A CASE
OF
STRANGULATED HERNIA,

IN WHICH THE BOWEL WAS RUPTURED BY THE PATIENT IN HIS
EFFORTS TO REDUCE IT.

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READ NOVEMBER 12TH, 1839.

AT 3 o'clock A. M., on the 29th October 1839, I was summoned three miles from town, to visit a young gentleman, supposed to be the subject of strangulated hernia. The patient, aged twenty, of muscular frame, I found lying upon his back, with a countenance expressive of great suffering and anxiety, his surface pale and chilled, eyes and lips livid, legs drawn upwards, pulse at the wrist imperceptible, and the heart's action rapid and indistinct. He had vomited several times, but had passed a motion at four in the afternoon of the preceding day. The scrotum was enlarged to the size of a young child's head, and discoloured of a gangrenous hue; the skin distended as if about to burst. The hypogastrium was swollen and tense, the pain acute, diffused and much increased on pressure. I was informed that he had recently laboured under go-

norrhoeal inflammation, and swelled testis on the right side, and had been the subject of hernia on the same side, from his birth; that he had not worn a truss since his childhood, but was in the habit of lying down, and replacing the protruded bowel with his hands, when inconveniently distended in the sac; always maintaining a strict reserve on the subject of this malady.

Upon further inquiry, I learned that at six o'clock of the preceding evening, the volume of the tumour became so increased, as to oppose a resistance to its return, which the young man could not overcome. In addition to continued violent manipulation, he compressed it forcibly between his hands and thighs, and as if reckless from ill success, actually made a section of the integument with a razor, transverse to the chord. At midnight, he sent for his father, and told him he had burst his testicle, or that something had given way, and if unassisted, he must die. The bulk of the swelling had gone on increasing, from this time, to the period at which I visited him.

Having explained the alarming nature of his symptoms to his father, I gave him some warm brandy and water to drink, which restored a very slender pulse, and then made an incision in the tract of the spermatic chord, towards the fundus of the tumour. The subcutaneous cellular membrane was throughout infiltrated with a dark-coloured fluid, emitting a feculent odour, and freely oozing from the section. The subjacent cremaster tunic was

then divided, and the collapsed sac, forming an enormous pouch, divided, and incised on a director: the testis lay exposed and somewhat swollen in its lower part, and a flaccid fold of bowel occupied the mouth of the sac, which on handling the parts, slipped into the belly. The finger passed freely through the dilated canal and upper orifice, round the epigastric vessels, into the abdominal cavity. There was nothing like stricture to be perceived at any part. A single stitch was placed in the edges of the sac, which was condensed on the posterior part, and of a loose cellular texture on the anterior and lateral parts. The divided integuments were also connected by a central stitch, over a dossil of lint; a free incision carried through the raphé scroti posteriorly, exhibited a similar loaded state of the cellular membrane behind, as in front, and extending far beyond the mesial line.

This completed the operation: the fluid which had escaped in such quantity as to form a pool in the bed, had so much the appearance of effused and putrid blood, as to be at first mistaken for it; no blood was lost during the operation, which was followed by some temporary relief and recovery of the circulation. While it was proceeding, the patient threw up some frothy bilious fluid, and very soon afterwards had two pretty copious stools of semi-fluid consistence, and precisely of the same colour as the effused intestinal fluid.

Restlessness however soon returned, and at 7

o'clock, three hours from the completion of the operation, he died.

Inspection ten hours after death.—The abdominal muscles were rigid, and a vast quantity of offensive flatus escaped on making the ordinary section, and through the scrotal wound. On tracing the small gut, a portion of the lower third of the ileum, equal to a hand's breadth in extent, presented the appearances of recent strangulation, accompanied with laceration, and extravasation of blood between the peritoneal and muscular coats. The fold was collapsed, of a claret colour, bounded by a faint ash-coloured streak at either end, and presenting three or four insulated grey spots of incipient gangrene. An irregular aperture, three-fourths of an inch in length, was found adjacent to the mesenteric attachment, and parallel to the axis of the bowel; and immediately contiguous to this wound, the serous membrane was detached from that beneath it to the extent of an inch, so as to exhibit the circular fibres of the muscular coat, as if dissected. Minute clots of blood were lying in this space, and some extravasation had taken place between the layers of the corresponding mesentery. The neighbouring small intestine was at several points inflamed, and congested even to extravasation beneath the peritoneal investment; liver reduced as if shrunk in bulk; its surface of a dark green hue, and slightly roughened. On section, it was tougher and paler than this tissue ordinarily is in youth and health.

