ART. XVII.—*Gangrenous Traumatic Hernia.*^a By WILLIAM TAYLOR, M.B. Dubl. Univ., F.R.C.S.I.; Member of the Council, Royal College of Surgeons, Ireland; Surgeon to the Meath Hospital and Co. Dublin Infirmary, and Surgeon to Cork Street Hospital, Dublin.

THE subject of my present communication is again, as have been most of my previous communications to this club, that of an old theme, but the case I take to illustrate it has I think at least one feature alike interesting and uncommon to redeem it.

The case is that of a young gentleman, aged twenty-seven or twenty-eight years, who, on the evening of the 24th of July, 1904, received a kick from one of his horses in the left groin.

Dr. Nolans, of Gorey, Co. Wexford, was sent for some hours later, and on arriving found on examination the scrotum and penis greatly swollen and ecchymosed, while the left inguinal region—the site of the injury—was also swollen and discoloured, the skin being slightly abraded over this area. The inguinal swelling crepitated on handling, giving the sensation of surgical emphysema. There was great tenderness over the swelling, and the patient complained of intense pain in it. Next day the state of affairs was much the same. There was absolute constipation, but very little vomiting. There was never any swelling in either inguinal region prior to this injury. An aperient was ordered, also enemata, but without other effect than that of increasing the vomiting and abdominal pain. Tympany of the abdomen soon appeared and rapidly increased. Owing to the history of the injury, the swelling in the left inguinal region associated with vomiting, absolute constipation, and increasing tympany, Dr. Nolans arrived at the conclusion that the case was one of a strangulated traumatic hernia requiring operative interference as soon as possible, and accordingly sent for me. On my arrival on the evening of the third day after the receipt of the injury I found the skin over the left inguinal region becoming gangrenous and crepitating on gentle pressure. The scrotum was perfectly black, and quite as large as a man's head. The general state of the patient was far from promising. Vomiting during the day had been severe,

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and almost continuous, the pain had been extreme up to that day, the tongue was dry and brown, constipation was absolute, the abdomen greatly disturbed, the facial appearance was one of anxiety, the pulse was quick and feeble, restlessness was marked, and he had been without sleep from the time he received the accident.

The stomach was well washed out, and a little chloroform was administered. Having cleaned the affected area as well as we could, a free incision was made through the skin and underlying structures, giving exit to a large quantity of dark brown, foul-smelling fluid, mixed with gas, broken down blood-clot and sloughs. On douching and separating the softened sloughing tissues a small nodule of gangrenous gut, with a small perforation in it, was discovered at the bottom of the wound.

It was impossible to be certain, but, as far as we could see, the bowel was forced through the muscular structures of the abdominal wall. On account of the very septic state of all the surrounding parts and on account of the patient's general condition I decided to simply make a free incision into the protruding piece of gut. Having done this the wound was irrigated, and the index finger was passed up the opened bowel so as to ensure that the constriction was not so tight as to occlude the lumen of the gut and prevent the exit of its contents. A tube was then placed in the bowel, and gauze packed loosely around it. An opening was made in the bottom of the scrotum, a quantity of blood-clot was removed therefrom, and a drainage tube inserted. Directions were given to wash out the stomach should vomiting recur, and to irrigate the bowel with warm water next morning if the bowels did not act in the interval. A purgative was to be administered as soon as the bowels acted. The subsequent treatment of the case devolved upon Dr. Nolans and the nurse, to whose care and attention at this stage the gentleman owes his recovery. There was a free evacuation next day through the artificial opening, and everything progressed in a very satisfactory manner until, at the beginning of September, on my return from my holidays, the patient was sent up to town to me to operate for the fæcal fistula, or rather false anus, which was bound to exist. After a few days I proceeded to operate by first closing the existing opening as accurately as I could, after which the parts were as thoroughly disinfected as was possible under the circumstances. This being done, a lunated incision was made above the pre-

viciously existing opening down to the peritoneum. A similar incision was then made below the opening until the peritoneum was again reached. At this point the intervening mass of tissue was grasped with forceps, the peritoneum was opened above and below, and the mass with the afferent and efferent loops of intestine withdrawn, after separating some few adhesions within the abdomen.

The abdominal cavity having been protected by gauze packing, about six inches of the intestine, including the artificial anus, were resected, and an anastomosis was effected by a Hildebrand's modification of the Murphy button. The wound was afterwards closed by suturing in layers with buried cat-gut sutures, and the skin edges united by silkworm gut, except at the scrotal end, from which too much skin had to be removed to permit of accurate approximation. Union by first intention took place throughout the sutured area. The bowels acted naturally on the second day. The button was passed on the ninth day, and the patient left for Gorey in less than a month, and has since then remained in perfect health.

