ART. III.—*Remarks on Hernia and Intestinal Obstruction.* By
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WHEN a portion of the contents of any of the compartments of the body protrudes through the walls or partitions, medical men recognise the abnormality by the name of hernia. The usual varieties met with in order of frequency are—protrusion through the inguinal canal—oblique and direct, through the crural ring, through the umbilicus, through the obturator foramen, and through the diaphragm, also through the external wall, in case of wounds or extreme emaciation. If the protruded part cannot be returned to its natural location the hernia is termed irreducible, and when the extruded portion becomes inflamed and the bowels obstructed it is called strangulated. The tumour is then tender, tense, and oftentimes swollen. The causes of hernia chiefly are—1. Patency or inefficient closing, in post foetal life, of openings which are appropriate to foetal life; 2. Weakening of the impedimental tissues in the defective parts; 3. Opening of the parietes by wounds or injuries; 4. Straining and shaking (as in jumping or riding) the enclosed viscera. An excess of mesenteric ligament has been assigned as a predisposing cause by Lawrence. This is more than doubtful. It has been observed that wherever a wound of the external walls has been made the restraining ligaments have been in every case sufficiently long to allow protrusion, and therefore it may be concluded that they do not in any instance offer a satisfactory check to hernia recurring. Nevertheless, in the proceeding called the taxis it is advisable that gravity and the traction of the ligaments should be made to assist position and medicaments, so as to aid in reduction. The principal causes of strangulation are—1. Accumulation of gases and fæces in the extruded part of the intestine; 2. Convolvulus or twisting due to peristaltic action or to manipulation; 3. Constriction by bands of lymph; 4. Extensive adhesions; 5. Paralysis of gut; and 6. Intussusception. It is manifest from the inelastic and non-contractile nature of the medium through which the hernial protrusion occurs that there is nothing like an active tightening of the canal or rings which bound it. The absence of an impulse communicable to the hand on coughing shows that the intestine is so strangulated that communication between the abdominal and hernial parts is cut off. The bearing in mind of these facts is of much importance for the treatment that will be suggested further on. When the

contents of the protrusion do not include intestine, but are made up of other organs, the symptoms are those of inflammation of the contained organ, and of a foreign body in the site affected. The symptoms of strangulated hernia are those of obstruction of the bowels, more or less according to the organ strangulated, pain in the hernial tumour and at the umbilicus, vomiting, thirst, and, if not relieved, peritonitis, gangrene, and death.

When strangulated hernia has not been found reducible by the taxis, and an operation has become necessary, almost invariably fluid from peritonitis in the sac and fæcal matter and gas in the involved intestine have been met.

It is well known in surgery that the chances of successful recovery greatly depend on the state of the hernial tumour and the extent of manipulation required to reduce hernia; besides, as the connexion between the abdomen and inguinal canal is barred, as indicated by the impulse of coughing being not communicable to the hand, it follows that there is great danger of rupturing or confusing the protruded organ when striving to return it by the taxis, and even when restoring it by herniotomy as at present practised. This consideration will apply to all situations. [N.B.—The presence of a communicable impulse at coughing indicates that there is a portion of bowel in the tumour which has free open connexion with that in the abdomen, and the passage of some stools shows that there is an emptying out of the part below the stricture, and that the strangulation is only partial, or perhaps embraces the omentum and not the intestine.]

The advantage of Dr. Laffan's proceeding, as published in the *Medical Press* of May 7, 1884, in Case 2, and recommended by Dr. Bryant some years ago, will be apparent. By tapping the tumour and reducing the distension, taxis has been successful. I may mention, at the risk of being considered egotistic, that I have been convinced since 1870 that tapping with a small trocar and canula and letting off fluid ought to be done early and freely in many cases of bowel obstruction and hernia. In that year the staff surgeon of Hyderabad, Dr. William Nolan, at present Superintendent of the Lunatic Asylum, Colaba, Bombay, had a patient—an Ordnance Sepoy—suffering from obstruction of the bowels brought on from eating melon. The fruit fermented in his gut, distending it, together with the belly, enormously. Every ordinary method was tried—sulphates, calomel and opium, croton-oil by the mouth, enemata of soap and water, castor-oil and turpentine, and air

