A memoir on the advantages and practicability of dividing the stricture in strangulated hernia on the outside of the sac / By C. Aston Key.

MEMOIR

ON THE

EXTERNAL DIVISION OF THE STRICTURE

IN

STRANGULATED HERNIA.

BY C. ASTON KEY.

A

MEMOIR

ON THE

ADVANTAGES AND PRACTICABILITY OF DIVIDING THE STRICTURE IN

STRANGULATED HERNIA

ON THE OUTSIDE OF THE SAC.

WITH CASES AND DRAWINGS.

By C. ASTON KEY,

SENIOR SURGEON TO GUY'S HOSPITAL, AND LECTURER ON SURGERY, ETC.

LONDON:

PRINTED FOR

LONGMAN, REES, ORME, BROWN, GREEN, & LONGMAN,

PATERNOSTER-ROW.

1833.

London:
Printed by A. Spottiswoode,
New-Street-Square.

TO

HIS COLLEAGUES,

THE PHYSICIANS AND SURGEONS

OF

GUY'S HOSPITAL,

THE AUTHOR BEGS TO DEDICATE THESE PAGES,

AS

A MARK OF HIS SINCERE RESPECT

AND ESTEEM.

St. Helen's Place,
May 1. 1833.

PREFACE.

THE operation of dividing the stricture of a hernia on the outside of the sac is not new: it has occasionally been performed, but at very distant intervals. From the defective state of pathological Anatomy, the steps of the operation have been so imperfectly detailed, that it has met with but few admirers, and still fewer imitators.

More than a quarter of a century has elapsed since the publication of Sir Astley Cooper's discoveries in the anatomy of inguinal and femoral Hernia. Yet, notwithstanding this vast accession to our knowledge, the operation continues much the same as it was fifty years ago; while the records of surgery afford ample evi-

dence that improvement in this department of operative surgery is much wanted. Upon his correct anatomical views is founded the operation which I have here advocated.

Having found the operation less difficult of execution than I had anticipated, and that its success realised all I had expected, I have brought it forward in the following monograph, in the hope of making its advantages generally known, and, probably, more generally adopted.

CONTENTS.

DRAWINGS, WITH EXPLANATIONS.

A

MEMOIR,

&c. &c.

The fatality that often attends the usual mode of operating for strangulated hernia must have been a subject of deep consideration and regret to every surgeon who bestows much thought on the results of his practice, and who endeavours to make his art subservient to its proper object,—the prevention of suffering and the preservation of life. Oftentimes must he have deplored the necessity of having recourse to an operation that, under some circumstances, holds out so slender a chance of success; and not unfrequently has his duty compelled him to perform it with the conviction that, while it afforded the only hope of relieving the intestine from impending gangrene,

it would almost certainly lead to the destruction of the patient.

That this is not an exaggerated feeling of apprehension as to the dangers attending the operation for strangulated hernia, the records of large hospitals and the memoranda of private practice, if candidly stated, will abundantly testify; and it cannot but strike the reader of the periodical publications, that they alone furnish sufficient evidence of its mortality, in the numerous *post-mortem* examinations, compared with the number of successful cases detailed in these works. The danger of the operation, it is true, is by no means the same, under all the circumstances attending strangulated hernia; and in some cases, when the operation is performed early, before untoward symptoms have supervened, it is usually attended with a fair prospect of success. But in estimating the risk of an operation, we must not separate the favourable from the unfavourable cases; we should form our judgment upon the nature and the issue of the aggregate cases that present themselves to surgeons in the ordinary

course of practice; and it is equally immaterial to the argument, should it be urged, that the operation is successful in the hands of one surgeon, if in the practice of another an equal share of skill in the operation, and of discernment in the after-treatment of the case, fails to ensure the same degree of success. It has lately happened to me to witness a series of unsuccessful operations for hernia, in which every thing was done that skill could effect, or the best judgment could suggest, and in which, from the previous condition of the patients, well-founded expectation was entertained of their doing well after the return of the prolapsed parts; but in each peritonitis insidiously came on, and, within a few days, prostrated the patient's powers beyond the chance of recovery.

The conviction of the frequent fatality of operations for hernia is slowly and with difficulty impressed upon a surgeon's mind. His sphere of observation may, perhaps, be limited, and the few cases that have occurred in his practice, or come under his notice, may have been attended

with more than an ordinary share of success; or, if his practice be confined to private patients, and he is fortunate enough, and, it may be added, wise enough, to operate before inflammatory symptoms show themselves, he will save the majority of his cases, and, naturally enough, will be slow to believe that the operation is surrounded with so much danger as is here stated. I am free to confess that, among private patients, the average success of the operation is much greater, for reasons which I shall take occasion to advert to, than among the same number of cases in the practice of an hospital. But even should he have had a more extensive field of observation, and have witnessed a large proportion of fatal cases, he is disposed to attribute the failure to the peritonitis established before the operation, or to the previously inflamed state of the bowel, or to any cause but the additional mischief inflicted by the operation. Or should he be inclined to consider the operation as the cause of the destructive inflammation, he regards it as an extraordinary occurrence, consoling himself with the reflection

that it is an exception to the general result of his cases, and that success is not always to be obtained.

Unfortunately, a surgeon who, from experience, is aware of the great risk to which the operation exposes his patient, is compelled either to shrink from his duty, and trust to the effect of remedies which past experience has proved to be unavailing, or to perform an operation which, under existing circumstances, instead of giving relief, will only tend to aggravate the inflammation. It may be contended, that the operation, when performed early, is, according to the testimony of the most experienced surgeons, generally successful. Mr. Hey emphatically observes, "I have now performed the operation forty times, and have often had occasion to lament that I had performed it too late, but never that I had performed it too soon." And, therefore, it may be asked, Why should the operation be deferred until inflammation has taken place? There are various causes of delay that do not rest with the surgeon. In some instances, the existence of the tumour is undiscovered until

symptoms of inflammation begin to show themselves, and lead the surgeon to suspect a hernia: this is especially the case in femoral hernia. Concealment of the tumour is not unfrequently practised by females, either from motives of delicacy, or from not connecting the tumour and the symptoms as cause and effect. In other forms of rupture, as in a sudden inguinal descent, attended with immediate strangulation, the lapse of a few hours employed in using the means of reduction will occasionally be succeeded by the setting in of urgent inflammation of the peritoneum. Sometimes intestinal derangement is the precursor of a protrusion into an old hernial sac, and may even lead to its occurrence, as in umbilical hernia. In this kind of incarceration, the symptoms depend, perhaps, more on a loaded state of the bowels and impeded peristaltic action, than on an obstructed state of the circulation: tenderness and tension of the abdomen are its earliest accompaniments, and evince the great predisposition to inflammation that attends this species of hernia. Other causes of delay (especially in the practice of an hos-

pital) might be enumerated, that tend to defer the operation until inflammation comes on; so that, notwithstanding the excellence of the precept, that the operation cannot be performed too soon, cases will occur in which the surgeon, however prompt he may be, will have to operate under all the disadvantages of peritoneal inflammation.

It will no doubt be readily admitted, that the operation of opening the hernial sac and dividing its neck, when performed during the existence of inflammation, tends to increase the inflammatory action, and that, in this condition of the abdominal contents, the operation is attended with no small degree of danger; but some may be not equally disposed to admit, that an incision made into a serous cavity not previously inflamed is likely to be productive of a fatal degree of inflammation. I am by no means desirous of representing a wound of a healthy serous membrane as an injury of a highly dangerous nature, and as universally followed by wide-spreading inflammation. Wounds of the abdominal cavity

and of the pleura, that have come under my observation, have frequently healed by adhesion, without the presence of an alarming symptom; and, as the ingenious author* of the Observations on Abdominal Surgery has shown, incisions into the peritoneum may be made without that immediate risk of inflammation which was formerly supposed to attend such wounds. The Cæsarean operation, the operation of removing ovarian cysts and the uterus, accidental wounds of the abdomen followed by protrusion of the intestines, and even the severer forms of abdominal injury in which the spleen has been removed, have all occasionally been unattended by alarming signs of inflammation. The results of experiments, by the same author, on the abdominal cavity of the lower class of animals, tending to show the extent of injury which they will suffer with impunity, bear with much less force upon the question; for, though analogy may be highly instructive in illustrating the processes of nature, the power

* Researches, Phy. and Path. By James Blundell, M. D. 1824.

of bearing injuries, and the disposition to inflammation, as their consequence in the human subject, cannot, by the utmost stretch of analogical reasoning, be inferred from experiments made on the brute.

Analogy, however it may serve to show that wounds of the abdominal cavity are by no means so dangerous as may be commonly supposed, at best affords but presumptive evidence that the operation, under favourable circumstances, would in many cases be successful. But, as I have mentioned, the want of control over the circumstances under which the surgeon is compelled to perform the operation, will throw into his hands many cases which neutralise the calculations of theory and experiment.

Mr. Hey, who is regarded as a successful operator for hernia, observes, that when he performed the operation late, he only saved two patients out of five; and when he performed the operation early in the disease, he lost two in nine. In this calculation, he says that he does not include the cases which he has lost from mortification

of the bowel. This gives an average of five unsuccessful cases out of fourteen, exclusive of the cases of gangrene, or a loss of more than one third; and supposing one or two cases of gangrene in addition to the five unsuccessful cases, we should have six or seven fatal cases out of fifteen operations.* In looking over the five first volumes of the Lancet hospital reports, I find six cases detailed, out of which five proved fatal.

