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CASE

OF

STRANGULATED HERNIA,

WITH PERFORATION OF THE BOWEL,

IN WHICH THE OCCLUSION OF THE APERTURE BY LIGATURE WAS SUCCESSFULLY ADOPTED.

BY

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CASE OF STRANGULATED HERNIA.

On Monday the 22d February, Dr Littlejohn received a telegram from Dr Bell of Kettle, in Fife, summoning him to his relative Miss W., and requesting him to bring me along with him, to operate upon her for a strangulated hernia.

On reaching our destination about midday, we found the patient, an active woman of spare habit, but upwards of sixty years of age, in a state of prostration bordering on collapse. The abdomen was tense and tender, the pulse still hard in stroke, becoming frequent in number, but small in volume, constant hiccough and vomiting, a flushed face, a dry tongue, a feeble whispering voice, and copious general diaphoresis. The hernial tumour which occupied the right femoral space was ovoid, lying along the line of Poupart's ligament, tense and tender to touch, the surface slightly reddened, and the cutaneous textures agglutinated to the parts beneath. Her history was one of old reducible hernia, for which she never wore a truss. She stated that when in Kettle, seventy-two hours previous to our visit, she felt the rupture start in her groin, occasioning pain and a sense of faintness; that she returned home immediately, and attempted to reduce the swelling, but without effect; that about 9 P.M. vomiting set in, and that ever since she had suffered from intense twisting anguish in the region of the umbilicus, with constant retching, and latterly hiccough. To relieve these symptoms she had taken aperient medicine, which had been ejected by vomiting, and had applied warm fomentations to the belly. It was not until seven hours before the period of our visit that Miss W. sent for Dr Bell, who at once, on examining her, telegraphed to Edinburgh for Dr Littlejohn and myself.

The condition of matters rendered an immediate recourse to operation imperative. Accordingly, having administered chloroform, I proceeded, with the assistance of Drs Littlejohn and Bell, to operate in the usual manner. On opening the sac, a quantity of claret-coloured muddy fluid escaped, and on exposing the contents, which consisted only of bowel, and sponging its surface, we found it presented a dark-chocolate colour, with its glistening serous surface

obscured by a white or rather ash-gray "bloom." The texture of the bowel was soft, and manifestly admitted of no rude handling. The probe-pointed bistoury was accordingly guided with the greatest gentleness beneath the stricture to the inner and anterior aspect of the neck of the sac, the bowel being protected by the fore and middle fingers, while the nail of the forefinger formed the director of the bistoury beneath the constricting ring. The slightest lever movement of the knife-handle made space so that the bowel became flaccid. On drawing gently upon the knuckle of intestine, it seemed adherent to the ring; but yielding to the gentle continued traction, an adhesion seemed to give way, and the knuckle of bowel came down. At the same moment, with a crack like a bubble of air bursting, a puff of fœtid gas and a gush of fluid fæculence escaped from the intestine on the level of the mouth of the sac. On washing the parts, the aperture of escape was found on the side of the bowel corresponding to the external aspect of the femoral ring, and close to the mesentery. It seemed like a transverse linear cut, a little more than a quarter of an inch in length, such as a thread might have made in the serous membrane, through which the ulcerated mucous and muscular coats along the whole line of constriction were obviously exposed. Puckering together the peritoneal coat with a pair of dissecting forceps from around the small aperture, I secured it with a ligature tied with a double knot, which, while applied with sufficient firmness to prevent it slipping, was gently tightened so as to avoid further cutting by the ligature of the tender serous membrane.

After again carefully cleansing the bowel, I returned it within the abdominal cavity; the ligature, however, was left hanging out through the wound. Further, the patency of the sac was secured by stitching its divided margins to the edges of the cutaneous incision. The dressing consisted of a pad of tow supported externally by a folded towel, and retained by a spica bandage. The patient was now laid in bed, with the limb on the affected side raised in the flexed position on pillows.

A draught of 50 drops of laudanum was administered as soon as the effects of the chloroform had sufficiently passed off to admit of her swallowing; and a quarter of a grain of muriate of morphia in pill was ordered to be given repeatedly.

Within four hours all painful symptoms had subsided; the patient had also enjoyed several quiet sleeps, and taken from time to time a single spoonful of water or of milk. We desired that her food should consist of milk and beef-tea, with ice, but no solids; and even of those fluid articles of nutriment, she should have no more than a mouthful at a time.