forcibly thrown up by the long tube. Faradisation was used, and all to no good purpose. Dr. Nolan was asked to permit tapping of the man, as the case was hopeless and in a sinking condition, as I had seen cattle who had suffered similarly after clover-grass vented and cured. After some deliberation permission was obtained, and, adopting the veterinary rule to strike the most tympanitic and prominent part, I plunged a hydrocele small trocar and canula. The trocar having been withdrawn, there was let escape a quantity of foul gas. The patient obtained much ease and consoling hope from the operation. Dr. Nolan took advantage of the improved condition, and endeavoured to have the bowels moved; however, he was not successful, the flatus had accumulated again the next morning, and the vomiting had returned in the night. I tapped him again, the gas was more fœtid, and though there was much relief, hope was not so assuring. For the third time I vented him in the forenoon, the interval being shorter than on the former occasion. He succumbed to peritonitis and gangrene, and at the *post mortem* examination in the afternoon it was plainly made manifest to Dr. Nolan and myself that the operation of tapping or venting the intestines is a legitimate proceeding. The cæcum, the ascending, transverse, and portion of the descending colon, were embraced in a convolvulus which, if removed, immediately came back; where they embraced each other there was complete gangrene. The included part of the colon was abnormally distended from foul air, and contained some decomposing melon. Its wall was quite transparent, in which were the three punctures of the trocar, and no exudation or inflammation, and only a slightly congested patch the size of a freckle to indicate the operation.

There were all the conditions present of an experiment from which might be drawn valuable conclusions—viz., an attenuated intestine wall with thinned mucous membrane and anatomical healthiness of the portion punctured, without any sign of the slightest injury having been done by the operation; so that tapping may be performed in obstruction of the bowels and in hernia without the least compunction; and thus by diminishing the tension of the gut the chance of the taxis in the one case and of medical treatment in the other is facilitated and rendered better.

The operations for the relief of strangulated hernia may be divided into two classes, according as the incision is made over the fundus or over the neck of the tumour; the former was generally

practised till recently, and the latter has received in Dublin the name "dissection operation."

Scientific surgery will concede that this operation is the preferable one of the two in the inguinal and umbilical forms; besides, the cause of the constriction may be in the sac and it is not desirable that the tumour should be returned with the stricture if it were caused by a band of lymph, leaving the patient still with obstruction of the bowel. It would be an advantage, for correspondence sake, were the old operation called "the proximal" and the new one "the direct." In the operation for hernia, the desiderata are—impediments to the normal action of the gut should be removed, as little force as possible should be used with the tumour, and the cure should be a radical cure, so that there should not be a relapse, which can be done more easily and effectually by the direct than by the proximal operation. Wherever adhesion is required it is axiomatic "to attend to the deep parts," and after the direct operation these can be held together by quill or pin sutures, and vessels and viscera may be avoided more easily than in the operations of Wutzer and Wood, as done in inguinal hernia.

The modifications proposed by some authors of invaginating the fundus of the sac in its neck to occlude the canal is liable to the same objection as Wutzer's and Wood's operations. Twisting the sac in rope fashion merits more emphatic condemnation on account of the difficulty of ascertaining as to how far upwards the twisting exerts its influence, for the twisted tissues may constrict a portion of gut, or include a piece of omentum, and the liability to sloughing and inflammation, which rough contusing of parts would induce, is made greater.

OPERATION ON A NEW SYSTEM FOR HERNIA.

The interest which the several societies in London, Dublin, and the provinces have attached to hernial papers in the current session, is a warrant that the treatment is not definitely decided or classically fixed in any of its phases. The number of cases that die in a short period after the operation for hernia of either peritonitis or obstruction of the bowels, the danger to life inflicted by much manipulation of the hernial tumour, and the almost physical impossibility of not contusing or even not lacerating the tumour by passing the finger or a director and knife up a passage that is already made too tight on its contents, are constantly recognised by experience. Again, herniæ take place usually through tendinous, ligamentous, bony openings,