OBSERVATIONS.

The rupture of an intestine by efforts made for its reduction by the surgeon or the patient is happily of rare occurrence; and never I believe occurs, the bowel being in a sound state. In the case now related, the rupture, accompanied by extraordinary dilaceration of the coats of the bowel, was occasioned by the violence of the patient, encouraged by the uniform success of his former efforts, and alarmed perhaps by contemplating the consequences of failure.

At Brighton, some weeks previous to his death, he had experienced difficulty in returning the bowel, and had recourse to a warm bath. He was at that time labouring under the swelled testicle.

The razor cut, in the groin, evinced a state of desperation bordering on insanity. The patulous orifices of the inguinal canal, both external and internal, the perfect freedom from stricture of the tunica vaginalis, forming the sac, and the absence of all adhesions, suggest an inquiry into the cause of an incarceration, presenting so obstinate an impediment to replacement; and the amount of injury so inflicted further suggests the question, whether the bowel was previously altogether free from diseased change.

The portion of small bowel which had been confined in the sac, and subjected to fatal pressure, was sufficiently defined by colour, and incipient gan-

grenous spots, as well as the two faint striæ, of an ashy hue, indicating the line of stricture; the distension of its cylinder by feculent fluid, *gradually* accumulated, could alone have operated to produce a state of strangulation by patulous apertures, considerably approximated. The swollen state of the spermatic chord, corresponding to the swelled testis, may have diminished somewhat the area of the canal.

This case therefore was, what the French writers call "hernie par engouement," and is that species of stricture to which persons having an irreducible hernia are most exposed, but to which they also are liable who, wearing no truss, rely upon their own vigilance and their own exertions to anticipate or relieve strangulation; for in cases where the hernia is of long standing and the ring is large, a portion of gut must be generally lying in the sac during the erect position of the body, and subject to become loaded, especially in morbidly increased hepatic or intestinal secretions. A bowel so situated would be liable to gradual filling, and the production of passive stricture, *i. e.* of stricture determined, not by the narrowness or the contractility of the orifice, but by the choked state of the bowel. To a certain extent this principle of reaction operates in all cases by the evolution of gas within the displaced bowel; but in that species of hernia to which I refer it *produces*, whereas in others it only *augments*, the resistance. In the present case the combined power of the tricipites femoris muscles to compress the swelling, and

manipulation unskilfully applied, had ruptured both sac and bowel, and collapse of the gut soon followed the free issue of its contents into the cellular membrane of the scrotum. A state of vascular congestion we must presume had pre-existed as in all cases of strangulation, but there was no evidence of previous disease, nor any appearances for which recent violence might not account; and the effusion of adhesive matter, rapid as that process is upon serous membrane, had not taken place.

The state of the liver was unhealthy, and the profuse and vitiated discharge from the intestine renders it probable that the patient's habits were intemperate; an opinion which the presence of a crop of warts bathed in gonorrhœal matter served to confirm. I regret much that the mucous membrane of the stomach and bowels was not examined.

Had the surgeon's aid been called in upon the young man's discovery of his inability to replace the bowel, there is no reason to doubt that it would have yielded to the temperate application of the taxis.

I have known the intestine ruptured in the taxis, but it was ascertained that the stricture included two thirds only of the cylinder, which was sloughy and separating by ulceration.

A man received a violent blow from a hammer on the pad of his truss, while stooping, by which the bowel was ruptured. This event was favoured by

position, but could not have happened had the truss been efficient.

From compression, as by a wheel passing over the body, or pinning it against a wall, from the kick of a horse, from a fall across a beam, from running violently against a post in the dark, and similar causes, I have known the bowel ruptured; sometimes in more places than one, and sometimes complicated with lesion of the liver, spleen, or kidney, without breach of the walls of the abdomen. Distorted muscular action is sufficient to produce rupture of the stomach in a loaded state, as I witnessed many years ago in the case of a tumbling boy, who a few minutes before had been partaking freely of apples and gin, which were effused.

