A memoir on strangulated hernia : from cases occurring in the London Hospital / by Nathaniel Ward.

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FROM

CASES OCCURRING IN THE LONDON HOSPITAL.

BY

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I HAVE been induced to publish the following Memoir at the suggestion of several Members of the Hunterian Society, and in accordance with the wish of some of the Pupils of the London Hospital.

NATHANIEL WARD.

1, *Broad Street Buildings*,
Sept. 2, 1854.

A MEMOIR,

&c.

The consideration, that the results of experience which have ensued either on recognised principles of action, or on a deviation from them, apart even from the interest of special description, should command as much attention as any medical or surgical novelty, constitutes my apology for bringing the subject of Hernia before the members of the Hunterian Society, in the manner in which I purpose doing this evening. I shall do so also the less reluctantly when I consider that the subject is a popular one, in consequence of the varied character of the affection, the necessary important nature of its details, the consequent modifications of treatment that are called for, and the good results which surgery has effected with a daily increasing amount of certainty in this department of its practice.

From the middle of February, 1851, to the middle of May, 1854, a period of three years and a quarter, 69

cases of hernia have been operated on in the London Hospital. Of this number 43 were femoral, 22 inguinal, and 4 umbilical. The number not operated on during that period amounted to 173, thus making a total of 242 that have been under treatment.

Of the 43 cases of femoral hernia, 39 have occurred in the female, 4 only in the male. 28 cases have occurred on the right, 24 of them being in the female, 4 in the male ; and 15 on the left side.

Among the 22 cases of inguinal hernia, 15 were on the right, and 7 on the left side. These facts, as to the greater frequency of hernia on the right than on the left side, correspond with the experience of Sir Astley Cooper, and may, as he remarks, possibly be accounted for by the fact, that exertion is generally greater on the right than on the left side of the body.

Of the 43 cases of femoral hernia, the sac was not opened in 29, and opened in 13. The average period of strangulation in the former class of cases amounted to 34 hours and a fraction ; in the latter to 58 hours.

Of the 29 cases of unopened sac, 4 died and 25 recovered, the shortest period of strangulation in the fatal cases having been 39 hours, the longest 5 days ; in the recoveries, the shortest period having been 10 hours, the longest 5 days.

Of the 13 cases of femoral hernia, in which the sac was opened, 6 died and 7 recovered ; the shortest period of strangulation in the 13 cases having been 24 hours, the longest 7 days.

In the 22 cases of inguinal hernia, the sac was opened in all but 3. 14 recovered, and 8 died. The shortest period of strangulation was 3 hours, the longest 9 days.

Of the 4 cases of umbilical hernia, 2 occurred in the male, and 2 in the female. 3 died, and 1 recovered. The case that recovered was that of a female, who had been operated on four years previously. In all the 4 cases the sac was opened.

The aggregate mortality in the 69 cases amounted to 21.

The plan of operation in the cases of femoral hernia in which the sac was not opened, was, in the majority of instances, conducted according to the plan detailed by Mr. Luke, in his admirable and practical essay, in the 31st volume of the "Medico-Chirurgical Transactions." In a few instances the method of operating recommended by Mr. Gay was had recourse to. Whichever operation was selected, it was carried out with as little delay as possible, and in the large majority of cases after only a short and guarded attempt of the taxis, associated with the use of the warm bath, and, in several instances, of chloroform.

Of the relative merits of the two methods of operating (if a wide view of the subject be taken, and if an operation is to be so planned as to embrace nearly every variety of a femoral protrusion), the method recommended by Mr. Luke appears to me preferable to that recommended by Mr. Gay, inasmuch as the latter is peculiarly applicable to those cases in which the division of Gimbernat's liga-

ment is sufficient for the reduction of the swelling, which division alone is usually found to be effectual only in comparatively recent herniæ. Mr. Luke's incision, made over Poupart's ligament, and the neck of the sac, so as to command all the structures round about the latter, and to interfere as little as possible with the fascial connexions of the body of the tumour, can easily meet the requirements arising from impediments to reduction caused by other fibrous and tendinous structures than Gimbernat's ligament, and to the extent of its greater applicability is therefore the preferable proceeding. An answer also must be given, I think, in favour of the vertical incision in a large number of cases in which, in consequence of the period of strangulation, it has been reasonable to infer that serious lesion had been inflicted on the mucous and other coats of the gut. There would be much greater danger of increasing this lesion by passing a director and bistoury between Gimbernat's ligament and the sac, in a line with which ligament the amount of injury is always the greatest, than by passing the instruments beneath Poupart's ligament and relieving the impediment to reduction over that part of the intestine, where frequent *post mortem* observation has proved that the injury has been the least. I should mention, however, here, that the most rapid instance of recovery that I have witnessed was one in which the oblique internal line of incision of Mr. Gay had been adopted, the wound having entirely healed on the fifth day.

The various sources of impediment to the reduction of

strangulated femoral hernia, which are situated externally to the sac, call for some observations, and I shall here enlarge on those I made some time back in the "Medical Times and Gazette."* It is curious and confusing to hear and to read the various descriptions as to what is termed the seat of stricture, or what, in my opinion, would be more properly termed the impediment to reduction; for the parts that surround the hernial protrusion can exert no active tightening effect upon it, but are rather themselves rendered tense by the pressure of the rupture, and its products from within, even, I imagine, although the coverings of the hernia may be, as in some forms of inguinal, muscular in their structure. This distension of tendinous and muscular structures, superficial to the rupture and its sac, in consequence of pressure exerted from within, is admirably illustrated in herniæ other than recent in which the dimensions of the different hernial canals and apertures are so far from normal as occasionally to allow of the easy admission of three fingers, as occurred in one among this collection of cases.