In order to show how far this operation is applicable to the majority of the cases of hernia that come under a surgeon's notice, I subjoin a brief description of thirteen fatal cases that have occurred in Guy's Hospital within the last few years. As the condition of the intestine, omentum, and of the sac, was in each case ascertained, any objections to the practicability of performing the operation without opening the sac, as far as the contents were concerned, must have appeared. The cases are not selected, but taken in succession from the report books of the Hospital, or

* Hey's Surgery, p. 129.

from the private book of my late dresser, Mr. Nunneley, who kept notes of all the cases of hernia occurring in his time.

The majority of the cases appeared to have died from peritoneal inflammation consequent upon the exposure of an inflamed or strangulated portion of bowel. I say, exposure of the bowel; for it is, probably, not so much the wound in the peritoneal sac that disposes to inflammation, as placing the bowel under circumstances to which it has hitherto been unaccustomed. The sudden change of temperature to which it is submitted, the exposure to light, and to a current of air, cannot but have some influence upon the delicate circulation of the part, and be productive of some impression on the nerves of so susceptible a surface as that of a strangulated intestine; and if to these influences be added the handling which the gut usually experiences, the re-action that follows these agents we must regard as a natural consequence, and likely (as experience proves) to amount to excessive inflammation. In tracing the inflammation

consequent upon an operation for hernia, it is found to spread from that portion of the bowel that has been strangulated, over the peritoneal surface of the intestines, and not to have its origin from the incision in the sac, although two wounds are usually inflicted upon it; one for the purpose of exposing its contents, and another higher up to divide the stricture: the peritoneum about the seat of stricture exhibits fewer signs of acute inflammation than the investment of the bowels.

CASE I.

A man aged thirty-four, admitted for some venereal affection, was seized with sudden indisposition on the Monday, which increased on the Thursday to well-marked symptoms of ileus. The matter vomited became stercoraceous, and the constipation could not be overcome by the remedies prescribed; he died on the seventh day from the attack, without mentioning the existence of a hernia to the apothecary under whose treatment he was. On exa-

mination, a knuckle of the ileum, three inches in length, was found in an inguinal hernial sac, of a dark livid colour, and appeared to have contracted some few recent adhesions; and notwithstanding the small size of the mouth of the sac, and the sharp edge of the ring, the intestine was readily withdrawn into the abdomen without dividing the stricture. A large piece of omentum was contained in the sac, bound down by old adhesions. A part of the omentum in the sac, and above its mouth, was of a dark colour, but not in a state of sphacelus: a quantity of dusky sanguisolent serum had been effused into the abdomen; the intestines were distended with gas, and in many parts highly vascular.

CASE II.

A female was brought in with symptoms of strangulation of several days' duration, and so depressed as to lead to the suspicion that gangrene, if it had not already taken place, was about to supervene. The sac and the intestine were therefore opened,

and the intestine allowed to remain in the sac after the division of the stricture. She died before the end of the second day. The intestine was of a dark dusky olive colour, but free from adhesions; the intestine above the stricture highly vascular, and dilated. Effusion of plastic lymph was found on the peritoneal surface of the intestines.

CASE III.

A stout middle-aged man, admitted for a strangulated inguinal hernia of short duration, but rendered so tender by the patient's own attempt to reduce it, that farther employment of the taxis was deemed inexpedient. An incision was made upon the sac, and a portion of intestine exposed. Some difficulty occurred in returning it, and in the attempt, some additional portions descended: the convolution that was found in the sac was thickened, and not returned by the operator, who thought that it was ulcerated internally. Inflammation came on, and he sunk in two days. The

intestine in the sac was found in some parts thickened, and of a dark colour. In the report it does not appear that the intestine was gangrenous, nor that there was any ulceration found in the mucous membrane: general peritonitis existed with puriform non-plastic effusion.

CASE IV.

A woman, aged about fifty, was admitted for an old but small femoral hernia, that had been only a short time strangulated. The taxis with other measures failed, and the operation was promptly performed without any untoward circumstance. The intestine found in the sac was in a healthy and favourable state, and readily returned after the division of the stricture. The omentum was strongly adherent to the mouth of the sac, and could not be returned into the abdomen.

She died under symptoms of inflammation in two days. The portion of ileum that had been strangulated was found at some distance from the sac, and appeared

perfectly healthy. The peritoneum exhibited a general state of congestion, with effusion of a discoloured purulent serum.

CASE V.

A muscular man, aged twenty-nine, admitted with an old and large scrotal hernia on the right side, which had suddenly descended about six hours before his admission. The taxis and other measures having been tried, and failing to reduce it, the operation was performed twenty-two hours after the descent: a quantity of dark brown fluid escaped from the sac; and between two and three feet of small intestine, with the dark colour of ordinary strangulation, and a piece of omentum, were found in the sac. The stricture being freely divided, several long continued and fruitless attempts were made to replace the bowel: an opening was made into it to relieve the distension, and the operator was compelled to leave that portion in the sac. The patient survived the operation about fifty hours. The portion of intestine left in the

sac appeared, on a post mortem examination, to be in a gangrenous condition, and the peritoneal tunic of the intestines slightly injected; a small quantity of ill-conditioned pus was found in the lower part of the sac.

CASE VI.

A man, aged sixty, admitted with a large inguinal hernia, of forty-four years standing, strangulate; had been ten times attacked with strangulation, but he could always succeed in reducing it without much trouble. The tobacco glyster and the taxis had been tried; the latter with some degree of force, which gave him much pain. After his admission the warm bath was used, and after it ice was applied for two hours and a half, at which time the taxis was repeated and with success, leaving a piece of irreducible omentum in the sac. The bowels were relieved, but he had symptoms of peritonitis come on the third day after the hernia was reduced, and he died on the fifth day. On examination twenty-two

hours after death, six inches of ileum were found of a black colour, allowing the mucous and serous membrane to be peeled off; no mark of the stricture could be discovered, and the gangrenous condition of the bowels was considered to be attributable to the force employed in the taxis. The peritoneal surface was generally inflamed, and covered with an effusion of puriform serum.

CASE VII.

A man, aged fifty-five, admitted with an inguinal hernia of twenty-five years standing, strangulated for sixteen hours prior to his coming to the hospital. He had been bled freely, and the taxis ineffectually tried. His pulse was compressible and natural; he complained of great pain in the abdomen, but could bear the hernia being handled. The operator endeavoured, having divided the external ring, to return the contents of the sac, but could not succeed; and then made an opening in the sac to the extent of two inches; a piece of small intestine,

very little changed in colour or texture, was laid bare, but on account of the distended state of the abdomen it could not be returned, and was, therefore, left in the sac. He had abundance of feculent motions, after the exhibition of enemata and purgative medicine. He died, however, on the second day after the operation. The intestine in the sac appeared to be inflamed, and to have contracted recent adhesions; the mucous membrane injected with blood, and the mesentery ecchymosed. There were no marks of general abdominal inflammation. A small hydrocele at the lower part of the tumour was opened during the operation, and a portion of the tunica vaginalis was in a gangrenous state.

CASE VIII.

A stout female, aged fifty-eight, was admitted with an umbilical hernia of ten years' standing, which she had contrived to keep up by means of the bone of her stays, with the exception of a small piece of omentum about the size of a walnut. On

the previous morning a large descent took place, attended with some symptoms of strangulation. The symptoms appearing to be relieved with the appearance of feculent discharge from the bowels, the operation was not thought to be immediately necessary; but the symptoms again returning in a less equivocal form, the sac was opened, and exposed a ball of omentum that appeared to be healthy, enclosing a piece of inflamed small intestine. On account of the adhesions, the omentum being healthy was left in the sac, and the intestine returned. Peritonitis came on, and she died twenty-nine hours after the operation. The portion of bowel strangulated was found to be a piece of ileum, about a foot from the cæcum, of a dark colour, and the serous covering was easily peeled off. A small quantity of sero-purulent fluid was effused in the abdomen. There were general old adhesions of the omentum to the anterior abdominal parietes from the stomach to the umbilicus.

CASE IX.

A man, aged fifty-four, with femoral, inguinal, and umbilical hernia, was admitted for strangulation of a piece of intestine and omentum in the femoral sac. It had been strangulated for two days: bleeding and other measures were resorted to without effect. The operation was performed soon after his admission: a knuckle of intestine was found enveloped in the omentum, the latter slightly adhering to the sides of the sac by recent lymph, the former free from adhesion; the intestine, though dark, retained its natural glossy appearance, and was, therefore, returned into the abdomen. The patient sunk in forty-six hours after the operation. The intestinal canal around the seat of stricture was slightly inflamed. The strangulated portion was marked at the point of stricture by a gangrenous line; the remaining portion was of a chocolate hue, and was slightly glued to the mouth of the sac.

CASE X.

A man, aged fifty, was admitted with a strangulated congenital hernia, that had descended the evening before his admission. He was bled, and the taxis used without success. The hernia was large and tense, and painful only on pressure; the taxis was again employed, and he was bled to twenty ounces. The operation was performed. The intestine in the sac was dark and much congested, but elastic and polished; there was a large piece of omentum adherent; the stricture was freely divided, and the intestine, which was marked by the stricture, but uninjured in its coats, was returned, the omentum being left in the sac. He died about thirteen hours after the operation, without any fæcal evacuation. The body was imperfectly examined, and the report not satisfactory as to the cause of death.

CASE XI.