The interest in this case centres round two points, the first being the nature of the hernia, which must be described as traumatic—a form of hernia which is extremely rare, there being practically no mention made of it in any of the text-books with which I am acquainted, while any reference made to such a condition is directed particularly to the diaphragmatic variety; the second point of interest being the method of dealing with a herniated gut, undoubtedly gangrenous, when exposed by operation. With regard to gangrene, a further question for pathologists arises—viz., whether the mechanical arrest of the circulation is the only element of importance in leading to its production, or whether gangrene does not very largely depend upon organismal virulence and activity. Not infrequently a surgeon cuts down upon a hernia strangulated for two or three days, and yet finds the gut in such a condition that he returns it without a moment's hesitation, while, on the other hand, he has occasion to operate upon a case in which the strangulation has existed for perhaps less than 24 hours, and apparently no more tightly than in the former case, yet the condition of the strangulated gut is one almost, if not quite, gangrenous. Such a diverse state of affairs would surely

seem to point to other factors than mere mechanical interference with the circulation being of ætiological importance in leading to the production of intestinal gangrene. Before coming to the treatment of undoubtedly gangrenous gut when exposed in the sac of a hernia, I should like to ask for information from those members of the club whose experience is greater than my own, how they finally solve the problem as to what is to be done in those cases which are in a decidedly doubtful state, and which embrace, so far as my experience goes, by far the largest proportion of cases one meets in practice? My own practice, so far as tests are concerned, is to employ warm saline irrigation, after dividing the constriction and withdrawing the loop, and notice whether the circulation returns as shown by change of colour. The gut is also flipped with the finger or handle of the knife, and peristalsis watched for. It is particularly noticed whether the peristalsis thus excited travels beyond the area of constriction. The veins in the mesentery leaving the loop are also examined to see whether they are thrombosed. Of course the site of constriction is examined the moment the gut is freed, also the most distal part of the loop. In spite of these tests I have often found extreme difficulty in deciding whether the loop is likely to recover, and consequently what should be done with it. Hitherto I have always returned the loop in such cases just within the internal abdominal ring, merely closing the skin around, and in no case have I had occasion to regret this step. The abdominal cavity seems the best place to ensure the recovery of a doubtful piece of intestine. It is, I think, unquestionably the case that many unnecessary resections are performed in such cases, and few will be found to deny the fact that resection will add, to place a mild estimate upon it, at least 20 per cent. to the mortality of the operation for strangulated hernia. As regards the treatment of undoubtedly gangrenous hernia I do not think any surgeon would be so unwise as to lay down a hard and fast rule which he would make applicable to all cases. For example, to have resected the gangrenous loop and opened the abdominal cavity to perform an anastomosis in the presence of a mass of septic sloughing tissues, such as I had to deal with in the case already detailed, would, in my opinion, have meant disaster.

Again, resection followed by anastomosis considerably prolongs the time occupied by the operation, and many such patients are not in a fit state to withstand prolonged operations. To leave a large gangrenous loop in the sac of a hernia—merely making an incision into it—would undoubtedly be unwise, as the increased septic absorption therefrom would surely add the last straw to the patient's already overtaxed recuperative powers. In such a case, if the patient's condition is one of gravity, resection of the greater portion of the affected loop as it lies in the sac of the hernia, without touching the constricting band, would probably be the line of treatment from which the best results might be anticipated. Resection and immediate restoration of the continuity of the intestinal canal should, in my opinion, only be undertaken where, in the first place, the patient's condition is otherwise good, and secondly, in cases in which perforation has not yet taken place, and consequently in which the gangrenous process has not spread to the surrounding tissues, no matter whether the affected loop be large or small. The treatment of the affected area in cases of partial enterocele, of which I have met with three examples, in the sac of a hernia—two of which occurred in successive weeks—is always one of considerable anxiety when the ensnared portion involves more than one-third of the circumference of the bowel, but if less than this amount is involved the difficulty is easily overcome by enfolding the affected area by a purse-string suture, and applying a couple of Lembert sutures over this again at right angles to the long axis of the intestine.

One other question arises in connection with gangrenous hernia—viz., should a radical cure ever be attempted in cases in which resection and immediate anastomosis have been performed. My own reply would be certainly not. Sepsis is pretty certain to occur in the wound, and the attempted radical cure will be a failure.

To sum up, I should say that in all doubtful cases of partial enterocele involving one-third or less of the circumference of the bowel, the affected area should be enfolded and the loop returned into the abdomen. In all doubtful cases of partial enterocele involving more than one-third of the circumference of the bowel, the treatment should be the same as

that for ordinary doubtful cases of strangulated hernia—that is, return the loop just within the internal ring.

In undoubtedly gangrenous partial enteroceles involving one-third or less of the circumference of the bowel, enfolding the gangrenous area by a purse-string suture, reinforced by a Lembert suture applied over it at right angles to the long axis of the gut, would appeal to me as the proper course to adopt, while should the gangrenous process involve more than one-third of the circumference of the bowel, resection of a couple of inches at least of the bowel, followed by immediate anastomosis (lateral or end-to-end, as the case may be), if the patient's condition is otherwise suitable, should be adopted. If the patient's condition is not considered suitable for immediate anastomosis the loop should be withdrawn, the gangrenous portion cut off, and the ends drained by Paul's tubes.

In either large or small gangrenous herniæ if the loop has not perforated, if the gangrenous process has not spread to the surrounding tissues, and if the patient's condition is suitable, resection of not only the affected portion but of a considerable portion both above and below the area of constriction, followed by immediate anastomosis, should be performed.

In small gangrenous herniæ which have perforated, or in which the gangrenous process has spread to the surrounding tissues, or in which the patient's condition is bad, a free incision into the affected loop without interfering with the constriction will give the best results.

Large gangrenous herniæ which have perforated, or in which the gangrenous process has spread to the surrounding tissues, and in which the patient's condition will in all probability be extremely grave, are best treated by cutting away the greater portion of the gangrenous loop and leaving the wound open for free drainage, the constriction being left untouched.