Sir Astley Cooper speaks of three sources of stricture: 1st, The crural sheath; 2nd, Posterior edge of the crural arch; and 3rd, The mouth of the hernial sac. Lawrence, of the thin posterior boundary of the crural arch as the very part that constitutes the stricture; and he compliments Gimbernat on the discovery. Mr. Hey speaks strongly of the falciform edge of Burns; Mr. Key placing much stress on a band of fibres above and behind Poupart's

* October 10, 1851.

ligament; and Mr. Luke pointing out the transverse fibres that are occasionally found highly developed, and strengthening the sheath of the vessels, as frequently the seat of stricture, these being apparently identical with the bands alluded to by Cooper, as the anterior columns of the sheath of the hernial protrusion.

Now it would appear, *à priori*, from a consideration of the anatomy of the femoral canal, that the sharpest and most resisting structure would constitute the chief impediment to the return of the bowel. Gimbernat's ligament has this peculiarity, and, in *post mortem* examinations of femoral ruptures, the bowel will be found to have experienced a greater amount of injury at that part where it was in relation with Gimbernat's ligament, than elsewhere. I had once an opportunity of being thoroughly satisfied on this point, on examining an old woman who had suffered from strangulated hernia, and had died without any operation having been performed. The mucous and muscular coats had entirely ulcerated where they were in relation to Gimbernat's ligament, but not elsewhere.

In numerous cases of femoral rupture, particularly in small and recent protrusions, an incision of Gimbernat's ligament is quite sufficient to effect reduction, and, with this object mainly in view, I conclude Mr. Gay introduced his line of incision to the Profession.* It is worthy

* Since the above was written, Mr. Gay observes, in the "Medical Times and Gazette," of August 12, 1854, in his "Remarks on the seat of Stricture in Femoral Hernia:" "The line of external incision by which my mode of operating is carried out, was not

of remembrance, that Gimbernat's ligament is in intimate relation with Poupart's ligament, and with Hey's ligament or the upper part of the falciform edge of Burns, and that they, by their blending together, constitute the greater part of the boundaries of the femoral ring. An incision of Hey's and Poupart's ligament could not consequently be made without relaxing somewhat Gimbernat's, as was illustrated in many cases in this series, in which, after the incision of the former two, the hernia was readily reduced. Now it is true that, after the incision of Gimbernat's ligament, or its relaxation by a division of Poupart's and Hey's ligaments, a rupture cannot, in many cases, be reduced, but returns easily on the further division of the transverse bands strengthening the sheath of the vessels. These bands are then spoken of as the seat of stricture; but they clearly constitute mere secondary impediments, no case having, to my knowledge, occurred in which their division alone, without the previous incision of Gimbernat's or Poupart's ligament, was sufficient to allow of the reduction of the contents of the hernial sac. I conclude, then, that Gimbernat's ligament is the principal impediment to reduction. In small and recent herniæ it is usually the only impediment; but when the tumour

devised for the purpose of specially commanding Gimbernat's ligament, but permits the knife to pass successively behind the falciform process, the edge of the lower orifice of the canal, Hey's ligament, and the fibres of the inguinal canal of Hesselbach, and is thus made to command whichever may happen to be the particular seat of stricture."

has existed for some considerable time, and has much increased on its original dimensions, it distends the canal into which it has descended, and presses on and renders tense and hypertrophied different series of fibres in more or less original intimate relation with the sheath of the vessels, such as the deep femoral ligament, the transverse fibres of the sheath and Hey's ligament, which structures were, in the small condition of the hernia, lax in comparison with Gimbernat's ligament, and produced no injurious effect on the tumour. These fibres, then, which in the majority of herniæ of long standing have thus become gradually hypertrophied, and brought to this condition also partly by the pressure probably of a truss from without, require division on the supervention of strangulation, as well as Gimbernat's ligament, in order to effect the reduction of the gut.

With reference to the transverse fibres of the sheath, properly so called, I would hazard a few remarks. I am not at all satisfied that the transverse fibres strengthening the sheath of the vessels exist so frequently as some surgeons imagine, and as one would be led to conclude from a perusal of Mr. Luke's essay : but that, on the contrary, they are, in many cases, artificially produced. I have carefully watched the steps of the operation in numerous cases of femoral hernia, and have observed, that immediately after the exposure of the external oblique tendon, the director has been glided down the tendon, and insinuated immediately beneath the lower border of Poupart's ligament, which has then been divided, when

the incision has been directed upwards, and together with it, Gimbernat's ligament, when the incision has been directed upwards and inwards. The result of this proceeding has been to detach Hey's ligament from its connexion with Poupart's. An attempt has next been made to reduce the hernia, but ineffectually. The left index finger has then (as recommended by Mr. Luke) been passed behind Poupart's ligament from above downwards, and, after having reached a variable distance, ranging from almost immediately below the ligament to three-quarters of an inch distant from it, the nail of the finger has been arrested by some more or less dense bands; a probe-pointed bistoury carried carefully along the nail, and then drawn forwards, has divided these bands, and the hernia has gone back without any further difficulty. Now these bands have appeared to me, from the manner in which the first steps of the operation were conducted, to have been the detached upper part of the falciform edge of Burns, and, if so, identical with the structure which Hey, more than forty years ago, described as the seat of stricture in femoral hernia.