A woman, aged thirty, admitted under the care of the physician with phthisis, and

with vomiting, constipation, and abdominal tenderness, which were not ascertained to arise from a hernial descent until the following day, and which she had laboured under for three days prior to her admission. A femoral protrusion about the size of an egg was returned by pressure; but the symptoms continuing, the sac was opened, and a small quantity of serous fluid escaped. Neither intestine nor omentum were found in the sac. On the same evening she gradually sunk. A post mortem examination discovered extensive tuberculation of the lungs, and abscess. A portion of ileum was found above the mouth of the sac, about three inches in length, of a dark dusky colour, with a pouch-like distension occasioned by a division of the two inner coats of the intestine from the pressure of the stricture. Much pressure had been used in returning the bowel. Sero-puriform effusion, and traces of great vascularity on the intestinal canal, were observed.

CASE XII.

A female, sixty-five years of age, was admitted with a strangulated femoral hernia of the right side. It had descended about ten days previous to her admission, and was treated as a case of ileus. The discolouration of the skin, which was reddened, the infiltrated condition of the cellular membrane, the abdominal tenderness and vomiting having ceased, the hiccough having diminished, and the distended state of the abdomen, together with the smallness and intermission of the pulse, led to the opinion that gangrene had taken place. The sac was opened, and a coil of intestine was discovered quite sphacelated, and in some parts opened by ulceration, through which an oozing of fæcal fluid was discovered. The stricture was divided, and the intestine opened. The patient lived until the fourth day, and then sunk exhausted.

CASE XIII.

A man, aged fifty-five, was admitted with a strangulated inguinal hernia, which

had often descended through the ring, and had been returned with some difficulty. He wore his truss upon a small piece of irreducible omentum. The shape of the swelling was peculiar: the hernia, instead of passing downward into the scrotum, turned, after emerging from the inguinal canal, over the tendon of the external oblique muscle, and appeared somewhat like a femoral hernia. The testicle had never descended lower than the external ring, and explained the peculiarity in the course of the hernia. The symptoms of strangulation were not severe, and the abdomen was not very tender. An enema brought away fæcal matter. The sac being laid bare, was found between the superficial fascia, and the external oblique tendon; the stricture at the external ring was very slight, and was divided; the contents of the sac were found to be a large loop of small intestine and a piece of omentum; the former being healthy was returned; the omentum, which was somewhat changed in structure, but free, was left in the sac. These symptoms were all relieved by the

operation; but inflammation came on, and he died on the third evening after its performance. General peritoneal inflammation, with sero-purulent effusion, was discovered on a post mortem examination.

In reading over the outline of these cases, it is obvious that the attempt to relieve the stricture without exposing the contents of the sac, could not have been attended with any untoward consequence in any of the cases, with the exception of the two cases of gangrene, Nos. II. and XII.; and in these the symptoms denoting the approach or existence of sphacelus, were sufficiently marked to point out to the operator the necessary mode of proceeding. Some of the other cases, in all probability, would have been benefited, had the sac been left entire. Cases III., V., and VII., in which the intestine was left in the sac, would not have been placed in a less favourable condition for recovery, had the sac been unopened and the stric-

ture merely divided; and it is far from improbable that the contents might, in each of these cases, have been returned by using the taxis gently upon the tumour after the pressure of the stricture had been removed: or, if such attempt to return the intestine failed, the operator could but have left it in the sac, as he was compelled to do after having opened it. Four of the cases sunk after the intestine was returned in a healthy condition; three of them, Nos. IV., VIII., and XIII., decidedly from peritoneal inflammation with effusion; the other, No. X., probably from the same cause, although the inflammation that destroyed him was not of so intense a nature as in the others, on account of the large bleedings to which he had been previously submitted. It may be fairly presumed, that if these herniæ had been returned without opening the sac, the event would have been different. In the other cases, the fatal termination seems not to be wholly independent of the taxis, except in the first case, in which the hernia was not known till the patient's death; but had it

been early discovered, the case was, in every respect, one adapted to this mode of operating. No. VI. exhibits the effects of a mischievous perseverance in the taxis after moderate efforts had failed; and, as I shall endeavour to show, if a less hazardous mode of operating were to be generally adopted, it would supersede the injudicious force so frequently and so often fatally employed, in order to avoid the hazard of an operation. The two cases, No. IX. and XI., seem to have suffered from the pressure of the stricture, and also from the force of the pressure in the taxis; and as, at the time of the operation in one case, such effect was not very clearly marked, inflammation set up subsequently to the operation might have been an aiding cause in producing the disorganisation. But I reserve these and other similar points for subsequent consideration.

Such facts, with the inferences which they suggest, seem to call upon surgery for some mode of relieving hernia under strangulation, that shall not expose the patient to the same risk of inflammation

as confessedly attends the present method of operating. The plan of dividing the stricture without including the sac, or exposing its contents, seems to realise this object; and I shall proceed to show, how far it is practicable in the different species of hernia, what its advantages appear to be, and the force of the objections that have been made to it.

The first case in which this operation was practised occurred to Petit, in the year 1718: it was a case of femoral hernia; and Garengeot, in his "Operations of Surgery," bestows upon it the following brief notice: "Last May, 1718, I saw a crural hernia of a woman, the operation of which had been made by M. Petit, without opening the bag. He only made use of his cushion; and the patient, though advanced in years, was well cured in eighteen days."* The mention

* Croissant Garengeot's Chirurg. Operations, translated London, 1723. p. 132.

of this case by Garengeot has no reference to the prevention of inflammation by leaving the sac entire, but is intended to illustrate the superiority of Petit's cushion to the tent commonly used by surgeons of his day in effecting a complete cure of the hernia after the operation. Petit's observation, "Il y a plus de trente ans que j'ai mis cette méthode en pratique pour la première fois; et elle m'a réussi,"* &c. implies that he had had, since that period, further experience of the operation, and it is to be inferred, from his subsequent reply to the objections brought against it, with success. It is not, however, mentioned what was the nature of the cases in which he so conducted the operation; nor are the steps of the operation more precisely detailed than are contained in his ninth section.

When speaking of the operation on large herniæ ("que l'on fait aux grosses hernies"), Petit seems to attach no importance to his own suggestion of leaving the sac unopened,

* Tr. des Malad. Ch. p. 329.

but confines his observations to the necessity of relieving the strangulation by dividing the stricture, and recommends the intestine, if it has contracted old adhesions, to be left in the sac; and, even should it be non-adherent, he dissuades the surgeon from returning a large mass of intestine that has for a length of time remained in the sac, on account of the risk of inflammation likely to follow the replacement of a mass to which the abdominal cavity has been long unaccustomed. His observations on the subject of large herniæ contrast strongly with the practice pursued and recommended by modern surgeons; for all our best writers are unanimous in directing them to leave the sac entire in cases of large herniæ, and to content themselves with dividing the stricture. And the perusal of Petit's cases, though it will impress the modern surgeon with a high opinion of his experience and strong sense, will, at the same time, convince him that they are precisely the cases to which his new operation would have been especially adapted, and in which, in the present day, a surgeon

of experience would, if possible, avoid opening the sac and exposing the bowel.

Dr. Monro, in the year 1788, again brought this subject before the profession, in his large work on the Bursæ Mucosæ* of the human body. He appears to have entertained a very unfavourable opinion of the results of operations for hernia in his time, and attributes their fatal termination to the practice of opening the sac and exposing its contents to the action of the air; an opinion supported by the results of some experiments he made on animals, in which he found that exposure of the intestine and handling it frequently destroyed life. At the time Dr. Monro began to recommend the practice of dividing the stricture without including the neck of the sac, only one of Petit's cases had been published by Garengeot; Petit's posthumous works appearing in 1774, and Monro's first operation having been performed in 1770. The latter advocates the operation with much zeal and some sound arguments, and has

* Work on the Bursæ Mucosæ, fol. p. 43.

given three cases in which the operation was successfully performed, and a fourth in which it was attempted; but the operator, being foiled in his object of preserving the sac entire, was obliged to open it just below the stricture, and introduce a director under the neck of the sac.

CASE I.

In 1770*, he was called, with Mr. Wood, to a woman, thirty-five years of age, with a femoral hernia with symptoms of strangulation, which had continued three days. Finding it impossible to reduce it, he prevailed on Mr. Wood to cut the tendon without opening the sac, and then to attempt the reduction; which was executed with the greatest ease.

CASE II.

In 1774, in a case of hernia congenita, to which he was called by Mr. Clarkson, he found the neck of the sac, as well as the tendon of the oblique muscle, ex-

* Op. Cit. p. 48.

tremely constricted. "After cutting the skin and tendon, we with much difficulty divided the stricture at the neck of the sac; and having reduced the bowels, we stitched the teguments."

The description which Monro has given of the last case has led to a misconception as to the manner in which the operator divided the stricture. One author, who does not seem to entertain a favourable opinion of Monro's operations, infers that he attempted to divide the stricture without including the sac, but that, being unable to accomplish his object, he was obliged to divide the neck of the sac. "Dr. Monro," he says, "mentions four cases in which he attempted this operation: he was obliged to cut the neck of the sac in two; and adhesions prevented the return of some of the parts in the third."* A little attention, however, to Monro's description of the second operation, will convince the reader that the expression, "we with much difficulty divided the stricture at the neck of the sac,"

* Lawrence on Ruptures, p. 250.

is evidently not intended to imply that the neck of the sac itself was divided, but the stricture at the neck of the sac. The anatomy of hernia was so imperfectly understood in Monro's day, that, knowing nothing of the structure of the inner abdominal opening, as since described by Sir Astley Cooper, and of the disposition of the transversalis tendon, he could describe the stricture in no other way, than as "the stricture at the neck of the sac," to distinguish it from that at the external abdominal ring; which, it appears from his description, he divided without releasing the intestine from pressure. The difficulty which he experienced in dividing the stricture at the upper opening, and which is readily explained by the nature of the hernia, also renders it highly improbable that he should have included the neck of the sac, as he would not have encountered any difficulty in completing the operation in this manner. In the fourth case, in which he did not succeed in dividing the stricture externally to the sac, he explicitly states, that he "cut the neck of the sac."