28*th February* (five days after the operation).—The wound has only once been dressed since the operation. To-day Dr Littlejohn again visited Miss W. with me, and we found all the symptoms of abdominal tenderness quite subdued; the pulse quiet, the tongue

moist and otherwise good, and the thirst moderated. On dressing the wound, I found the sac sloughing, and accordingly cut out the sutures. The ligature still hung out of the wound. There was no fæculent smell, and no purulent discharge; the fluid exuding from the surface consisting simply of fœtid serosity.

4*th March* (ten days after the operation).—Dr Bell remarked that some fluid fæculence had escaped upon the dressing. The ligature still, however, remained in the wound, which, in the report with which he favoured me, he says, is beginning to granulate, the sloughing sac having separated.

9*th March* (fifteenth day after operation).—No fæculent discharge to-day.

14*th March* (twentieth day after operation).—To-day the ligature came away on the dressing. There has been no fæcal flow since last report. To have oatmeal-gruel three times a day.

21*st March* (twenty-seventh day since operation).—To-day the bowels acted spontaneously, for the first time since the operation.

1*st April*.—To-day the wound has soundly closed, no discharge of any kind showing upon the dressings.

Since last report the patient has not only been out of bed, but has been able to venture out of doors, and is now (21st April) perfectly restored to her usual health.

In this case, a period of more than seventy-two hours had elapsed from the time when the rupture descended till the operation was performed, and during at least sixty-three hours of that period symptoms of strangulation had existed. The prognosis of an operation undertaken under such untoward circumstances was necessarily bad. It is a recognised fact in the treatment of hernia, and one which should be sedulously impressed upon pupils as illustrating the necessity of avoiding all unnecessary delay in resorting to operation, that death of the patient has occurred within eight hours after the descent of a hernial protrusion.[1] In such cases, where sphacelation has ensued, the constriction has usually been excessively tight, and the bowel unprotected by any omental wrapping. In any instance where twenty-four hours have elapsed during which urgent symptoms of strangulation have been persistent, there is little likelihood of finding the intestinal contents of the sac in such a condition as to admit of their being returned to the cavity of the abdomen. Those examples where a much longer period has intervened from the recognised descent of the hernia till it has been successfully relieved by operation, such as a week or ten days, have undoubtedly partaken rather of the characters of the incarcerated than the strangulated hernia; and as the condition of incarceration may either insensibly pass into

[1] Sir A. Cooper on Hernia, 2d edition, p. 36.—"There is a drawing of a large intestinal and omental hernia in the museum of St Thomas's Hospital, which Mr Else used to state in his lectures proved fatal in eight hours from the first appearance of strangulation. Under these circumstances, death is not occasioned by mortification, but by the constitutional irritation."

that of reducibility or of strangulation, it certainly becomes a difficult matter to decide when the symptoms of strangulation—*i.e.*, interference with both fæcal flow and vascular circulation in the part retained—became established. For convenience' sake, the occurrence of abdominal inflammatory symptoms and persistent vomiting may be accepted as indicating the period when strangulation is established, and after which all delay is dangerous. Accepting this criterion, we have in this case a history of sixty-three hours of strangulation.

The strangulation had fortunately not been aggravated by any violent remedial efforts. She had taken a dose of aperient medicine, certainly, for she regarded the attack as a bilious one; but this purgative had been ejected by vomiting, and it may be eliminated from the history of the case as in any respect complicating its progress. There had, furthermore, been no repeated efforts at the taxis.

Dr Bell, when he saw the case for the first time, at 6 A.M. of the 22d, taking into account the long period the hernia had been down, very wisely abstained from making any violent or long-continued effort to reduce the rupture, regarding the condition of the bowel as very questionable, and doubting whether, if he could reduce it, the result might not be for the worse rather than the better. It would be well if a like prudent consideration guided the conduct of all surgeons. I have more than once been called in to see a patient in a state of collapse and unconsciousness induced by the forcible reduction of a strangulated hernia, and where a soft tympanitic sac indicated that an effusion of the intestinal contents had occurred, and that a gangrenous portion of torn bowel had been returned to the cavity of the peritoneum.

Considering the other symptoms present in this case, there were indications good and bad. The pulse had a steady, sharp, jarring character. The face was flushed; the surface was covered with a warm and copious perspiration. So much was favourable. But, on the other side, hiccough had set in; there was well-marked abdominal tenderness, and the skin was brawny over the sac, while the voice was like that of a cholera patient in the stage of collapse.

By some hiccough is thought to be pathognomonic of sphacelation having occurred.[1] This view I cannot accept, as, not only in the present case, but in several others in which I have operated with success, the hiccough had for hours been a source of great uneasiness and exhaustion.