The previous analysis has shown, that out of 29 cases of femoral hernia in which the sac was not opened, 4 only died; of 13 in which the sac was opened, 6 died, thus leaving, one might say, a wide margin in favour of the first proceeding. On reflection, however, a comparison would not be just, and I hardly know how it would be possible to arrive at an appreciation of the relative merits of opening the sac or of not opening it in the practice at

an Institution where the latter proceeding is intentionally the rule, the former the exception ; the one undertaken on conviction, the other by caution or necessity. In other words, unless experiments were intentionally made on a given number of cases, carefully selected as to points of resemblance, similarity of treatment before and after operation, and the operation by opening the sac performed in as many instances as by not opening it, I do not see how, in the absence of most extensive statistics, a logical conclusion can be drawn, however much a common sense view of the question may appear to determine in favour of not opening the sac in those cases of protrusion that admit of it. Of this point, however, I am tolerably clear, that the operation without opening the sac, in consequence of the ease of its performance *when the steps for conducting it, the difficulties that may occur, and the mode of meeting them, are distinctly impressed on the mind of the operator*, its comparative freedom from the danger of wounding intestines, or bloodvessels of importance, and the general rapidity of recovery, will lead to one most desirable result, I mean the early surgical interference for the relief of a strangulated rupture. Thus, by doing away as much as possible with the monstrous habit of delay and expectancy—a habit forming too large an element, even now, in the mortality of hernia cases—the general adoption of the early operation without opening the sac will justify the remark I made at the commencement in reference to the progressive amount of certainty in carrying out a hernial operation and insuring its success.

Of the four fatal cases in which the sac was unopened, the following are the brief particulars :—The first, a woman, aged 73, died on the nineteenth day from exhaustion. The second, aged 73, died from a similar cause on the sixth day. The third, a woman aged 72, died on the fourth day from a low form of peritonitis, and had been suffering for many years from troublesome prolapse of the uterus, which had much reduced her prior to the operation. The fourth case was that of a woman, aged 56, who died on the third day after the operation, from peritonitis and a perforating ulcer, strangulation having existed for three days.

Among the cases that recovered, of those in which the sac was not opened, two only out of the 25 require notice :—

1. A fat, unhealthy woman, aged 69, died from pulmonary apoplexy two days after the healing of the wound.

2. A man aged 64. Strangulation had existed for fourteen hours on the right side, and he recovered on the thirteenth day. He had had a strangulated hernia on the left side a year or two before, and had been operated on in St. Bartholomew's Hospital. The right rupture occurred shortly after leaving St. Bartholomew's in consequence of a severe jerk while working. Since then he wore a double truss.

The above series of cases of femoral hernia, in which Petit's operation was performed, although peculiarly satisfactory to the surgeon in consequence of their general favourable termination, lose much in interest when com-

pared with cases in which the sac was opened in consequence of some individual peculiarity or complication not existing in the first series, or, if existing, necessarily unobserved and comparatively unimportant.

I proceed now to speak of those cases among the femoral class, amounting to 13 in number, 6 of which died. The following are the particulars of the 6 fatal cases :—

1. A woman, aged 46, was at the time of the operation convalescent from scarlatina, and died on the third day from low peritonitis, strangulation having existed three days before the operation.

2. A woman, aged 72, died exhausted thirty-five hours after the operation, strangulation having existed five days before it.

3. An emaciated female in-door pauper, aged 66, died thirty-six hours after the operation, strangulation having existed between seven and eight days before admission. In this instance the woman was so weak that she could give little or no account of herself; the skin over the hernia was inflamed, and her hands were cold and clammy. A large quantity of omentum was found in the sac, concealing a knuckle of intestine at the back of the sac, which was adherent to it by recent fibrinous exudations. On the *post mortem*, the omentum was found attached by old adhesions to the front, inner, and outer part of the neck and body of the sac; the part of the gut which had come down was much inflamed, and interrupted by purplish spots, but not devoid of lustre;

the mucous membrane much congested, particularly that part which had been in contact with the inner boundary of the ring. This case is interesting as showing that when an omental hernia exists prior to the occurrence of an enterocele, the inflammatory action on the bowel is much limited in intensity. This circumstance arises from two conditions,—the first, the enlargement of the femoral ring by the presence of omentum; the second, the presence of the omentum between the sharp edge of Gimbernat's ligament and the bowel, so that the sharpness of the former, and its consequent injurious action on the latter, are materially diminished, as in this instance, in which though the symptoms of strangulation had lasted about eight days, the mucous membrane had not ulcerated, nor had the bowel lost its lustre. This result strikingly contrasts with the rapidity and severity of symptoms that usually supervene in a case of simple protrusion of the bowel (particularly in lean subjects), in which it is brought into almost immediate contact with Gimbernat's ligament, the mucous membrane frequently ulcerating through, even in the course of less than forty-eight hours after the descent.