CASE III.

At the end of 1781, he was called by Mr. Arnott to a gentleman above sixty years of age, with a large hernia, to which he had been long subject, in a state of strangulation. He proposed the incision of the tendon, which was very easily executed; and, after that, all the bowels were readily returned into the abdomen, except a portion that seemed to grow firmly to the inner side of the sac. All the bad symptoms disappeared; and then the incision, the sides of which were supported by stitches, closed like a common wound of the teguments.

CASE IV.

In 1782, he was called by two surgeons to a case of femoral hernia, which had been strangulated more than two days, in a woman thirty-five years of age. He directed the tendon to be cut; but, still finding some resistance from a straightness

and thickening of the neck of the sac, they made a small perforation in the peritoneum, above the stricture; and introducing a probe bent semicircularly at its point, cut the neck of the sac upon it. A small portion of the ileum, which was strangulated, was easily reduced, and the patient recovered.

Monro's cases reflect credit upon himself, and upon those who were concerned with him in the operation. Few surgeons, with the knowledge possessed at that time, could have divided the stricture of a congenital hernia, at the upper opening of the canal, without opening the sac; and it is not a matter of surprise that he should have found "much difficulty" in accomplishing it. The third case, in which "adhesion prevented the return of some of the parts," is one that peculiarly calls for the operation: it appears, from his short account of it, to have been an irreducible scrotal enterocele of long standing; and had the operation been performed in the usual manner, a portion of intestine, after being exposed, must have been left in the sac,

and the patient, in all probability, would have fallen a sacrifice to inflammation. In the fourth case, he had recourse to a different mode of operating, which he recommends as preferable to the free division of the sac as practised by Pott and other surgeons, namely, the making a small opening in the sac below the seat of stricture, for the introduction of a grooved director, and dividing the neck of the sac upon it; though the sac is opened, the contents of the hernia are thus not exposed, and the risk of inflammation, according to Monro, is diminished. This operation, which certainly possesses some advantages over the free incision of the sac as commonly practised, is still attended, in some degree, with the risk of inflammation, while it is open to all the objections that have been urged against returning the contents of a hernia without examination of their condition.

Although I must join with the author whom I have quoted, in condemning the injustice of Monro's criticism of Petit, I cannot withhold the tribute of praise from

the former author, as well for the boldness of his surgery as for the novelty of his operation. For Petit, though he is entitled to the merit of priority, had performed the operation only in cases of inguinal herniæ, in which the stricture seems to have existed at the external ring, and the operation was comparatively easy; but Monro has extended the operation to all descriptions of hernia, — to small protrusions, in which the operator has to exercise more skill, as well as large.* Surgery

* Petit's description "de la manière d'opérer les hernies sans ouvrir le sac†," shows that he had only performed it in cases in which the stricture was formed at the external ring. "When the surgeon has laid bare the hernial sac, and removed the fat and membranes that cover it as far as the ring, he takes a broad sound, curved at the end and grooved in the middle, introduces it between the ring and the sac, and passes the point of the bistoury in the groove, in order to divide as much of the ring as lies over the end of the sound; and if he thinks that he has not cut sufficient to disengage the ring, he continues to push the broad sound under the ring to divide all that lies upon the sound. By these means the sac remains entire, and the tension of the ring being taken off, the parts enclosed in the hernia are somewhat released from

† Traité du Mal. Chir. tom. ii. p. 329.

has done justice to Petit, and has retained his operations, but has neglected those of Monro, probably because they were more difficult of execution; but, while we acknowledge the merits and originality of the French surgeon, it is unnecessary to detract from the utility and excellence of the British surgeon's operations. The operation, as performed by Monro, is more generally useful, because it is more frequently called into practice: his success is encouraging, and is not unworthy of the imitation of modern surgeons, who possess anatomical advantages to which he was a stranger.

In 1803, Sir Astley Cooper performed the operation of dividing the stricture, without including the sac, in a case of large inguinal hernia, in a man aged fifty-four years, in which, the intestine not being re-

---

constriction (sont moins à la gêne), and the surgeon can return them by gentle pressure." It is needless to observe, that an operation so conducted would relieve very few herniæ from stricture, as, with few exceptions, the stricture is formed at the inner ring. Monro, therefore, cannot be said to have borrowed the operation, which he performed in the case of congenital hernia, from Petit.

leased as soon as the external ring was divided, he carried the bistoury under the edge of the transversalis, and divided a portion of it: this gave immediate relief to the strangulated bowel; and slight pressure upon the tumour returned the larger portion of its contents. He had not an untoward symptom, and in a week could bear the pressure of a laced truss to support the tumour *, — a portion of intestine being irreducible from old adhesions.

In 1807, a large umbilical hernia came under his notice, that could not be reduced by the ordinary means, and which he succeeded in returning by carrying the bistoury under the edge of the tendinous umbilical aperture, and dividing it. "I made a very small incision opposite to the neck of the tumour, exposed the fascia which covered it, passed my bistoury between the fascia and the sac, and divided the former to the edge of the umbilical ring; then putting my finger to the edge of the linea alba, I passed my knife through

* On Hernia, part i. p. 63. 2d edit.

the umbilical opening, behind the linea alba, and made a small division of it upwards; then withdrawing the knife, I pressed upon the tumour, and it immediately returned."* In another case of irreducible umbilical hernia, he performed the operation in the manner recommended by Monro, with the view of preventing exposure of the contents of the sac; namely, by making a small opening in the sac, just below the seat of stricture, and dividing the stricture with the neck of the sac. "I made the incision upon the orifice of the sac, opened it, and passed in a probe-pointed bistoury, and dilated the stricture upwards; then pressing the intestine, I discharged its contents into the intestine within the abdomen, left it in the sac, and brought the edges of the wound together with very little exposure of the protruded parts, and with relief to all the symptoms of strangulation."†

M. Boyer briefly recommends the sac not to be opened in large inguinal herniæ, but the stricture to be divided by passing a

* Op. Cit. part ii. p. 41. † Ibid. p. 43.

director under the aponeurotic opening, and introducing the bistoury upon it; or, if that be impracticable, to make a small opening in the sac, just below its neck, and to divide the stricture from within the sac. He especially recommends the operation to be performed in this manner, when a hernia is irreducible from adhesions, or from the enormous volume of its contents.*

A writer in the Edinburgh Journal for 1814, under the name of "Inquirer," has advocated Dr. Monro's operation, and, from notes taken from the Doctor's lectures, states the advantages of not opening the sac. His account, though somewhat highly coloured, is true. "The surgeon," he observes, "divides the integuments by a wound several inches in length, and then proceeds by an incision of similar magnitude to lay open the sac. After the viscera, thus unhallowedly exposed to the pernicious stimulus of a medium unusual to them (viz. the atmospheric air), have been felt, fin-

* Boyer, Traité des Mal. Chir. vol. viii. p. 257.

gered, turned over, and examined *secundum artem*, the next step is to divide the stricture, which one might suppose to be the first object in view. The protruded bowels are at length reduced; but not until, in all probability, they have been brought into such contact with a number of irritating substances, such as sponges applied to the wound, the fingers of the surgeon, or, perhaps, even the sleeves of his coat. After all this, can it be wondered at, if abdominal inflammation comes on so often and kills the patient?

"Surely any surgeon would, at all times, be willing to reduce the hernia without an operation if it is practicable, and will think it perfectly safe to do so. When the operation is had recourse to in due time, what new reason makes a change of plan necessary? Why will he open the sac now, when he would most willingly have reduced it but a few minutes before by the means usually called taxis? Surely there is a manifest inconsistency in such a proceeding; and although a practitioner may screen himself from censure under

the broad canopy of general usage, I suspect he will not be able, without sophistry, to elude the unsatisfied enquiries of his own conscience."

The writer's recommendation not to defer the operation is a little overcharged. "Allowing the enema a reasonable time to operate, let the efforts at reduction be renewed; and should they still be unsuccessful, it may fairly be pronounced that the patient has no chance but from an operation; and, therefore, every minute that is allowed to pass in further temporising and delay, carries away with it, beyond recall, a chance from the unfortunate sufferer. I think all the steps above recommended might, by an active practitioner, be put fairly in force in one hour at the utmost. Should a trial so energetically conducted fail, the operation ought to be instantly resorted to; as farther attempts at reduction, in the present position of things, is too often productive of much ensuing evil."

"The manifest advantage of this mode is, that a most formidable and often fatal

operation will be converted into a simple incised wound of the abdominal parietes. The risk of subsequent visceral inflammation would be so comparatively small, as scarcely to be the subject of reasonable calculation. The only objections of which I am aware, are the probability of the strangulation being occasioned by a frænum passing across the mouth of the sac, or a quantity of fetid fluid being accumulated in the bottom of it. As for the latter, I think no harm can result from the whole contents of the sac being replaced in the abdomen, as the water would soon be absorbed. As for the former case, the cause of strangulation will be readily ascertained as soon as the integuments are divided; and should it appear to be something in the mouth of the sac itself, a small opening may be made in the neck, just sufficient to admit of the obstacle being divided. But I believe the existence of a frænum is not found more than once in a hundred cases; and for such a rare occurrence to be pitted against the operation here recommended, could prove no more

than that one mode of practice is not universally applicable."