or some opening bounded by a combination of those structures, little vascular, and therefore difficult of closure; it is for this reason a misfortune to enlarge such a viaduct by cutting, if it can be avoided. Aspiration of the tumour by tapping will assist in obviating contusion or laceration where it will not be successful in assisting the taxis; and I advocate that it should be invariably performed when the tumour is tense, and that it should be done at an early stage. In the effort to force back the tumour there is danger of rupturing at the neck of the hernia; the cover of any pneumo-fluid contents is liable to burst at the weakest part and where the resultant of the forces applied acts, and this is at the neck of a conical or cylindrical shaped bag, which is rendered more liable still by a gangrenous or inflamed state following strangulation. Another grave defect in the heretofore practised proceedings is that all attempts at occlusion of the chasm are made at the distant side of the wall to that on which the pressure which caused the rupture, and is likely to re-cause it, exists.

If the contents of the abdomen be called pneumo-fluid of less specific gravity and greater elasticity than water, it will be perceived that a small resistance offered at the side of the wall next the pressure will be much more effective in preventing the outflow than a vastly greater amount at the distant side—a fact established in hydraulics. For the purpose of overcoming these defects I venture to ask the profession to adopt a new system of operating in hernia.

I propose that for umbilical hernia a vertical section shall be made just outside the seat of tightness, and that for inguinal—oblique and direct, crural and obturator—the cut shall be made above, and almost parallel to, Poupart's ligament—that, in fact, the abnormal state of things should be combated *ex tergo* instead of *ex fronte*. By this means the hand will impinge on a sound and not on an inflamed or sloughing part of intestine, there will be less liability to laceration and rupture, and the adhesions which have caused the obstruction of the bowel can be more easily and securely broken down. Moreover, if enlargement of the so-called stricture be found necessary it can be done better from the pressure side than from the tumour side. I propose that the enlargement may be effected by an expanding forceps, whose blades are smooth, slightly curved and distensible with force to the handles. By such action wounding of important structures will be avoided and the expansion of the opening or so-called stricture will take place at the weakest point, and not as in the old operation. In oblique inguinal hernia

the tumour components will be between the operator and the epigastric artery; in direct the artery will be outside them; in crural, direct, inguinal, or obturator, the incision, if kept close to the ligament at the pubic end, will avoid the epigastric artery and the important vessels which lie adjacent. The wound can be effectually closed by pin or quill sutures; and in umbilical, inguinal and crural hernia they can be inserted so as to close the hernial opening, and thus effectually accomplish the radical cure. One lip of the wound being highly vascular, healing will be facilitated. If the bowel be found gangrenous or atrophied an artificial anus can be made at the same incision, and there will be no risk of ligaturing important organs as exists in Wutzer's and Wood's operations. I propose to call the proceeding "the distal operation" for hernia.

The objections which may be advanced against the distal operation are—1st. There is already an abnormal opening into the abdomen, and it is not advisable to make another if the existing one will suffice for our object. 2nd. The risk incurred by exposing a large serous cavity, and of wounding large vessels and the intestines. 3rd. The greater difficulty of performing the distal operation—(a.) As the object should be to give the patient the greatest chance of life and comfort, and the aim should be to meet in the most efficient way every probable and possible contingency; these will be attained by the distal operation, and not so surely by either of the other two methods. (b.) The risks to life and comfort are not greater in exposing the peritoneal cavity than they will be if a portion of intestine, with adhesions or bands of constricting lymph be returned through the existing passage, which is proved by the large mortality amongst strangulated hernia cases, within a short period from obstruction or peritonitis. (c.) The difficulty of the operation should be no bar to its performance, and especially if, during execution, numerous vantage points be seized for overcoming the immediate and mediate effects as well as preventing a recurrence.

THE RADICAL CURE OF NON-STRANGULATED HERNIA.