4. A woman, aged 40, who had suffered from symptoms of severe strangulation six days before admission. The nature of her affection had been overlooked for that space of time, and a remarkably varied, and what is termed palliative, treatment had been adopted. The gut, when the operation was performed, was found mortified, and fæcal matter was extravasated in the immediate

coverings of the intestine. The patient died on the ninth day after the operation ; no discharge from the false anus having taken place for three days previously, and the symptoms shortly before death having been those of a low typhoid type.

5. A woman, aged 65, who, when admitted into the hospital, was very depressed, the tongue being dry and brown, the pulse quick and feeble, and the hands clammy. The hernia was very large, occupying half the space between the front and upper spine of the ileum and pubis, measuring three and a half inches in its long axis, and two inches in the broadest part of its vertical diameter. The nature of the case had been overlooked till within a short period of her admission, and the patient had for several days been under treatment for enteritis. During the operation, which was performed without the application of the taxis previously, the fascial structures were found highly developed, and six distinct layers were divided before the sac was opened. The most superficial connected the tumour so firmly to the tendon of the external oblique, that the latter was incised in order to detach them. Half an ounce of blood escaped on opening the sac, which contained omentum, connected by old adhesions to the sac, and by recent to a purplish, but not lustreless, knuckle of intestine. Nothing appeared to stand in the way of the recovery of the patient but her great depression and her determination to die, which made her refuse her nourishment and medicine to a great extent. She sank six days after her admission. On a *post mortem* examination no

trace of peritonitis could be detected; about six inches of the intestine was of a purplish tint, the middle part was darker than elsewhere, and the mucous membrane interruptedly congested, and here and there ulcerated.

6. Was of the variety termed by Stephens "obstructed hernia." A woman, aged 56, was admitted with symptoms of strangulation, which had been slowly developing for a week, and came on without any perceptible increase in a small right protrusion, which had existed, she said, for nine or ten months. She had had on several occasions, similar attacks of sickness and constipation, but they had gradually gone off. After the incision of the superficial fascia a dark layer of membrane was exposed, on opening which out came a quantity of bloody serum. Inside this sac was a globular mass of fat, hard and condensed, and of the form of a large walnut. On incising this, its circumference was found a quarter of an inch thick, and in close contact with, and enveloping another sac, which contained dark serous fluid, and a small portion of gut, which had all but lost its elasticity, being flaccid, yielding on pressure, and but slowly regaining its form. It was not much larger than the tip of the middle finger, and the coats were thick, and like soaked leather. Its upper part, all round, was in most intimate union with the sac, and to all appearances so structurally connected with it, that it would have been impossible, I think, to have separated it with the knife or otherwise, without endangering its integrity. It was, therefore, left *in situ*, as much tension having been removed as possible, by the

free division of Poupart's ligament at the angle of junction between it and Gimbernat's. The symptoms of strangulation remained unrelieved; and, on the second day the gut was opened by a crucial incision; fæcal matter escaped. The patient died in four and a half days after the operation. The neck of the sac was found firmly adherent to the neck of the gut, which was only a portion of the entire calibre, by very firm close connexions girting it all round, and which to all appearances had existed for years.

Of this variety of incarcerated hernia, termed obstructed, Stephens relates several cases, in which the uniting adhesions to the chronically inflamed and thickened bowel were freely detached, the gut returned into the abdomen, and a favourable result ensued. Could this proceeding have been safely effected in the above case, it is possible that a different result might have followed.

Among the 7 cases of hernia that recovered, of those in which the sac was opened, I find several interesting statements. Thus, in a woman, aged 60, who recovered on the thirty-ninth day after the operation, a previous operation had been performed on her on the same side ten years previously. A woman, aged 72, recovered on the thirtieth day, strangulation having existed for forty-eight hours. In one instance the sac was opened, in order to examine the nature of a tumour in connexion with the sac, and which turned out to be a large dilated diverticulum appended to it.

I come now to a consideration of the particular points

of interest connected with the 22 cases of inguinal hernia, of which 14 recovered, and 8 died, and, in all of which, with three exceptions, the sac was opened. The shortest period of strangulation was three hours; the longest nine days before the operation. All, with the exception of one, were of the oblique inguinal kind; the exceptional case occurring in a man, aged 37, in which the protrusion was a direct or internal left inguinal. The sac contained a large portion of the sigmoid flexure of the colon, the symptoms of strangulation were slight, and recovery ensued on the fifteenth day, the operation having been performed within twenty-four hours after the descent of the gut, chloroform and the taxis having been previously used without effect. Among the 14 recoveries, there were 2 cases of reduction *en bloc*; and one of marked hour-glass contraction of the neck of the sac, which formed the impediment to reduction, and which was placed more than half an inch below the level of the outer ring, and very analogous to a case I witnessed operated on by the late Mr. Andrews, in which the neck of the sac, which formed the impediment to reduction, was one inch below the outer ring. In this case, as well as in several others, Mr. Luke's strangulation test was found of signal advantage; and I extract the following description of it from the "Medical Gazette" of 1841, as I do not think it is so generally known as its merits deserve:—

"If the body of the hernial tumour be compressed by the hand, an impulse is communicated to all its parts

below the seat of stricture ; but, if the neck of the henia be grasped between the finger and thumb of the other hand, above the stricture, while such compression is made, there will not be any impulse felt. When, in the commencement of the examination, the neck of the tumour is first grapsed, we may be always assured, that if an impulse is felt on compression of the tumour itself, the seat of stricture is nearer the abdomen ; and by gradually withdrawing the finger and thumb in that direction, while renewed compression of the tumour is made, a point will soon be reached at which impulse ceases to be felt. The point at which impulse first ceases to be felt is the seat of stricture. In like manner, if an impulse is not felt when the neck of the tumour is first grasped, we may be equally assured that the stricture is situated nearer to the body of the hernia ; and, by a like gradual approximation to it with the finger and thumb, an impulse shortly commences to be felt. The point where the impulse commences to be felt is the uppermost part of the strangulated contents, which implies that the stricture is immediately above it ; and, on inquiry, it will be found to correspond with the indications of an examination commenced from below."