I never knew a case of ruptured intestine from vomiting or muscular action, unless ulcer had previously existed, by which the internal tunics were destroyed; in this case the peritoneum covering the aperture is probably burst, for the symptoms of effusion commence almost simultaneously with the act of vomiting. This act, I may observe, is abridged and impeded after rupture of the canal at any part; it is half vomiting and half expectoration, as if the muscles had lost their fulcrum, which is in fact the case; the fluid rises into the fauces, and is with a convulsive effort spit out of the mouth.

The symptoms following ruptured bowel are death-like from the moment of the injury. They are quite unlike those of inflammation and of gangrene, and are indeed '*sui generis*.' The mind is

clear but depressed, as if overwhelmed by the irreparable nature of the injury. The countenance is pale and the features liny and drawn. The pulse is not immediately affected, but soon becomes quick, feeble, and irregular in its measure, intermitting, thready, and then no longer to be felt. The surface chills, but remains dry; there is a painful sense of dryness of the mouth and fauces, and frequent efforts to vomit in the way before described. Pain, which commences at variable periods, but is never long delayed, is acute, unremitting, extending over the whole abdominal region, which becomes tense and will not bear the slightest pressure. This produces great anxiety and restlessness, and frequent appeals for relief, and next for death. The peritoneal surface is reddened, but there is seldom any effusion of membranous or massive lymph agglutinating parts; only small deposits in tags and shreds roughening the surface, although the period of survival varies from twelve to six-and-thirty hours: the state of the canal perhaps determines this variation.

Granting the irreparable nature of this injury, it is worth while to inquire whence the mortal stamp of the symptoms is derived at the moment of its infliction. The amount of change by inflammation falls short of what is observed in most cases of peritonitis and of hernia. The symptoms of prostration are so immediate as to put aside all idea of blood-letting: opiate suppositories have not the smallest influence; the pain is not only intolerable, but is unremitting and insusceptible of relief, which

is not often the case in inflammations otherwise induced.

The nervous shock must be as great, we should suppose, in the unhappily common accident of broken dorsal spine, in which the patient is instantaneously deprived of the real sense of existence in the lower half of the body, or half devitalized, as if he were cut in two: here there is no direct or diffused inflammation, no pain, nor are the symptoms of dissolution apparent for days or even weeks. The effusion of *blood* is innoxious to the peritoneal surface. The air which escapes from the canal, immediately upon the lesion, probably acts as a poison upon the nervous and absorbent tissue of the surface exposed to it, and its deadly influence increasing with the time may perhaps explain the peculiarity and rapid progress of the symptoms. I may mention that I have known cases in which the symptom of *pain* was so much less marked than usual, as to lead some to doubt the nature of the injury.

The solitary indication which these most distressing cases afford is unhappily contravened by the first impulse of the attendants to administer a cordial, as spirits and water, for example; and of the doctor, who thinks only of inflammation, or of opening the bowels by a purging draught, preparatory to other measures. I believe that little, if any, of the fluids swallowed, pass beyond the stomach, or remain there, unless in the very commencement of the case. An absolute negation of sustenance or

diluent of any kind, except to rinse the mouth, would however be the most rational plan of treatment to follow.

With the permission of the Society, I shall take the present opportunity of briefly recounting the particulars of two cases of strangulated hernia, which occurred to me in the year after my election to St. Thomas's Hospital, by which the practical question of returning the hernia into the abdomen, *without opening the sac*, was raised, and finally negatived in my mind.

John Kelf, aged twenty-one, had a congenital hernia of the left side, for which he had generally worn a truss, but having broken his truss, had neglected to procure another. The hernia was largely protruded after a fall on the evening of the 20th of January 1816; he was unable to return it as usual, and he was admitted next day into St. Thomas's Hospital, with frequent vomitings, and other symptoms of acute strangulation. The tumour, which appeared to consist of both gut and omentum, was large, tense, coloured, and very painful to the touch. The warm bath, a full bleeding, cold applied to the scrotum, and the tobacco enema, in addition to two or three prolonged trials of the taxis, being found ineffectual, the operation was performed at one o'clock on the 21st January.