This writer leaves out of his calculation the occurrence of gangrene, as he presumes the operation to be resorted to early, when the return of the contents of the hernia by the taxis would have relieved the symptoms of strangulation.

A prominent character of the operation, and one that raises it above many of the objections that have been brought against it, is, that should the attempt to execute it fail, either from want of dexterity on the part of the operator, or from any peculiar difficulty in the case, the operation can be completed in the ordinary way, by laying the sac open. A surgeon may possibly find great and insuperable difficulty in dividing the stricture externally to the sac; or, having divided the stricture, he may be unable, by the best directed efforts, to return the contents of the hernial tumour: in such a case, he has not brought himself into any dilemma by his unsuccessful attempt; the operation may proceed, as if it had not been made; and neither patient nor surgeon are

in a worse position than if the sac had been opened in the first instance, without the attempt to preserve it entire. It is no slight recommendation of the operation, that its failure involves the surgeon in no embarrassment, but leaves him at liberty to adopt the old mode of operation.

But an intermediate line of proceeding remains for his choice, between the division of the stricture on the outside of the sac, and the laying the latter open in the usual way, so as to expose its contents; namely, the operation, as recommended and practised by Monro in his fourth case, of making an opening into the sac below the stricture, introducing a director into the opening, conveying it under the stricture, and dividing the latter upon it. Such a proceeding diminishes the danger of inflammation, by less freely exposing the surface of the intestine; and in a simple case of recent enterocele, strangulated, appears to be free from objection. An unusual degree of tightness in the stricture at the inner ring, in inguinal hernia, rendering it impossible to divide the tendon without

wounding the neck of the sac, or a thickening of the neck of the sac in femoral hernia might render this modification of the operation expedient, and, perhaps, these are the only cases in which it can be considered to be strictly necessary, or, indeed, to possess any decided advantages. If the stricture could not be relieved without passing the bistoury within the neck of the sac, the operation would be preferable to the more free incision of the sac ; but it would not render the return of the contents of the sac more easy than if the stricture were divided on the outside of the peritoneum. It also equally conceals from examination the state of the intestine and omentum, and precludes the possibility of knowing whether they are in a condition to be returned into the abdomen. To these latter objections it is equally liable with the external division of the stricture.

The experience of Sir Astley Cooper in its favour is accompanied by an allusion to the advantages that attend it, and by the expression of his conviction " that the operation will be gradually introduced into ge-

neral practice when it has been fairly tried; and will be found, if performed early, to be free from danger, and attended with no unusual difficulty."* In ordinary herniæ, he says, that dividing the tendon without including the sac avoids the danger of wounding the bowel, which has occasionally happened when introducing the bistoury within the sac, and in the event of the epigastric artery being wounded, the hæmorrhage does not take place into the abdominal cavity.†

In large herniæ he strongly dissuades the surgeon from opening the sac, chiefly on account of the handling to which the intestines are necessarily subjected in returning so large a mass into the abdomen; and also from the difficulty of retaining them in the abdominal cavity after they have been replaced. In large irreducible herniæ he recommends that the sac should not be opened, as the time required for the separation of extensive adhesions would expose the intestine to great risk of inflammation.

* Part I. p. 64. † Page 39.

I need not again urge the main benefit derived from the external division of the stricture in the non-exposure of the patient to those causes of inflammation, to which the ordinary operation subjects him, and, as experience frequently proves, with most unhappy consequences. The exposure of a bowel in a state of incipient or active inflammation, the handling it in this susceptible state, the incision made into a peritoneal bag already disposed to, if not in an actual state of, inflammation, are, as every surgeon will admit, and as his forcible efforts to reduce the hernia without the knife prove that he feels them to be, dangers of no ordinary magnitude to a patient labouring under a strangulated intestine. I do not feel that I have exaggerated the risk of inflammation; for frequently enteritis comes on, when at the time of the operation the bowel appears to be healthy, and the abdomen free from tenderness; and when general inflammation precedes the operation, the release of the intestine by the knife rarely succeeds in checking it.

Cases are sometimes met with in which

the patient appears to be doing well after the operation, the evacuations being free and natural, and the sickness and pain subsiding; but after the lapse of two or three days the powers begin to sink, the abdomen, though not very tense, is uneasy under pressure, the pulse small and quick, and the tongue becomes dry and coated. This condition is, perhaps, protracted for several days, and the patient at length dies. A *post-mortem* inspection discovers the cause of death in the dark colour and lacerable condition of the strangulated portion of bowel, and the vascular state of the surrounding parts.

This unexpected termination of a case, when it does occur, usually takes place in patients of enfeebled constitution, whose powers are unequal to the restoration of the healthy circulation in the strangulated bowel after its release from the stricture; and in whom, therefore, a slight degree of inflammation gradually ends in the extinction of its vitality. At the period of the operation the intestine, when exposed, presents none of the usual indications of

present or approaching gangrene; no infiltration of its tissues, no discoloration beyond that which retarded circulation in a healthy bowel produces, no lack of peritoneal lustre, and no lacerability of texture; it in no point appears to differ from those cases of strangulation, in which an early operation is had recourse to before severe symptoms come on, and in which a favourable prognosis is verified by a rapid convalescence. Exposure of a portion of bowel possessing such feeble powers of resistance to morbid influence cannot but tend to increase, probably to excite, a disposition to inflammation; which, though low in degree, is sufficient to destroy its vitality; and it may, therefore, be fairly regarded as the main agent in the production of gangrene.

In cases in which great depression of the powers are observed to precede the operation, death sometimes rapidly takes place without any other obvious cause than the exposure of the bowel. The condition of the patient is often found to be manifestly worse after the operation,

and stimulants are obliged to be plentifully administered, in order to sustain the sinking powers of life. This may happen without inflammation of the abdominal cavity, or gangrene of the bowel; and is attributable solely to the depressing effect of the operation. The pulse, which before the operation was feeble, becomes fluttering, and scarcely perceptible; the countenance, which was anxious, now bespeaks the approach of death; the skin is covered with a clammy moisture, and the whole frame is seized with a restlessness that gradually ends in the calmness of dissolution.

Mr. Wallis of Melsham, Norfolk, allows me to mention a case that occurred in his practice last year.

Mrs. C——, aged forty-five, sent for him in the year 1829, on account of a swelling in the groin about the size of an egg, attended with sickness and constipation of the bowels; which, by means of the warm bath and subsequent use of the taxis, was partly returned. The remaining part of the swelling gradually went away under rigid abstinence. A truss was recom-

mended, and for some time worn; but being an active woman, she at length discontinued its use. Occasional attacks of sickness and pain, which she experienced, were usually relieved by a little rhubarb, with aperient injections. On the 16th of October, in last year, she was again seized with the same symptoms, the tumour being as large as when Mr. Wallis first saw it in 1829. But in this attack there was a greater degree of anxiety and restlessness, with a surprising prostration of strength. She was bled twice, and had injections administered with the warm bath. After some hours, the taxis appeared to reduce the swelling to half its size, and some part of its contents slipped into the abdomen. The bowels became soon relieved, but in other respects the symptoms remained the same. Suspecting, therefore, that a portion of the cylinder of the bowel remained strangulated, he thought that no time should be lost in having recourse to the operation. Mr. Wallis having met with an accident, a neighbouring surgeon of skill was sent for,

and the operation performed. A knuckle of intestine was found in the sac, dark-coloured but healthy, and was returned into the cavity of the abdomen. After being put to bed, she became restless, throwing herself about in bed, and her pulse scarcely to be felt: in about an hour after the operation she died.

It is true that such a condition of bowel is sometimes discovered on inspection, *post mortem*, of a patient whose hernia has been returned by the persevering taxis of the surgeon; and in whom, instead of the expected relief, a series of symptoms ensue, as succeeded to the return of the prolapsed parts in the case No. XI. This, however, is comparatively rare, and only shows that the prolonged and forcible use of the taxis may occasionally prove as destructive as the operation; and that rough handling of a tender bowel tends as much to produce disorganisation, as its exposure does to induce slow inflammatory action sufficient to overcome its vital power.

It is a common remark among surgeons,

that there is no circumstance conducing more to the ill success of the operation than the violent pressure to which patients are subjected in the employment of the taxis. The surgeon, anxious to avoid an operation attended with so much uncertainty as to its result, keeps up for a length of time such a degree of pressure as he thinks in prudence ought to be applied. The same unsuccessful efforts are renewed by another surgeon, who thinks to succeed by using a greater degree of pressure. He is succeeded by a third; who, determined to return the hernia at all hazard, keeps up a degree of pressure nearly sufficient to rupture the distended bowel. After their several attempts, the surgeon has to perform the operation upon a bruised and inflamed intestine, requiring but the additional agency of the operation to induce sphacelus. Were the operation for hernia attended with less danger, such violent attempts at reduction would not be made; the operation would be earlier resorted to: and I cannot but think that, among other advantages, the operation I now propose

would, if generally introduced, have the effect of rendering such violence less frequent. An operation is often regarded as a forlorn hope, resorted to in the extremity of danger, when the injurious effects of delay and violence combine to preclude a chance of success.