As there is not immediate danger threatened in non-strangulated hernia, the reasons for performing an operation are different and not so urgent. The radical cure is done for the purpose of removing an inconvenience, and of anticipating strangulation. Several methods have been adopted. Wutzer's, which may be denominated the caulking process, and Wood's, which is an ingenious plan, have both only met with an indifferent success. Wood

draws the pillars of the ring together by a ligature. Spanton, of Hanly, has devised an instrument for this purpose. There are others who tie or twist the sac so as to obtain a barrier to the tumour re-forming. The evil results that have sometimes followed are ligature of the spermatic vessels, and as a consequence, necrosis of the testicle and peritonitis or cellulitis from the twisting or plugging, irritating the peritoneum and acting as a foreign body. The twisting may even entangle the intestine and strangulate it so as to cause obstruction. A proposal has been made at the other side of the Atlantic to inject some irritant fluid into the sac so as to set up inflammation and adhesions. The objection to this will be that the fluid may pass into the cavity of the abdomen, as from the nature of the part the anatomical continuity will favour such an event. As an improvement on this latter, it would be well to apply a piece of lint, saturated with acetum cantharidis, in the length of the sac, for a few seconds, the irritation and inflammation will be thus limited, and with pressure and rest the chances of occluding the passage will be many; the proceeding would be equally applicable to femoral hernia as to inguinal. I have seen exceedingly bad fistulæ closed by such means.

There is yet an operation which is done in veterinary surgery, a modification of which might be of use to man. In umbilical hernia of the horse a pin, or two, is inserted superficially, and under the ends of them are placed parallel pieces of wood and tied together so as to act as a clamp; the pins urge the clamp to make deep-seated pressure. An equivalent disposition can be effected in the human subject for umbilical and inguinal hernia by substituting for the pieces of wood strong and long pins, inserted deeply at right angles to the short and parallel to the long diameter of the neck of the hernia. By tying the ends together, the opening through the wall, and the channel through which the hernia protruded, may be obliterated. The superficial pins are used to draw out the integument, and to direct the large pins deepwards.

OBSTRUCTION OF THE BOWELS.

The symptoms are—constipation, pain at the umbilicus, vomiting, tympanites, gastritis, peritonitis, gangrene; death. Causes—Impacted fæces, intussusception, convolvulus, adhesions, stricture from bands of lymph, atrophy and paralysis of intestine. Treatment—Enemata of castor-oil and turpentine, soap and water, magnes. sulph. thrown up by the long tube, stuping and friction, faradisation,

calomel and opium, or belladonna—the purgatives which act through the muscular coat in intussusception, convolvulus, and paralysis; in impaction, stricture, and adhesions—those which act through the mucous coat and increase watery discharge. Forcible injection of water, and even air, have been followed by a favourable result. When the tympanites is extensive, tapping should be performed. Removing the cause of the great distension from the intestines will facilitate the action of drugs on the walls. I would suggest that some castor-oil and turpentine might be injected into the intestinal canal by the canula. If gas has escaped freely, the canula is in the hollow of the gut, and there can be no danger of injecting into the peritoneum. The advantage would be decided in a therapeutic point, as there would be assurance that the medicine would not be vomited ere it arrived adjacent to the seat of mischief. Abdominal section should be more generally and early performed. I leave to experience the determination of the value of the foregoing remarks, and conclude by adding that the surgeon, like the skilful strategist, should make an economic disposition of his resources, having carefully noted the evils he has to overcome; and not only should he weigh thoughtfully in his mind the apparent difficulty, and so arrange his operations that he may subdue them with the greatest ease and least loss, but he should make provision for all eventualities and any miscarriage that may take place at every step; and he should apply his reserve so that he may be able to retrieve as far as possible a partial defeat. I have striven in this article to estimate the gravity of hernia and bowel obstruction, and, with the hope of combating it, to give some new suggestions which have been dictated by the recollection that, though the best result may be obtained, there are several accidents and misfortunes which may arise, and which might be disastrous if not checked. If these hints do not contribute to make success easy and complete, I trust that they will assist in rendering failure less frequent, and contingent complications less formidable.

RESORCIN IN CHANCRES.

LEBLOND AND LISSIAUX (*Annales de Gynécologie*) recommend resorcin as a better application to soft chancres than iodoform, not only on account of its freedom from smell, but also because of the rapidity of its action. Whilst the healing of a chancre with iodoform occupies, on an average, 38 days, the resorcin has the same effect in 23 days. It is used in solution (5–20), or in the form of powder.