There was found to be a double stricture; the first formed by that portion of the intercolumnar fibres

which complete the upper margin of the external ring. These, which formed a tense crescentic band at the neck of the sac, and were strongly marked externally, being divided, the hernia was partially liberated. After a further division of the superior pillar of the ring, upon a director, the contents of the sac rapidly and completely ascended into the abdomen, on applying gentle pressure to its sides. The relief of the patient was instantaneous, and the wound healed quickly; so that he left the hospital with a proper truss, on the eighth day of the following month.

In this very encouraging case, the strangulation, though the symptoms were urgent, had not existed more than eighteen hours.

On the 22nd of October of the same year, was admitted John Bishop, aged fifty-five, with a femoral hernia of the right side, and the symptoms of strangulation, which had existed for three days. The usual means of relief having failed, the operation was done without delay. There was found, beneath a suppurating lymphatic gland, a small and very tense sac. The fibres of the crural arch were divided upon the point of the finger; but it was found necessary to carry the probe-pointed bistoury under the arched fibres of the fascia transversalis, in order to liberate the contents of the sac, which returned with a gurgling noise into the belly. The return of the gut, and collapse of the sac, were perfect and satisfactory; the latter was in consequence not opened. The patient was imperfectly

relieved ; vomiting continued at intervals throughout the rest of the day and night, although several scanty, dark, and scybalous stools were obtained by injection, and small doses of aperient salts.

The second day he kept gruel on his stomach, and was free from abdominal pain ; but the pulse was thready, and he was ordered a small quantity of wine.

The third day he was very restless, but had several copious evacuations and a clean tongue.

The fourth day bilious vomiting recurred ; he complained of pain in the wound, spreading over the whole abdomen, and had a fuller pulse (90), and a furred tongue. In the afternoon the pain and pulse increasing, he was bled to f̄xv̄j, and twenty leeches were applied to the abdomen. In the evening, the pain being unrelieved, he was again bled to f̄zv̄ij. The blood was neither cupped nor buffed ; pulse 126, and small ; breathing laborious ; wound open and sloughy.

Fifth day. Had passed a good night, and was free from pain. In the course of the day he vomited frequently, and again complained of pain in the belly. Pulse 106, and feeble ; breathing laboured ; tongue furred ; copious evacuation from the bowels.

Sixth day. Abdomen tense and swollen ; no pain on pressure. Towards evening he was slightly delirious, and had cold extremities. I excised the sac close to the crural arch with curved scissors.

Seventh day. Vomiting and tumefaction have

subsided ; bowels sufficiently relieved, but the patient is restless and desponding. Blister applied to the abdomen.

Eighth day. A restless night ; blister had risen well ; patient frequently crying out with pain, which had now become general ; was but partially sensible ; at 9½ P. M. died.

Examination twelve hours after death.—Stomach distended ; small intestines moderately full ; peritoneum presented some red specks at the angles of contact of the intestinal folds. A portion of the tube of the ileum was disorganized, being an ash-coloured rag ; but an adhesion at the mouth of the sac included this piece, so that it was not seen on opening the abdomen, nor until the adhesion gave way, when a quantity of pultaceous feculent matter passed into the pelvis. Another fold of intestine adhered to the sound side of this, and supported it against the ring. A portion equal to one-third of the canal of the strictured gut was sound, and freely admitted the passage of a bougie, and by this route the feculent matter had passed from the upper to the lower part of the tract. On the mouth of the sac was deposited a lip or elevated border of lymph, corresponding to the line of separation of the slough from the living edge, so that no effusion into the belly could have taken place.

OBSERVATIONS.

Judging from the state of the dead piece, which tore like wetted paper, an artificial anus would have been established in twenty-four hours ; indeed a considerable oozing of feculent matter had been observed on the day of the patient's death.

The dead piece of gut had been strangulated, and returned at the time of the operation. It went on to gangrene, lying over against the mouth of the sac. This, and the adjoining fold were so placed, as to dispose to the formation of artificial anus, and had that fortunately been accomplished, the man would in all probability have survived. It cannot be known what the actual state of the gut was, when replaced, as the sac was not opened ; but as it was elastic, and no symptoms of gangrene present, we must conclude that its state was one of intense disorganizing inflammation. The vomiting was obviously relieved by the alvine evacuations ; but the action of the intestines was imperfect in the dead portion, which occasioned a partial obstruction, and consequent recurrence of the symptoms. If the whole cylinder had been gangrened, the obstruction would have been complete, and instead of living a week, and vomiting at intervals, the vomiting would have been incessant, and death would have taken place in half the time, provided no discharge had been set up at the groin. *This* would probably have saved the man in either case, because it would have tranquillized the stomach. Not only

was no benefit gained, but the separating process was retarded by the integrity of the peritoneal sac. Had this been opened by the ordinary incision at the time of operation, both the sloughing and the adhesive process would have been so much accelerated, as to have established the artificial anus in time for the patient's relief, and ultimately, perhaps, the continuity of the canal.