The effect of exposing a contused part is seen in a common bruise: if the soft parts are severely contused, the skin remaining entire, the inflammation that follows subsides without injuring the texture of the part. But if a small wound accompanies the injury, the inflammation proves destructive in its effects; sloughing of the cellular membrane, with copious suppuration, ensues, and the process of healing is tedious. Between a common contusion, and an intestine, or omentum, bruised by the taxis, there is a close analogy: a breach of texture, in the one case, leads to the same effects as exposure in the other. Inflammation is in both the result; and the vitality of the parts being impaired, disorganisation in both cases follows as the consequence of inflammatory

action. If the contusion be not accompanied by a breach of the surface, no harm is anticipated; and just so if the bruised contents of a hernia are returned without a wound of the peritoneal sac, and consequent exposure, inflammation, if it does come on, seldom proves severe, and still more rarely fatal.

The following case strongly illustrates the force of these observations. The hernia had been strangulated four days, but was fortunately returned by the taxis. From the symptoms, it is probable that the bowel was in a state of inflammation, with its circulation reduced to the lowest state compatible with life. Had the operation been performed in the usual way, and the congested and feeble portion of bowel and inflamed omentum exposed and handled, a fatal termination of the case might have been anticipated. As it was, the patient's life was placed, for more than a fortnight, in considerable danger. The condition of the bowel, as well as that of the omentum, was most precarious, and nature seemed, for a long time, unable to restore its natural

healthy circulation. I am indebted to Mr. F. Fagg, the dresser, for the particulars of the case.

CASE I.

Anne Florence, aged forty-six, admitted into Guy's Hospital, January 6th, 1833, at three P. M.; a married woman, and has had five children. After her last confinement, seven years ago, she noticed a swelling, the size of a walnut, in her right groin. This has, at different times, been a little larger; but she has always been able to return the greater part of the hernia, its return being accompanied by a gurgling noise. She has never worn a truss.

Four days ago, having had more than usual exertion in washing, she found that the swelling was about twice as large as before, but did not attribute its increase to any sudden exertion. She was soon afterwards seized with violent pain in her bowels, hiccough, and vomiting. These symptoms have continued up to the present time, gradually becoming more trou-

blesome. Bowels have not been open during the last four days. At present there is considerable anxiety of countenance; abdomen tympanitic, and slightly tender on pressure; hernial tumour tense and somewhat tender; pulse 100, rather sharp and jerking. The taxis had been used before she came to the hospital; and she has taken a great quantity of medicine, but has not been bled.

Five P. M. The intestine was returned, at half past four. There is still a small portion of omentum in the sac.

Enema Ol. Ricini stat.

Eight P. M. The injection remained up some time, and was followed by two scanty fluid dejections. She has had a little hiccough, but no sickness or vomiting; pulse 100, less sharp.

January 7th. Slept but little, being troubled very much by flatulence; countenance much better; abdomen less tympanitic, and very slightly tender; has had slight hiccough; tumour not at all tender; bowels three times freely open; dejections

fluid and bilious; tongue slightly furred; pulse as before.

8th. Slept better, but is still troubled with flatulence and hiccough; abdomen soft and less tender, but still slightly tympanitic; pulse 112, small, and rather weak; bowels relaxed; tongue coated by a white fur.

Mist. Cretæ, ℥iss, 4tis horis; Hydr. c. Cret., gr. iv. Pulv. Dover, gr. v. h. s. Catap. Sinap. scrob. cord. Wine, 1½ ℥ daily.

9th. Slept badly; hiccough still continues in a slight degree; abdomen soft and free from tenderness; pulse as before; tongue cleaner; bowels still relaxed; dejections offensive.

Mist. Cretæ, Infus. Catechu, āā ℥j. ter die.
Hydr. c. Cret., gr. iv.; Pulv. Dover, gr. v. h. s.

10th. Slept better, and had very little hiccough; bowels less relaxed; dejections still very offensive; pulse stronger; tongue more furred.

P.

11th. Bowels are more relaxed again; pulse weaker.

Hydr. c. Cret., gr. ij.; Conf. Opii, gr. viij., 4tis horis.

12th. Had a good night; bowels less relaxed; dejections of a healthier character; slight hiccough.

P.

13th. Slept well, and expresses herself to be much better; bowels much more composed; pulse stronger.

Rep. Pil. ter die.

14th. Had a bad night from griping pain in her bowels, and is feverish this morning; bowels are more relaxed; dejections offensive; pulse 108, small and weak; slight hiccough occasionally.

Rep. Pil. 4tis horis.
Enema Amyli. c. T. Opii, ♏ xxx. stat.

15th. Had a better night, and has less fever; bowels not so much relaxed; no hiccough, but still a little flatulence; pulse 100, rather stronger; tongue moist and less furred.

P.

16th. Slept well; pulse small and weak; bowels still relaxed; dejections offensive.

P.

Brandy, ʒ ℥ daily.

17th. Complains of griping pain in her bowels; but they are less relaxed; pulse a little stronger; tongue dry.

Emp. Lyttæ abdom., et P.

18th. Had a bad night, being troubled very much by pain in her bowels and flatulence; dejections are still very offensive; the countenance is rather anxious; and there is slight tenderness of abdomen on making considerable pressure; pulse weak; tongue moist: the blister has not risen.

Mist. Cretæ, ℥iss; Infus. Catechu, ℥iss.
Liq. Opii Sedat., ♏ x. 4tis horis urgente diarrhœâ.
Pulv. Opii, gr. i.; Calom., gr. ss., h. s.
Catap. Sinap. hypogastrio.

19th. Had a better night; much less flatulence, and scarcely any pain; bowels not so much relaxed; dejections less offensive; tongue rather dry.

Rep. Pil. hâc nocte; Rep. Mist. 6tis horis.
Brandy 1½ ℥ daily.

21st. Had more pain in her bowels last night, and the flatulence is increased; bowels more relaxed; dejections dark and

offensive; tongue clean and moist; pulse as before; no tenderness of abdomen.

P.

23d. Passed a good night; has less pain in her bowels, but is still troubled by flatulence; bowels are less relaxed; dejections of a healthier character; tongue rather dry; pulse 104, still weak.

Rep. Mist. bis die.
Hydr. c. Cret., gr. ij.; Opii, gr. ss.
Omni alt. nocte.

25th. Feels much better; has had no return of pain; pulse stronger.

P.

28th. Continues improving; has had no pain in her bowels, and very little flatulence; tongue clean; bowels three times open since yesterday; dejections of a healthier character.

Rep. Mist. semel die; Rep. Pil. omni alt. nocte.

31st. She has had a return of pain in her bowels, and flatulence; bowels relaxed, and dejections offensive; pulse 84, and weak; tongue clean and moist.

Rep. Mist., 4tis horis, et Pil.

February 2d. Complains still of a little pain and flatulence; bowels less relaxed; dejections still dark and offensive.

Rep. Mist. bis die, et Pil.

6th. She feels much better; has had very little pain in her bowels, and they are less relaxed; dejections light-coloured.

Hydr. c. Cret. gr. iv.; Opii, gr. j. hâc nocte, et P.

9th. Continues to improve, and is gaining strength; bowels not too much open; dejections healthy.

P.

11th. She had considerable pain in her bowels last night, and vomited a little sour fluid; also had slight hiccough. She is quite free from these symptoms to-day.

Omitte Pil.; Rep. Mist.

26th. She is now quite recovered.

Some of those accidents that have occasionally attended the division of the stricture are, in a great measure, prevented; or, at least, the risk very much diminished: hæmorrhage is one of them; if it were to take place when the sac is

not opened, the blood would not flow into the abdominal cavity. The vessels, however, are much less exposed to danger; for the director in both inguinal and femoral hernia is so placed, that the knife is carried before the vessels; and thus the epigastric artery, and the obturator, when it crosses the femoral sac, will be more likely to escape. The cremaster branch of the epigastric, which, in one case mentioned by Mr. Lawrence, furnished a very copious bleeding, is out of the reach of the knife when the latter is passed on the outside of the sac.

In a case of femoral hernia that lately occurred at St. Thomas's hospital, a small branch given off from the obturator artery crossed the fore part of the neck of the sac, and was cut through in dividing the stricture; the obturator artery itself, which arose from the epigastric, passing into the pelvis, behind the neck of the tumour. Owing to some peculiarity in the hernia, the operator, without being aware of it, found that he had divided the stricture

without opening the sac; and thus the blood that escaped from the wounded vessel diffused itself into the cellular texture of the abdominal muscles, and not into the cavity of the peritoneum.

The intestine also is placed beyond all reach of danger from the knife. It is often endangered, and sometimes wounded in the operation. In the division of the stricture, it sometimes prolapses before the edge of the knife, and is wounded. This more especially happens in the attempt to divide Gimbernat's ligament in the operation for femoral hernia: the ligament lies so deep, that the operator cannot follow the knife, which he is obliged to bury deep within the sac. Sir Astley Cooper mentions this accident, and gives cases in which it occurred. I have also seen Mr. Abernethy, when I attended his lectures in 1817, produce at lecture a portion of ileum that had been wounded in the operation, and followed by a discharge of fæces when the knife was withdrawn.