I regarded the hiccough in this case, especially in combination with the febrile disturbance, well-marked abdominal pain, and brawny thickening of the soft parts overlying the sac, as symptomatic of peritonitis affecting the sac, its contents, and the abdominal cavity. The symptoms, therefore, on the whole, urgently called for operation; but the long continuance of these symptoms and their well-marked inflammatory characters, gave a somewhat doubtful

[1] Sir A. Cooper on Hernia, 2d edition, p. 35.

prognosis as regarded the vital condition of the contents of the sac, and therefore of the prospects of the patient.

The operation needs no comment; it was executed in the usual way. So far as opening the sac was concerned, I will only here remark in passing, that this case was one of those in which not even the most strenuous advocate for the extraperitoneal procedure would have deemed it expedient to have attempted to afford relief without opening the sac. There were two grounds for such a view being taken of the line of operation even before commencing: *first*, that the symptoms of strangulation had lasted almost beyond the period when any hope of finding the bowel in a returnable condition could be entertained; *second*, that the inflammatory symptoms were so well marked, that to open the sac would be desirable, as a means of affording an escape for the fluid inflammatory products. On opening the sac, the fluid which escaped was both good and bad: good in so far as it was not putrid, bad in so far as it contained lymphy flocculi. I have on several occasions observed, when the fluid in the hernial sac is flocculent, and a nebulous haze obscures the natural peritoneal lustre, even where there is no sphacelation of the intestine, that the patient either sinks from sphacelation of the bowel after its return, or that a fæcal fistula becomes established from the giving way of the softened intestinal structures. And in the latter class of cases, when the patient has sunk, and an opportunity for dissection been afforded, I have observed well-marked ulceration of the mucous and muscular coats of the bowel at the point of constriction.

The division of the constriction was effected in the usual way with a curved blunt-pointed bistoury. I have never employed a director in operating for hernia, either for the preliminary division of the soft parts, or for guiding the bistoury beneath the constricting margin. When the opening is moderately large, the tip of the forefinger can much more accurately form a guide; when the opening is very small, there is really no room for most of the implements of this kind to be introduced without the risk of bruising the constricted parts. I never experienced the slightest difficulty in insinuating the mere cutting extremity of the edge of the blunt-pointed bistoury guided by the finger under the constricting fibres, so as to notch them effectually; and I have always looked with dismay at operators who seem not to be content unless they have at least half an inch of the knife in the cavity of the belly, and cut as though it required a large incision to give the necessary relief. A very limited division of the stricture is all that is necessary. Such a careful application of the cutting edge of the bistoury, in one instance in my practice, most certainly avoided the division of the obdurated artery, where, after the bowel had been returned, on inserting the finger within the ring, the course of the vessel arising abnormally from the epigastric could be distinctly perceived surrounding the neck of the sac.

After relieving the constriction, on gently drawing upon the bowel, which had become flaccid, there was a slight resistance, and then the escape of the flatus and fæculence from the point of constriction as the site of nipping was exposed. Adhesions at the site of stricture had taken place, agglutinating the intestine to the parietal peritoneum within the abdomen, and at the site of stricture. The yielding of these lymphy patches exposed the slit-like opening in the peritoneal coat, and thus established a communication with the cavity of the intestine where the mucous and muscular coats had already been penetrated by ulceration. How, it may be asked, was this slit-like aperture produced in the intestine? I believe, by the tight and thread-like margin of the stricture, against which the taxis forced the thinned and softened texture of the bowel with such effect as to cut it through. The absence of any omental wrapping would necessarily favour this effect. But if the solution of continuity took place when the taxis was employed, how came it that the intestinal contents did not escape into the sac, and the collapsed bowel recede within the abdominal cavity? For this is the result in most cases when either the softened contents of the hernia or the inordinate efforts at taxis are attended with perforation of the intestine. The adhesions between the bowel and the parietal peritoneum at the seat of stricture, and on its inner or abdominal aspect, together with the integrity of the mucous and muscular coats at the time the taxis was employed, may suffice satisfactorily to explain this result.

Such slit-like apertures have undoubtedly been sometimes produced by other causes, such for example as a careless application of the bistoury in relieving the stricture. In narrated examples of this accident, the escape of fæculence and flatus is described as occurring when the knife is either introduced or withdrawn in dividing the constriction; the aperture is situated on the aspect of the bowel corresponding to that upon which the knife is inserted within the femoral ring, and the slit in the gut is at right angles in its direction to the axis of constriction. In the present case, the aperture in the serous coat of the intestine was linear, but transversely so, or, in other words, in the axis of constriction, there was no flatal or fæculent escape on employing the knife, and the opening was upon the aspect of the knuckle of bowel away from that on which the knife was applied. Fortunately, it corresponded to the mesenteric attachment of the intestine, and was not upon its free marginal surface. It was, in other words, situated where the likelihood of plastic results was greatest, and where the puckering together of the peritoneum was least calculated to diminish the calibre of the intestine.