I believe that the advantage is altogether hypothetical which is supposed to accrue from preserving the sac entire, in cases where the gut is simply paralysed, and unable to resume its function, the ordinary cause of failure of the operation for hernia ; and that the practice is decidedly disadvantageous in all cases where inflammation is of such standing as to have endangered the continuity of the canal ; for of such cases, doubtful as is the alternative, the only chance of recovery is in the speedy relief of the symptoms by artificial anus. The incision of the sac establishes at once a free fistulous opening into the peritoneal cavity, and identifies it with the external wound, which materially quickens the separating, and strengthens the fastening process ; the spoiled bowel being left *in situ* at the mouth of the sac.

I therefore regard the first of these cases as forming a rare exception to a general rule of practice. The stricture of the external ring being removed, the return of the bowel was almost spontaneous. But not to insist upon the numerous cases in which the seat of stricture or the existence of adhesions does not

permit us to leave the sac entire, the practice is objectionable, on the ground that where the stricture is of such firmness as to require the aid of the knife, we can never know the actual state of the bowel, with which it is the paramount duty of the surgeon to make himself acquainted, that he may regulate his proceedings accordingly.

I have adverted to the paralysed condition of the strangulated bowel, as the ordinary cause of death after the operation for hernia. This opinion, which I published near thirty years ago,* has been fully confirmed by my larger experience; yet it is not, I believe, generally entertained. Death is ascribed to the inflammation of the general cavity, where gangrene of the gut has not supervened upon its replacement: but in how few cases does inflammation prove intractable, when the operation is followed by full evacuations, demonstrating the re-establishment of the canal. I have repeatedly seen patients, after operation, in whom the symptoms of inflammation were feebly, if at all, indicated, and have inspected many 'post mortem,' in whom no agglutination interfering with the function of the bowel had taken place, or other explanation of the continued obstruction showed itself, than the utter atony of the congested bowel, which had been replaced; marked by its precise interposition to the

* An Inquiry into the Process of Nature in repairing Injuries of the Intestines, illustrating the Treatment of Penetrating Wounds and Strangulated Hernia. London, 1812.

flatulent portion of the tube above, and the collapsed piece below.

To combat inflammation, according to modern theories, mercury has been administered in every possible emergency; even in injuries of the head, attended with stupor and convulsion, and after the operations of lithotomy and hernia it has not been withheld, and I can attest its decidedly beneficial effect in some remarkable instances. The employment of mercury in these cases (like the application of leeches and the knife in acute inflammation of external parts) is of modern introduction. Our immediate predecessors would have considered it inadmissible, even as a speculation; but to them its powers were unknown. The overflow of bile upon the stomach is one of the most invariable symptoms of hernial or mechanical obstruction; its diversion downward is the leading indication after the replacement of the bowel. The vomiting which survives the operation is limited, or nearly so, to the return of the fluids given, whether drink or medicine; it is little, if at all, spontaneous. The redundancy of the biliary secretion is checked by the removal of the stricture, and the liver becomes comparatively inactive. I have given calomel, with an addition of opium, at short intervals, with the best effect, and have seen, as I believe, life saved by its administration. The natural stimulus restored to the mucous surface of the bowel, must be, I imagine, the most effectual to procure a return of its natural action. It may and will fail; but if in-

flammation be present, we cannot treat it more effectively than by giving two grains of calomel, with a quarter or half a grain of opium, every hour or every second hour, *pro re nata*. And thus supported on each hypothesis, I venture to recommend it, in the common, but desperate case, in which the gut having been replaced by operation, sound in texture, however congested, and no such constitutional signs of gangrene being present, as thready pulse, cold sweats, and insensibility to pain, the natural relief of the bowels fails or proves insufficient to arrest the symptoms.