In bringing the intestine more com-

pletely into view, although the stricture may have been divided, it sometimes happens, that drawing the bowel down from under the stricture is suddenly followed by a gush of fæculent matter. This has been found to arise from an ulcerative process induced in the bowel by the pressure of the edge of the constricting band. It is more frequent in femoral than in the other forms of hernia. Such an accident cannot attend the division of the stricture on the outside of the sac.

Small collections of pus at the mouth of the sac, attended with intestinal irritation and peritoneal inflammation, are occasionally found, on inspection, after the operation of opening the sac. The following case presented this appearance, together with a change in the condition of the mucous follicles of the intestine. I will not aver that this will not happen if the sac be left entire; but it is probable that the latter mode of proceeding would much diminish the chance of suppuration. The intestine was much chilled before it was returned: this frequent and fruitful

source of subsequent reaction and inflammation would be wholly avoided.

CASE.

George Wallis, aged forty-eight, a sailor, admitted November 2d, 1832, at a quarter to eleven P. M. He states that he has had a small swelling in the left groin for fourteen years: since that time, it has occasionally been increased, but was easily reduced to its former size. He had worn a truss till the last fortnight; during this time his bowels have been costive. Last night the hernia became larger, whilst exerting himself (as he states, in *larking*). He was immediately seized with cramps in his stomach and vomiting, which have continued up to the present time; his bowels had not been open for two days. The symptoms on his admission were, nausea and vomiting of undigested food without fæculent odour; hiccough; pulse 120; abdomen somewhat tense, tympanitic, and tender; countenance anxious; hernial tumour in the scrotum, the size of a large

duck's egg, and excessively tender. He had been bled three times during the day, and the taxis had been used for some time.

Calom., gr. iij.; Opii, gr. j., stat. Enema Ol. Ricini stat. Lotion, with muriate of ammonia and nitre, to the tumour.

November 3d, seven A. M. He has had less vomiting; but the hiccough is very troublesome. The operation was proposed; but the patient would not give his consent.

One P. M. Countenance more anxious; pulse 100, and feeble; abdomen tense; tumour less tender. He consented to the operation, which was performed. The superficial fascia was considerably thickened. On opening the sac, a large quantity of dark fluid escaped, and only omentum appeared. On this being drawn upwards, a knuckle of small intestine was exposed, about an inch of which was of a dark port-wine colour, thickened and ecchymosed. After the stricture, which was at the internal ring, was divided, the intestine was returned, the unsound portion

being left in th e inguinal canal. The omentum was adherent to the neck of the sac, and the greater part of it was cut off.

Magn. Sulph., ʒij.; Magn. Carb., gr. xv. 3is horis.

Four P.M. Countenance much less anxious; slight hiccough; pulse 112, rather jerking; abdomen less tense.

Ten P. M. He has had slight vomiting, and the hiccough continues. He has taken three doses of the mixture; but the bowels have not been opened; passes a good deal of flatus; abdomen less tense, and free from tenderness.

Rep. Mist., post hor. j.; Enema Ol. Ricini cras mane.

4th, ten A. M. Slept pretty well. The injection brought away a copious, scybalous, dark stool. He has had slight vomiting; hiccough continues; abdomen soft and free from tenderness; pulse 120, small, and rather weak.

Cataplasm. Sinap. scrob. cord.; Rep. Mist. 4tis horis.

Nine P. M. Hiccough continues; no anxiety of countenance; cannot keep any thing on his stomach. He has just had

an injection, which was followed by a copious, fluid, bilious dejection.

Calom., gr. iij.; Opii, gr. j., stat.; Enema Ol. Ricini cras mane.

5th, nine A. M. Slept four hours. The injection produced the same effect as the last; hiccough continues; stomach rejects every thing; pulse 130, and weak; abdomen free from tenderness.

Calom., gr. iv. stat.; Mist. Effervesc. i.; Tinct. Humuli, ʒj. 4tis horis.

Ten P. M. Hiccough relieved; no vomiting; bowels four times open since the morning; dejections fluid and bilious; complains of headach.

6th, eleven A. M. Slept pretty well, but was rather delirious; hiccough continues; no return of vomiting; pulse 100, and stronger; abdomen free from tenderness; has passed a copious solid dejection.

Calom., gr. v. stat.; Rep. Mist. sine Tinct. Humuli.

Eight P. M. Hiccough more troublesome; bowels four times freely open since the morning.

Calom., gr. j.; Camphor, gr. j.; Opii, gr. iss. stat. Emp. Belladonnæ, scrob. cord. et P.

7th, eleven A. M. Slept but little, and

was delirious; hiccough continues; countenance somewhat anxious; has passed three copious fluid stools; pulse 120, compressible; wound healthy.

Calom., gr. j.; Opii, gr. ss. 4tis horis. Mutton broth.

Eight P. M. Hiccough very troublesome; bowels relaxed.

Opii, gr. ij. stat.; Julep. Ammoni. Magnes. et Tinct. Opii, iij. viij. 4tis horis.

8th, ten A. M. Slept pretty well; has had slight sickness during the night; hiccough less troublesome; countenance improved; pulse 110; bowels three times open; dejections fluid and bilious.

Tinct. Opii, m. xx. ex vino stat. Arrow-root and Wine.

One P. M. Bowels continue relaxed; omentum at the external ring sloughy.

Opii, gr. j. statim.

Nine P. M. Sickness continues; hiccough relieved; tongue moist.

Quinin. Sulph. gr. ij. Opii, gr. ss. 4tis horis. Thirty drops of Tincture of Opium in a tablespoonful of brandy, directly.

9th, eight A. M. Passed a tolerable night;

vomited the first two pills, but kept the last on his stomach; countenance rather depressed; bowels twice open.

Opii, gr. j. stat.

One P. M. He kept the pill on his stomach, but vomited some wine which was given him; hiccough less troublesome; abdomen rather tympanitic, but free from tenderness; pulse 120, and weak; wound healthy; omentum sloughing; internal ring closed.

Opii, gr. ss. 2is horis. Mutton Broth and Porter.

10th, eight A. M. Thinks himself better; no return of sickness; very slight hiccough; pulse 110, and soft; appetite improved; has passed a solid motion.

Pergat.

11th, ten A. M. Had slight nausea this morning; no vomiting; slight hiccough; has had three fluid stools; tongue furred, but moist; pulse 120.

Rep. Pil. A blister to be applied to the pit of the stomach, and dressed with Opium ointment.

Eleven P. M. He is exceedingly rest-

less; pulse 130, very weak; bowels twice open.

Morph. Acet., gr. j. stat. et rep. post 2 hor.

12th, eleven A. M. Countenance very much depressed; pulse 140, very feeble; no hiccough; has passed two fluid stools; extremities cold.

13th. Died at half-past nine this morning.

Sectio Cadaveris, twenty-four Hours after Death.

On laying open the abdomen, the omentum was found to be thickened and drawn tightly towards the internal ring; small intestines adherent to internal ring and glued together, thus rendering a small collection of pus at the internal ring circumscribed; the portion of the ileum which had been strangulated dark-coloured, but not spacelated; a great quantity of fluid fæces escaped from the intestines when they were opened; patches of glandulæ aggregatæ ulcerated, with lymph thrown out on them; the peritoneal coat separ-

ated with great facility from the ileum; duodenum not at all affected.

Among the advantages accruing from the operation of dividing the stricture without including the peritoneum, I do not enumerate many circumstances that, in my view, go to support the operation, but which others may consider as objections to it. There is no proposition in surgery but admits of being viewed in contrary lights; and the arguments that an advocate may bring forward to support his view of the question are oftentimes adduced by an opponent as the strongest objections to its truth. In the present instance I can only say, that I have given an attentive consideration to the subject, and trust that what I urge may be regarded as the result of an honest and deliberate conviction, rather than the effect of a partial and hastily adopted opinion. I shall refer the reader to the statement of the objections to the practice, for those points that are here omitted.

Petit has anticipated many of the objections that might be, and in some instances were, brought against the operation; and I shall present the reader with his very sensible remarks on the subject, that he may judge of their force, and how far he is successful in combating them.

"In the first place *," he says, "it is objected that this operation is difficult; if it be performed, as I have just described, with the director that is peculiar to myself, there is not a surgeon who could not perform it with ease, however little dexterity he may possess; but the difficulty of a thing is not the question, when it is useful and practicable. It is said, in the second place, that fluids are found shut up in the sac, which are returned into the cavity of the abdomen, where they may produce mischief: but I will ask those who make this objection, would they not, if they had reduced the tumour without an operation, have returned it with the fluids which were contained in the sac? It is a mistake to suppose that this fluid

* Op. Cit. p. 329.

can produce any mischief; it is analogous to that which moistens the interior of the abdomen, and, doubtless, comes from the same source.

" Another objection is, that, if the intestine or omentum be in a state approaching to gangrene, and being returned into the abdomen suppurate or give way, the fæcal matters, not having an outlet at the ring, spread over the abdominal cavity, and destroy the patient. This objection is not founded upon the observations I have made in my public lectures concerning this manner of operating, but upon what has been written by some authors who have quoted me, and who, from not having quite understood me, have attributed to me and made me say things that never entered my head. I may be permitted to describe my method, and to explain myself more clearly on the points which they have not understood, or which I have not made sufficiently clear in my public courses of lectures. Had I pretended that the disengagement of the ring without opening the sac was a general mode of operating, my critics would have been

correct in some points ; but those who have done me the honour to assist at my operations know, if they have attended to my practice, that I do not practise it in all cases: on the contrary, I may say, that I have not made it as general as it might be rendered ; and when I shall have explained its utility, I am persuaded that many persons will employ it, and apply it in a variety of other cases in which I have not yet put it in practice, but in which, if opportunity offers, I shall employ it. My opinion, then, is, that with the exception of gangrenous herniæ, those in which the intestine is loaded with scybala, and some of those in which the intestine contains foreign bodies, all others may be treated in this manner ; there are some even which ought not to be treated in any other way.