The degree of nipping of the bowel at the site of constriction was sufficient of itself to mark that ulceration of the mucous and muscular coats of the intestine must have advanced to the complete division of these textures at the point where the stricture had most essentially interfered with the vitality of the tissues. It is this

ulcerative change in the mucous and muscular structures of the intestine which so often gives rise to after sphacelation of the loop of bowel when neither the appearance of the intestine nor a gangrenous fœtor indicate at the time of operation that its vitality has been destroyed. When this ulceration of the inner coats has become complete, the serous coat alone remaining entire, the vascular supply must come through the vessels of the serous coat alone, and therefore the vitality of the parts forming the mass of the protrusion must be most seriously imperilled. I am surprised, in looking into the systematic works on surgery, how little is said on this subject. No mention of the early destruction of the mucous and muscular coats at the site of constriction due to ulceration, is to be found in the works of Syme, Erichsen, or in the System of Surgery by various authors which is regarded as the great exposition of the British surgery of the hour. In the "System of Surgery" by the late Professor Miller, I alone find the fact adverted to. There it is said, that where "the ulceration proceeding from within has nearly divided the intestinal coats," indicated by the existence of persistent "nipping," the condition of the bowel is "fast passing into gangrene," which may occur wholly or partially with fatal fæculent extravasation after the intestine has been returned to the cavity of the abdomen. If the completeness of the nipping in this case were not sufficient to prove the degree of the destructive change going on within, it was demonstrated by the ulcerated condition of the mucous and muscular coats as seen through the small slit-like aperture. It also proved that the ulcerative change is one which really occurs during the presence of the constriction, and is not merely a pathological result effected and completed during the period which intervenes between the relief of the stricture and the death of the patient. Certainly, the thin membranous film of the serous coat, denuded of all internal support from mucous or muscular structure, when looked at through the opening did not present an appearance calculated to inspire much confidence in its power of either bearing a ligature, or of materially assisting in the process of repair.

The treatment of the aperture in the intestine, together with the successful result, appear to me the most interesting feature in the whole facts of the case.

Careful examination of the implicated portion of intestine led me to hope that its vitality was not wholly extinguished, but that, after the degree of long-continued constriction to which it had been subjected, its recovery was more likely to take place when lying within the cavity of the belly than if left exposed in the hernial sac. To return it into the aperture unclosed, admitting a free fæculent escape, was of course out of the question; but to close the opening as if it were a case of simply wounded intestine, was to run a risk of after-fæcal escape. Against a successful result there were, (1) the weakened vitality of the textures implicated, owing to the long period of

strangulation, and the consequent ulceration of the mucous and muscular tissues of the bowel at the part requiring ligature of the serous coat; (2) the risk of fæcal extravasation, in consequence of early separation of the ligature before any satisfactory agglutination of the parts implicated could take place; (3) the increased risk of a septic purulent peritonitis from the presence of a ligature, and, possibly, sphacelating bowel within the cavity of the abdomen. In favour of a satisfactory result there were, (1) the position of the aperture in the constricted parts being, as we have seen, close to the mesenteric attachment; (2) the likelihood of an agglutinative peritonitis fixing the affected portion of bowel close to the mouth of the sac; thus affording it efficient support, and a free external escape for pus or intestinal contents. The procedure by puckering up the serous coat from around the small opening is precisely what should be practised in cases of penetrating wounds of the abdomen, with punctured wound of the bowel, where the application of the ligature can be effected without diminishing the calibre of the intestine. The healthy condition of the viscus wounded in such circumstances makes the probabilities of success much greater than when the textures, long strangulated in a hernia, are subjected to ligature. This plan of treatment, as adapted to the circumstances of wound in the intestine contained in a hernia, was apparently first suggested by Sir A. Cooper, in the second edition of his work upon Hernia,[1] where he says, "A small wound may be inflicted upon the gut by the knife of the operator. . . . . When this accident occurs, and the aperture in the gut is very small, the surgeon is to employ a different mode of treatment from that required for gangrened intestine. The aperture, with a small portion of the surrounding gut, should be pinched up with a pair of forceps, and a fine silk ligature, being passed round it, should be secured so as to include the ruptured spot; the intestine should then be returned to the mouth of the sac." In the case given by Sir Astley in illustration of this practice, and upon which he seems to have operated himself, he states that, after tying the aperture with a ligature, he reduced the intestine, and closed the wound with five stitches and strapping. He says nothing, however, about cutting off both ends of the ligature close to the knot,—an addition to his plan of procedure which finds its way into the works of both Mr Teale[2] and Mr Erichsen,[3] as if it were part of the original proposal.