The value of acting on the indications of this simple proceeding when its application is practicable is at once apparent, as unnecessary division of the soft parts is thus avoided. But to continue ; I find that a man, aged 34, who had recovered on the eighteenth day (the symptoms of strangulation having existed only three hours), had

been operated on on the same side ten months before, in St. Thomas's Hospital, and that a large quantity of omentum had been taken off. A case of right oblique inguinal hernia in a man aged 43. It belonged to the intermuscular, or ascending variety, described by Mr. Luke, in the "Medical Gazette" of 1850. The tumour in this instance, instead of passing down into the scrotum, had mounted up in the cellular tissue between the external oblique tendon and the internal oblique muscle, considerably above the level of the anterior superior spinous process of the ileum. On the free division of the tendon of the external oblique and the subjacent fasciæ, the sac was exposed; it was drawn down, a free incision made into it, and the intestine exposed. This was highly inflamed; no further impediment to reduction was found, strangulation having arisen in consequence of the peculiar position of the body of the hernia, and the bending upwards on itself of the bulk of the gut, a distinct indentation existing at the angle of flexure. Strangulation had existed for four days, but the symptoms had not been severe till within fifteen hours of the operation. This man had used for a considerable time an ill-adjusted truss, which commanded the outer but not the inner ring. The protrusion had, in consequence of the resistance offered to its descent in the former locality, mounted upwards, and had thus become analogous to the upward course of a femoral protrusion, the truss having acted in the same way in the inguinal as the blending of the fascia transversalis below the saphe-

nous opening with the immediate covering of the femoral artery and vein, does in the crural form of hernia.

Of the 2 cases of reduction *en bloc*, one occurred in a lad aged 14, who had had a right inguinal hernia for two or three days, with slight symptoms of strangulation. On the application of the taxis under chloroform, the bulk of the tumour disappeared, and could only be indistinctly felt in the region of the inner ring. Symptoms continuing, an exploratory operation was had recourse to. The body of the tumour was pulled down, and the neck of the sac and inner ring divided. A recovery in fifteeen days resulted. The last cases worthy of particular note are, a case of left congenital hernia, with orchitis and empyema of the tunica vaginalis following the operation, in a man, aged 27. Strangulation was of twelve hours' duration. The sac was opened; it contained omentum, and seven or eight inches of the large intestine. Orchitis shortly supervened, and was followed by a large purulent effusion into the tunica vaginalis, which membrane was laid freely open on the eighth day. Two days previously erysipelas had come on on the dorsum of the foot, terminating in an abscess, which was opened on the ninth day. Recovery ensued on the fifty-second day. A case of oblique inguinal hernia in a male child, 21 months old. The strangulation had not existed twenty-four hours, and he recovered on the seventeenth day. And, lastly, a case of strangulated inguinal hernia, in a male infant 9 weeks old. The symptoms of strangulation had existed three days.

The sac was not opened, and the wound had healed on the seventh day. The child was taken out of the hospital contrary to the wish of the surgeon ; erysipelas and death supervened.

Among the 8 fatal cases of inguinal hernia, I find several that are worthy of a more or less lengthy notice.

