughy swelling, extending as far as the loins, noticed on the day preceding his death. Below, the fluid could be traced as coming from behind the pubis, having the central portion of the transversalis fascia internal to it, and the posterior surface of the symphysis pubis, covered only by periosteum, in front of it. On injecting the bladder, by means of a catheter along the urethra, fluid was seen to escape slowly immediately behind the pubis, from the neighbourhood of the membranous portion of the urethra. There were traces of very extensive peritonitis, with flakes of lymph one-fourth of an inch thick. On cutting into the perineum, we found that around the urethral bulb there was much effused blood; and from the bulb to the prostate gland, which was itself normal, the urethra was torn, there being no distinct canal, but a sort of sac, bounded by softened cellular tissue, infiltrated with blood.

REMARKS. The preceding case presents some features which are not of frequent occurrence. It is a striking example of the results to be looked for from an injury to that part of the urethra behind the anterior portion of the deep perineal fascia, and is instructive as to the symptoms following such an injury, as well as to what would, in another similar case, be the most appropriate treatment. It will have been observed, from the account given of the *post mortem* appearances, that the extravasated urine did not take its most usual course after injury to the urethra with the escape of urine; this usual course being, that the urine escapes under the superficial perineal fascia, and is by this fascia directed forwards under the superficial fascia and integument covering the scrotum; whence, continuing its course, it finds its way under the superficial fascia of the abdominal walls, where it is found outside the external oblique muscles and their tendons, between them and the superficial abdominal fascia. This is the direction taken

by urine escaping from all injuries to the urethral canal anterior to the front layer of the deep perineal fascia, and also from laceration behind that fascia, if it as well as the urethra should be injured. In all these cases, the fact of urine escaping is quickly made manifest by the swelling, first in the perineum, then in the scrotum, and afterwards on the lower part of the abdominal walls; and it is almost too well known to need mention here, that the only hope of safety to the sufferer is by free incisions into the perineum and other swollen and perhaps gangrenous parts.

It is not, however, especially to this class of cases that I am desirous of calling attention, but to another and much rarer form, of which the case I have just detailed is an example, where the injury to the urethral canal is behind the front layer of the deep perineal fascia. The course taken by the extravasated urine is altogether different, and does not cause any swelling in the perineum to call our attention to the fact that urine is escaping from its proper channel, and causing that destruction which we know to be the result wherever it escapes. This variety, although the least frequent, is by far the most dangerous in its results, as, in the first class of cases, recovery may be hoped for, and will frequently occur, without even the aid of the surgeon's knife; but, in these cases, such a result will never take place unless through the most timely and energetic treatment.

To understand fully the two courses which extravasated urine may take, according to the part of the urethra injured, it is absolutely necessary that we should have a clear knowledge of the deep perineal fascia; and as, in some respects, I believe this fascia to be incorrectly, or at least not fully described, in most anatomical works, I may perhaps be excused for briefly giving what I believe the more correct description, so far, at least, as my own dissections show.

The deep perineal fascia, or triangular ligament, as it is sometimes called, is described generally as a strong triangular portion of fascia, consisting of two layers—an anterior and posterior—extending across beneath the pubic arch. "The two sides are firmly attached to the rami of the pubes and a small portion of the ischia," becoming continuous and mixed up with the periosteum on these bones. This description is strictly accurate in regard only to the anterior layer, to the lower part of which is joined the superficial fascia of the perineum, after it has passed under the transversalis perinei muscle; but the *posterior layer* of this fascia I believe to be only a part of the pelvic fascia continuous with the transversalis fascia from above and the obturator fascia from each side, which are only different parts of one continuous membrane. It extends across the back of the upper part of the pubic arch, and is attached by cellular tissue on each side to the margin of the pubis and a small part of the ischia; but it is not lost in the periosteum covering these bones. At its lower part, like the anterior layer, or true triangular ligament, it gives passage to the urethra, and sends backwards upon it and around the prostate a continuous fascial investment; and, below the urethral opening, it is continuous downwards and slightly forwards, to join with the lower margin of the anterior layer of the deep perineal fascia, where the two terminate in a tolerably distinct margin, from which, however, there is continued a less strong process of fascia on to the termination of the levator ani muscle, which, with the anterior layer or true triangular ligament, completes the division of the perineum into a superficial and deep compartment, between which this fascia extends as a very strong septum above and a more delicate one below. It was behind this anterior layer of the deep perineal fascia, and the fascia continued from it below on to the levator ani—that is, in the back part of the membranous or commencement of prostate portions of the urethra—that the urethral canal was ruptured in this case; and it will be seen that the urine would be prevented from coming forward by the anterior layer of the deep fascia, in consequence of which we were without swelling in the perineum, previously considered as a constant and immediate symptom of extra-

vasated urine from rupture of the urethra. Prevented from coming forward, the urine pushed back what is called the posterior layer of the deep perineal fascia (but what in reality I believe to be a part of the pelvic fascia), separated

1. Bladder. 2. Prostate. 3. Pubis. 4. Urethra. 5. Abdominal muscles.
6. Line indicating transversalis fascia—the lower part of it representing what is called the posterior layer of the deep perineal fascia. *6. Line indicating anterior layer of deep perineal fascia or true triangular ligament, joined by superficial fascia below. 7. Integument and superficial fascia of the abdomen. 8. Dotted line and arrows, indicating the course taken by the extravasated urine in this case. 9, 9, 9. Dotted line indicating course taken ordinarily by extravasated urine. 10. Rectum.

it from the back of the symphysis pubis, and then, getting behind the abdominal walls (where, it will be remembered, swelling was first present in each iliac region on the third day after the injury), pushed inwards the transversalis fascia and peritoneum, and at last got into the sheath of the rectus muscle. It might also find its way into the areolar tissue around the rectum and at the base of the bladder.