In the case I have narrated, I did not cut off the ligature close to the knot. Neither did I close the wound. In fact, I attached the divided margins of the sac to the edges of the cutaneous wound, so as to maintain a patent communication with the cavity of the abdomen, and a free channel of escape for purulent or intestinal matters. The ligature I purposely left hanging out of the wound, that it might afford a guide for the fæculence, should it escape. The

[1] 1st part, 2d ed., p. 45. [2] Teale on Hernia, p. 134.
[3] Erichsen's Science and Art of Surgery, vol. ii. p. 460.

wound itself was dressed simply with a pad of tow, retained by a spica bandage, so that no impediment might exist to a free fæcal escape, should it come in quantity and with force, as is sometimes the case. No better commentary could be made upon the good effects of this mode of procedure, together with the careful restriction of diet to the smallest quantities of fluid nourishment, and the free administration of opiates, than to read by contrast Sir Astley's case, where the closure of the wound, the repeated administration of violent mercurial purgatives, and free bloodletting, was attended with violent fever, retention of urine, a tense and tender belly, great flatulent distention and delirium, relieved at once, when the stitches were cut out, by a copious discharge of pus from the wound.

If there be one thing more than another in the treatment of a strangulated hernia after operation, which, next to early interference, conduces to the success of the result, it is the abstinence from the employment of purgatives, and the somewhat free administration of opiates. Here the patient's bowels were not opened for nearly four weeks after the operation, and then this result was spontaneous, unless the oatmeal food can be supposed to have conduced to have procured their evacuation. Till this evacuation she had no solid food of any kind. The patient was very hungry during a considerable period of her convalesence, and grumbled somewhat at the strictly-limited dietary. By diminishing the quantity of fæculent material passing through the intestine, this meagre diet undoubtedly shortened the period during which the fæcal fistula existed, while the progress of the reparative changes were at the same time not delayed.

For the first week, Miss W. took a quarter of a grain of morphia every two or three hours; during the second week she had the same quantity thrice a day; during the third week she had a pill only at bedtime; and after that period it was discontinued. To the heroic practitioner of former times, to whom the early evacuation of the bowels after the operation seemed the great object to be sought after, such non-interference may seem foolishness, and, possibly, the idea may even suggest itself that the obstructed condition of the intestines may have favoured the establishment of the fæcal fistula. Were it so, the fæcal discharge would not have ceased spontaneously before the bowels were moved, nor would it have lasted for only five days,—a duration of flow which, with its very limited amount, points to the separation of the ligature as the source of the escape.

Would it have been a wiser method to have adopted that mentioned as Sir A. Cooper's, by Mr Teale and Mr Erichsen, viz., cutting off the ends of the ligature close to the knot, by which, as in the case of wound, the detached ligature effects its escape by ulceration into the bowel? I think not; for if adhesion be imperfect, and fæculent or flatal escape be established, it is surely as well that a free channel of escape be provided than risk the fatal

extravasation, which a complete or even partial occlusion of the neck of the sac from any cause might entail. A painful result, after an illusory period of convalesence.

No doubt, cases have been narrated where a portion of bowel with a small ruptured or ulcerated aperture in its parietes has been returned to the abdominal cavity without employing any measures for securing even a temporary closure of the opening. Such successes are, however, no more worthy argument for the imitation of such practice than the few scattered cases where recovery in cases of unrelieved hernia has followed sphacelation of the bowel, sac, and integumentary tissues, should encourage us to neglect the ordinary operation for relief.

Practically, the adoption of this practice of applying a ligature around any small aperture in the intestinal contents of a hernial sac is not likely to be frequently repeated with success, especially in instances where the strangulation has existed for so long a period as sixty-three hours. But if Mr Erichsen's statement is taken into account, viz., that accidental wounds of the intestinal contents of a hernia have occurred in the "practice of the best and most careful surgeons," that Lawrence, Sir A. Cooper, Jobert, and Liston, have all met with it in their practice,—then we may believe that this class of intestinal wounds may occur again, and the successful issue in this much more unfavourable condition may encourage less distinguished men, should they meet with such an untoward accident, to resort to this method of treatment, and to have a better prognosis than I should imagine their personal feelings, in the circumstances, would be likely to originate.

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