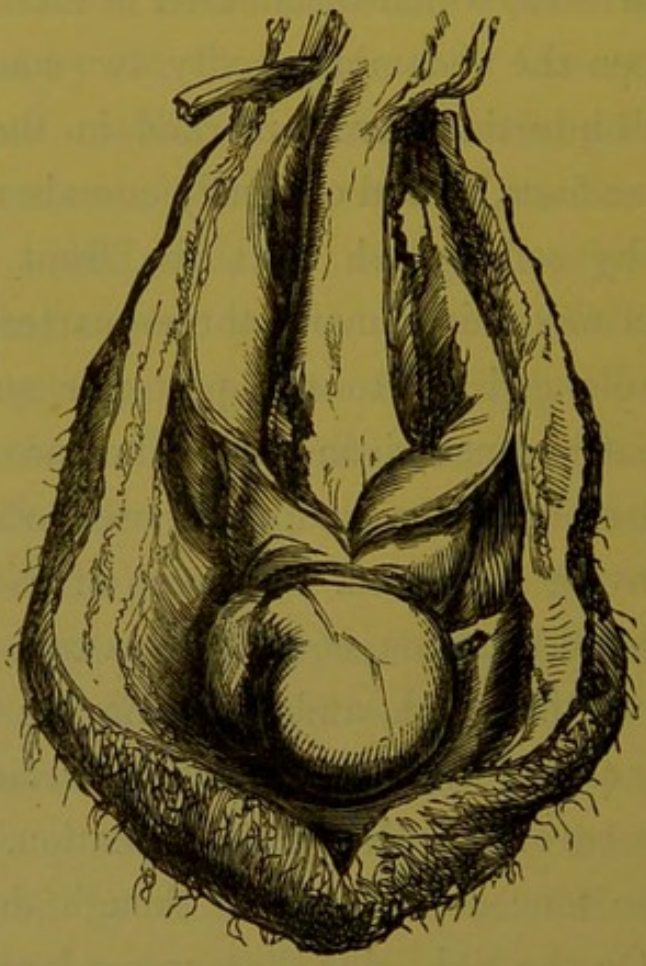
1. A man, aged 51, subject to double inguinal hernia. Seven days before admission, the left rupture came down, and became larger than usual. He had been in the habit of reducing it easily before. On this occasion, he succeeded in the taxis in five or ten minutes, but used a much greater amount of force than he had been in the habit of doing, kneading it and twisting it about. It gave him great pain, which was relieved however, when the reduction had been accomplished. The bowels acted every day till the day preceding his admission, when the pain, which had never entirely ceased, became very severe, increased on pressure, and was limited by a space equal to the palm of the hand, which included the upper part of the inguinal canal. Sickness had now come on. No tumour could be detected in the course of the inguinal canal, although there was an obscure swelling at its upper part. The supposed enteritic character of the symptoms not yielding to treatment, an operation was performed on the following day. The neck of the sac was divided deeply and internally to the inner ring ; a good deal of the exposed gut was sphacelated. The man sank in thirty-six hours after the operation ; and on a *post mortem*, the neck of the sac was found over the border of

the inner and anterior part of the true pelvis, the body of the sac occupying the iliac fossa. A case similar to this occurred some short time before my record commences, and is recorded by Mr. Curling, in the "Lancet," for 1850.

2. A case of double congenital hernia, partial reduction *en bloc*, remarkable malformation in the left tunica vaginalis. A bailiff, aged 37, married, subject to a left rupture for nine or ten years. He was not aware that there was anything wrong on his right side, although there existed there an irreducible omental hernia. Five days before admission he fell out of a cart and was much shaken. On the evening of the same day, the rupture came down on the left side, his truss not being on. It was reduced with great difficulty in about an hour and a half. He was sick during the time it was down ; on reduction he felt quite easy, but soon afterwards pain in the bowels, followed by sickness, came on. He had taken lots of medicine, and had had, he said, about forty injections. Two days after reduction he had passed a small quantity of fæculent matter. Sickness continued at intervals, and injections returned as soon as administered. These symptoms continued till his admission. An operation was performed on the left side three-quarters of an hour after the patient came in. The canal was laid open, and, on pinching up the sac prior to opening it, the bowel appeared to recede and collapse. The sac was very thick, and the intestine of a dark claret colour, but not lustreless. On passing the finger upwards, the impediment to reduction was found at the neck of the sac, about half an

inch above the natural position of the inner ring. The patient died on the third day, in consequence of a violent attack of diarrhœa, which terminated in fatal prostration. On laying open the abdominal cavity, two contiguous portions of small intestine were remarked in the upper part of the left iliac fossa, placed obliquely one above the other, and united by soft lymph. At the front part of the upper portion was a dark mark, three-quarters of an inch long, not prolonged on to the posterior surface. The peritoneal coat had not given way in the line of this mark, but the subserous tissue had, the muscular and mucous coats not having ulcerated. A patch of the lower division of the small intestine, equal in area to a shilling, was covered over with lymph, and, on removing this, the gut looked dusky and red ; a corresponding surface internally was similarly covered with plastic exudation. With this exception, the mucous membrane, though dark, was not lustreless. On the right side there was a large congenital hernia, containing nearly all the great omentum, so that the transverse colon had been dragged much down, and was distant only an inch from the inner ring. The omentum was adherent to the sac, and the lower part overlapped the testicle, thus verifying the diagnosis which had been formed on the admission of the patient. The neck of the left hernial sac had been divided a little above the internal ring. On laying open the sac by a vertical incision, carried to within two inches of the scrotum, it was found distended with sero-purulent fluid. The vas deferens—five times its ordinary thickness, and covered over by a

dense layer of fat—was observed at the outer and back part of the sac. The testicle was not seen, nor the epi-



didymis ; but, on passing the finger to the bottom of the sac, the nail could be insinuated between the upper part of the body of the testicle and the epididymis, and a smooth dense ring in the bottom of the sac, as though the tunica vaginalis had an opening below. On extending the vertical incision to the bottom of the scrotum, the body of the testicle was exposed. It was much altered in position ; the anterior and inferior border looking downwards, backwards, and to the left side ; the epididymis looking in the contrary direction. On the outer and back part of the body of the testicle, immediately below

the globus major, was a somewhat semilunar opening, the size of half a sixpence, leading upwards to a cul-de-sac on the outside of the cord, gradually contracting as it proceeded upwards, and one inch and a half in length. The cavity in which was the somewhat atrophied testicle was larger than sufficient to contain it, not glistening on the surface, but covered over with layers of soft false membrane. On cutting through the ring which girted the upper part of the body of the testicle (and which appeared at first sight to be the boundary of a perforation in the lower part of the parietal tunica viginalis), and making slight traction of the structure which formed it, it was found that the membrane could be stripped off from the subjacent tissue, which latter, when thus exposed, resembled that surrounding the body of the testicle. Thus the cavity of the tunica vaginalis was divided into two unequal portions by the development in its upper two-thirds of an adventitious sac, which contained the hernial protrusion and the spermatic chord, and, by its lowermost portion, completely encircled the testicle without adhering to it. During life the hernia must have descended into this false sac, above the body of the testicle, which would have formed a distinct swelling below it, and thus the diagnosis of its being a congenital form of protrusion would not have been made. The accompanying sketch illustrates the above description.