The instructive features in this case I conceive to be the fact that we may have extravasation of urine from a rupture of the urethra, without any swelling in the perineum—a fact which I have nowhere seen stated before; that this is far more dangerous in its consequences than the ordinary kind; and that the absence of swelling depends upon the unusual course taken by the extravasated fluid. It will be remembered that the daily reports of this case show an entire absence of swelling from the perineum up to death; and, in the face of the fact that we had a constant discharge of urine in good quantity through the catheter, I scarcely feared, until the end of the second day, any extravasation of fluid of any kind, either blood or urine; but on that day general symptoms pointed to some serious mischief; and the abdominal swelling on the third day was still more serious; its cause was shown by the *post mortem*.

As to the treatment of similar cases, I think the result of this case most instructive; and I should, in any future case where, in injury to the urethra, I had reason to fear escape of urine, even though there be no swelling in the perineum, provided there be general symptoms of extravasation, feel at once called upon to make a free and deep opening into the perineum. In such a case, the incision must not be merely superficial, but must go through the anterior layer of the triangular ligament; and, in order to avoid wounding (should it not be already injured) the artery of the bulb, the incision must be made in the exact mesial line. It may be a question also whether or not, the urine having found its way behind the abdominal parietes, it would not be prudent to make an opening through these, cutting through the integument, superficial fascia, and three muscles. Such a course would, I think, be quite proper; and had it, as well as the deep incision I have spoken of, been made early in this case, it is within the

range of possibilities that there might have been a more fortunate termination; but, in the face of an entire absence of swelling in the perineum, and of the improbability of there being much urine extravasated, we did not consider it justifiable. I am now of opinion that I should take a different view of any similar case, and should at once resort to the free and deep opening.

The very rough outline of the position of the several parts will probably aid in conveying a correct idea of the course taken by the urine in both kinds of extravasation.

6 Lever Street, Manchester, August 1855.

BIBLIOGRAPHICAL NOTICES.

MAXIMEN DER KRIEGSHEILKUNST. Von Dr. LOUIS STROMEYER, Königlich Hannoversche Generalstabsarzt, etc., früherem Generalstabsarzt der Schleswig-Holsteinischen Armee. Zwei Abtheilungen, 8vo., pp. 773. Hannover: 1855.

[MAXIMS OF MILITARY SURGERY. By Dr. LOUIS STROMEYER.]

In one of our former numbers, we offered a few remarks on the scientific career of Dr. STROMEYER, and announced to the profession the publication of the work whose title heads our present article. This work, we then stated, contained an extension to the surgery of the field of battle of the principles at first applied to the surgery of civil life. The soundness of these principles, and the correctness of the step taken in their extension, was shown to have been proved by the experience furnished in three campaigns. Our confidence in this assertion was based upon the name, position, and character of the author, and upon the circumstance that he gave all the facts from which his principles are derived in so simple, perspicuous, and at the same time so inductive a manner, that their intrinsic value would have, irrespective of the reputation of the author, entitled them to our most earnest consideration.

We have said thus much confidently, because we are ourselves not unacquainted with the subject; honestly, because it is our deepest conviction, which we gained from a frequent perusal of the *Maxims*, and from a careful comparison with most of the more modern works on the surgery of warfare. While the reader will derive pleasure and instruction, and abundant food for reflection, from a perusal of the *Maxims*, on the other hand, the surgeon in the field, if he make Dr. Stromeyer's principles his own, will find his confidence justified by his success.

The introduction to Dr. Stromeyer's work contains valuable remarks on the medical staff of the Schleswig-Holstein army, with glances at the actual position of military medical officers in general, and that which they ought to hold. The division of army surgeons into six classes, according to their qualifications, is to be recommended for general application. Five classes include all the qualities required; the sixth class comprises those who should be got rid of as soon as possible, because they injure the reputation of the department. For this reason, all appointments made on a sudden, and any considerable increase of a medical staff, ought to be only temporary. The introduction also contains remarks on the pharmaceutical staff; on implements and means of transport at the disposal of the sanitary staff; on hospitals (a most important chapter); on the ambulances; and on regulations, instructions, and reports, regarding the sanitary service of an army.

The first part treats of Gunshot Wounds in general. It would be vain to endeavour to give even the shortest sketch of the single chapters; we have therefore selected a few points which, from their practical importance, are of interest not only to the military, but also to the civil surgeon, such as hæmostatic operations, and practical rules for their performance, injuries of bones, and the question of primary or secondary resections in the continuity of long bones, about which there exist so many conflicting opinions.