3. A case of right oblique inguinal hernia, with strangulation of intestine, in consequence of its having previously passed through a ring in the mesentery. The

tumour occupied the upper third of the scrotum and inguinal canal, and occurred on the right side in a young man. The gut had come down thirty-two hours before admission, and symptoms of strangulation had supervened in three hours after. During the operation the bulk of the swelling, which was much below the outer ring, was found to have arisen from bloody fluid, which had distended and rendered the sac tense. The upper part of the swelling, which occupied about the upper third of the inguinal canal, and extended somewhat beyond it, was occupied by a highly congested knuckle of intestine. There appeared to be no impediment to reduction at the inner ring; but, one and a half inch beyond this, the neck of the sac was reached, and was incised by a bistoury guided on the finger. From the direction of the finger the neck of the sac appeared to be lying over the brim of the pelvis. The patient died suddenly while leeches were being applied to the abdomen, twenty-two hours after the operation. On a *post mortem*, the neck of the sac was found an inch and a half from the level of the inner ring, just over the brim of the pelvis; and, extending from the lower and posterior part of its circumference, was a delicate old organised band, tense, and connected with a ring in the mesentery, which tightly encircled three folds and a half of the small intestine, which was dark purple, with patches of deeper coloured extravasation in the coats, and matted together by plastic effusion. A large quantity of bloody serum was found in the cavity of the abdomen. The part of the intestine

which had been in relation with the mouth of the sac was evidently part of that which had passed through the ring in the mesentery.

4. A case of strangulation of the small intestine in an old irreducible hernia, containing portions of the ascending and transverse colon, occurring in a man, aged 52, in which the operation, without opening the sac, was performed on the fourth day, and the recent protrusion reduced. Death, however, occurred from apoplexy on the sixth day.

Thus I have endeavoured to bring forward a general view of the important subject of hernia, as far as it can be illustrated without tedium, by the number of cases of strangulation I have had the opportunity, during the last three years and a quarter, of witnessing, gaining information upon from others, or of personally conducting the necessary surgical proceedings; and I here tender my best acknowledgments to my colleagues, who have unreservedly placed their Hospital experience during this period at my disposal. I cannot, however, leave the subject without making a few brief observations on those very important points concerning the treatment of strangulated hernia preliminary and subsequent to the operation; the application of the taxis and the period of operation, on the one hand, and the medical treatment after the operation, on the other.

My own experience has led me to the strong conviction that the taxis, when employed, should be used with the utmost caution; and, after having been so used, and

failing, the operation should at once be had recourse to, the warm bath and chloroform having also proved ineffectual.

To quote from the chapter on hernia in Dieffenbach's "Operative Surgery" (an essay of a highly practical character, too little known in this country, but particularly entitled to consideration, as emanating from a man who had greater experience in strangulated hernia than any surgeon, I believe, in Europe), "It is not too much to say, that to see a surgeon postpone an operation, after the ineffectual use of the taxis properly applied, is much the same as the conduct of that man who, on going suddenly into a room, and seeing a fellow-creature who had just hanged himself, quietly put his hands in his breeches pockets, seated himself before the unlucky individual, and, instead of cutting the cord from his neck, called for soap liniment, and began rubbing it into the soles of his feet."

In the perusal of my Note-book I find statements like the following:—"Taxis employed for about an hour before admission; quantity of bloody serum escaped on opening the sac; taxis used three times, each time lasting about a quarter of an hour; hurt him very much; two ounces of bloody serum on opening the sac, and after death a large quantity of bloody fluid in the abdomen; ecchymosis of the connective tissue between the different layers of abdominal muscles; patches of deep-coloured extravasation in the coats of the intestine that had protruded; taxis used for a considerable time before admission, sac found as black as your hat, looking like mortified

gut; longitudinal rent, an inch long, in the peritoneal coat of the intestine. Death."

I might multiply extracts, but I forbear, for I have no doubt, the experience of all those who have seen much of hernia, either in public or private, has led to the conclusion, that the ruthless application of the taxis has been the cause of a lamentable amount of failure in hernial operations. And if, in some cases, we remember, that, even in the hands of the most experienced, the taxis, although to all appearances judiciously used, has been attended with serious and fatal consequences, extra caution becomes requisite. In illustration of this remark, I bring forward the following case which has come under my notice: An emaciated widow, aged 53, had a strangulated hernia of thirty-two hours' duration; the taxis was carefully and skilfully applied, no undue amount of force appearing to be used. Very shortly after the intestine had been reduced, she gave a loud shriek, complained of violent and excruciating pain, which lasted about an hour, and was then followed by irremediable collapse, and death in three hours after the reduction of the gut. A careful *post mortem* examination, in nineteen hours, found the sac protruded through the saphenous opening, the boundaries of which were very tense, as also those of the femoral ring. On opening the abdomen, a strong smell of garlic obtruded on the nose. A small loop of intestine, which had been in the sac, was deeply indented, and contracted at its upper part, the indentation being covered by fibrinous deposit; the

corresponding part of mucous membrane had partly ulcerated through. On the posterior part of the gut, nearer the lower than the upper border, was a circular opening, equal in size to the end of a small pencil-case, with a clean cut border in the mucous membrane; a corresponding opening of the serous coat was three times larger, with a ragged circumference; and that of the muscular was intermediate in size. An extravasation of blood was in the subserous cellular coat. The entire intestine partook of the general wasted character of the body, was thin, and possessed little tonicity. In this case the symptoms of strangulation were anything but well marked. At the time of the application of the taxis, or just before, the patient was sitting up in bed drinking her tea; and she had been sick but once, symptoms bearing no proportion to the serious organic lesions, independent of the rupture, revealed by the after-death inspection.

The substitution for the operation of various forms of medicine on the failure of the taxis appears equally reprehensible with the abuse of the latter, and can only be comprehended by supposing that the surgeon, in consequence of vague apprehension or ignorance of the danger of delay, thinks anything better than the use of the knife, setting up in his own mind the most irrational hopes of the recovery of his patient, the realization of which would be akin to miraculous. In illustration of this part of my subject, I cannot do better than again quote from the illustrious Dieffenbach; "I was called," says he, "once to

see a young man who had been suffering for two days with acute strangulation. I found a surgeon in attendance, who was leaning over the bed, and applying the taxis. Thick drops of sweat were rolling down from his forehead. The patient was constantly screaming out with pain, and the doctor in a louder tone bellowed out to him to keep quiet, telling him that nothing else could succeed. Shortly after I came into the room, he rose up exhausted, wiped the sweat from his brow, and remarked that it was tremendous hard work, and that he had been so employed with but little rest ever since yesterday; 'but, thank God,' said he, 'it's somewhat smaller. I've tried, sir, numerous clysters, castor-oil, and croton-oil which is thought so much of in these cases. Linseed-oil with saltpetre he vomited up, but fortunately he has kept twenty grains of calomel down. Cold applications, sir, I don't think have done him any good; and yesterday evening once, and to-day twice, I placed his legs over my shoulders and used the taxis while he and I were in the hot bath together. But it's all been of no use!' I had almost added, You have not yet tried the wheelbarrow method ?* but I merely remarked, 'Why on earth havn't you per-

* A method introduced by a German Physician. It consists in placing the patient on his back in a wheelbarrow, with his legs hanging down in front over it, so that the thighs and trunk become bent towards each other. Then, while the invalid is being wheeled along a stone pavement, the operator runs backward in front of the barrow, and manœuvres on the hernia, under the idea that, by the simultaneous application of the taxis and the shaking of the vehicle, the hernia will be reduced.

formed the operation?' He immediately turned deadly pale, and whispered in my ear, 'The artery, sir, the epigastric!' I immediately performed the operation. The intestine was blue, and had been able to resist the tremendous violence that had been used only in consequence of the large quantity of fluid which was contained in the hernial sac. I have related this case," quietly remarks Dieffenbach, "only to show how dangerous, on the one hand, is a want of foresight associated with timidity, and, on the other, how much a patient can occasionally go through and yet recover."

Of the medical treatment subsequent to the operation, a review of that adopted in the above cases has led me to the conclusion, that the simple, uncomplicated, solid opium treatment is the best in the first instance; in combination subsequently, or, rather used at the same time, or not, as circumstances may suggest, with enemata and castor-oil. In the history of hernial strangulations, it will be found—if any reliance can be placed on subjective evidence—that a great number of patients prior to the irreducible descent of the bowel have had symptoms of intestinal irritability, as evidenced by more frequent stools than natural, sometimes amounting to absolute diarrhœa, which affection has afterwards returned (sometimes so severely as to threaten death by prostration), without the administration of any purgative, and has required sedatives to check it. The use of opium is here at once apparent. In other cases in which the bowels have been constipated, or natural prior to strangulation, the drug is still called for,

as being one of the most powerful antiphlogistics we possess, in consequence of the tendency it has to restore the disturbed balance between the nervous and vascular forces, whatever that may be ; and, by procuring sleep, and tranquillizing the system, to renovate the powers of the frame, and thus to give the best possible opportunity for the establishment of a healthy reparative process.

The object of combining calomel with the opium does not appear to me to be evident. When so used, opium is looked on as a secondary remedy, and given in order to keep a check on the baneful influence of the mercurial drug, which, in the irritable or inflamed state of the gut, is otherwise too apt to act as a powerful purgative. The question may be fairly asked, If the opium assists the action of the calomel, may not the calomel interfere with the action of the opium ? Traumatic inflammations of the eye, the arm, or any other part of the body, might with equal propriety, I think, be subjected to mercurial influence, whereas they readily yield to counterirritation, local abstraction of blood, sedative and soothing applications, and a judicious constitutional treatment.

In conclusion, I would remark, that by thus scrutinizing what we have done, we come generally to know what to keep doing,—treatment conducted on sound principles urging us to confidence, treatment deviating from them warning us to caution.

THE END.

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