"Let a person ask himself,what use is there in opening the sac? I know of none, unless it be to expose the intestine and the omentum, to provide a remedy for any changes that may have taken place in them, to disengage the intestine from itself and from the omentum in herniæ where the intestine is loaded,

and to be able to touch the intestine itself, the better to return indurated fæcal matters, and even foreign bodies, should there be any. Now, these three cases are those of which I make an exception; in all others, which constitute by far the greater number, why open the sac? There is nothing to indicate the necessity of doing so; it is even highly advantageous to avoid this operation, because the parts are not exposed to the air; the surgeon does not run the risk of wounding them in opening the sac; and, moreover, I shall elsewhere show, that, as regards the consequences, it is more advantageous that the sac should not have suffered any solution of continuity. From all this I draw this inference, that it is better to disengage the ring on the outside of, than within the sac."

The little consideration bestowed upon this method of operating by surgeons in the middle of the last century is explained by their ignorance of its advantages, and yet is surprising, considering the futile nature of the objections made to it, all of which

had been exposed by Petit. "Amongst other improvements," says Sharp*, "of the operation for the bubonocele, it has been recommended in recent herniæ to return the viscera into the abdomen without opening the sac, from a persuasion that the patient would be less liable to a relapse. But I do not find that the proposal has met with a favourable reception; and indeed the objections to this new method seem unanswerable; for frequently there is a fetid water in the sac, which may prove pernicious when voided in the abdomen. Frequently the intestine and omentum are mortified, though the hernia be recent; and if the diseased omentum is not removed, nor an opening made for the issue of the excrement, when the eschar drops from the intestine, the event must, in all probability, be mortal." It will be observed, that Sharp has laid himself open to the same charge that has been brought against Monro, of omitting the principal advantage accruing from Petit's operation, and has contented himself with repeating objections that had

* Critical Enquiry, p. 45.

been previously urged, and had been refuted by Petit himself.

Heister rests his objections to the operation on the following grounds: 1st, Because the sacculus sometimes adheres to the spermatic vessels (in allusion to Petit's operation of returning the sac). 2d, Because the prolapsed omentum or intestine is sometimes suppurated, which can neither be cured nor discovered while the sacculus is entire. 3d, Because the sac sometimes contains a large quantity of fetid and ichorous matter, which would be this way returned into the abdomen, to the great injury of the patient; and Cheselden observes, in his Anatomy, that he has found above two pounds of fetid matter in the sac of a rupture of this kind, which, according to the preceding method, would have been, doubtless, returned into the abdomen. 4th, The intestines or omentum sometimes adhere to the external parts, from which they cannot be separated without opening the sac. 5th, The sac being left entire may easily occasion a return of the disorder. 6th, and lastly, This method cannot succeed in those

inguinal ruptures when the peritoneum is lacerated. Heister goes on to observe, that "Le Dran also disapproves of this method, because he does not find it to be attended with any particular advantage, and because, in incarcerated rupture of some days' continuance, the intestine may be sphacelated, and ignorantly returned in that state, by which means the chyle and fæces would run into the abdomen, and possibly kill the patient. He therefore concludes, that the sac should always be opened when the rupture is incarcerated."*

Richter, in his "Traité des Hernies," thus puts the question of opening the sac or leaving it entire. "This method (speaking of Petit's) possesses no utility, no advantage that can render it preferable to the ordinary method. It is founded only on the imaginary danger of opening the hernial sac. It is really indicated, when the intestines adhere to each other, and to the hernial sac, because the operator can hardly open the sac without wounding the adherent intestine. But in this case, where

* Heister's Surgery, p. 51.

it would be advantageous, it is not practicable, because the hernia cannot be reduced without first opening the sac, and destroying the unnatural adhesions.

"2d, The performance of the operation is difficult, sometimes even impossible. The distended state of the sac prevents the surgeon passing his finger and director up to the ring. This difficulty is especially great, when the hernia is small, round, and situated just before the ring, and when the patient is stout; it is not so difficult if the patient is thin, if the hernia is scrotal, because the upper part is usually less voluminous. I have myself proved this objection to be well founded. I once tried, for my own information, to cut the ring before opening the sac, and could not succeed.

"3d, It is not easy to see any advantage to be expected in this mode of operating. As the hernial sac always remains in the scrotum after the operation, it is quite immaterial if it remains there after the sac is opened or not. By adopting this method, it may be affirmed that the patient has less

chance of a radical cure than by the ordinary method.

"4th, The contents of the sac are often gangrenous, or highly inflamed, and ready to fall into a state of gangrene; which can only be ascertained after opening the sac. When they are reduced without opening the sac, the operator returns into the abdominal cavity parts that are damaged, or already gangrenous, and death is the result; or, at least, one is never sure of the state of the parts that form the hernia; consequently there is a degree of uncertainty attending the operation. Experience proves that this has already occurred several times. Mr. Achell returned a hernia without opening the sac; the patient died after the operation, and the intestines were found in a gangrenous condition. Le Dran reports a similar case.

"The parts contained in the hernia are sometimes adherent to each other, and to the sac. By opening the sac, these adhesions can be destroyed, and the parts returned. If the sac is not opened, this separation cannot take place, and the re-

duction will be impossible. But supposing that it is done, the parts that adhere may be so twisted as to cause a fatal ileus. This is not to be apprehended in opening the sac.

" There is sometimes in the sac a considerable quantity of irritating fluid. Cheselden found two pounds of a putrid sanies. This fluid will be returned into the abdominal cavity if the sac be not opened, and it is to be feared that it might produce dangerous consequences. By opening the sac this sanies escapes, and the patient so far escapes this danger.

" Finally, this method is not at all practicable, when the cause of strangulation is not in the ring, but depends on the neck of the sac, or on some other part either containing, or contained in the hernia; because without opening the sac it is impossible to remove the strangulation and to effect a reduction of the contents. Mr. Bell has found the appendix vermiformis of the cæcum firmly adhering around the intestine contained in the hernia, and occasioning strangulation. Mr. Callison has

seen the omentum contained in a hernia, divided above into two portions, that united below into a cartilaginous and hard mass, and the intestine was strangulated in this cleft in the omentum."

He proceeds to examine the other side of the question, and to state some reasons why the operation should be sometimes performed.

"If it is objected," he observes, "that in those cases that have not been long strangulated, and when the danger of gangrene appears very distant, yet, without suspecting it, gangrene may have commenced; and, therefore, one is never on sure grounds in following this mode of operating, even when the operation is performed in time, and before the symptoms are urgent, I make this answer: if the surgeon, after having decided upon the operation, makes one more attempt at reduction by the tobacco smoke, or by the taxis, or by any other means, and succeeds, the hernia is reduced without opening the sac, and the parts contained in the tumour may be damaged. Why should he not be afraid of

doing that by the taxis, which only a quarter of an hour afterwards he fears to do in the operation? Will a surgeon of sense be deterred by such reasons from making the attempt? and ought not such reasons, with equal justice, make him reject the taxis, the tobacco smoke, and all other means of reduction, because by all such measures the hernia is reduced without opening the sac?

"I therefore think that this mode of operating is not to be rejected in all cases; but, on the contrary, that it may sometimes be practised with utility and advantage in certain specified cases."*

In regard to the difficulty of the operation, which I conceive to have been the principal reason of it not coming into more general practice, I apprehend that most surgeons will concur with Petit's opinion, that the difficulty of executing an operation ought not to have any weight in the scale of objections, if it be found to be practicable, and to possess decided advantages. The

* French translation of Richter, by Rougemont, p. 120.

difficulty is much over-rated; and at the present day, when anatomy is so thoroughly cultivated, and especially that of hernia, surely that which was effected by Monro can be done by a surgeon who possesses advantages to which Monro was a stranger. I confess, however, that I was somewhat startled by the difficulty of dividing the stricture in this manner in inguinal hernia, until I had hit upon a method that greatly facilitated the operation.

From the extent to which the stricture is usually divided in order to return the contents of the sac, it may, perhaps, be imagined that a still more extensive division is required, when the sac is not opened, the surgeon consequently not having the advantage of making such direct pressure on the intestine and omentum, as he does when they are exposed. The contrary, however, I believe to be the case. If the stricture is divided from within the sac, parts are incised that have really no share in constricting the hernia, as the sac itself and the cellular membrane that intervenes between the tendinous border forming the

stricture and the neck of the sac. If the knife be applied to the tendinous band alone that forms the stricture, a very slight division is required; and I believe that in two of the cases on which I have operated the extent of the division did not much exceed the breadth of the hernia knife; the passage of the knife under the margin of the tendon was sufficient to remove the stricture, and by very gentle pressure the contents could be immediately returned. When the tendinous band is divided, the parts subjacent to it that surround the neck of the sac, as well as the sac itself, dilate, when pressure is made on the tumour, and offer no resistance to the return of the contents. I believe that in every case of strangulated intestine a very little additional room is sufficient to release the parts from pressure, and to allow their escape into the abdominal cavity. Of this we have evidence in the facility of returning the whole contents of a hernia, when a very small portion of omentum or intestine has been pressed into the abdomen.

The risk arising from the return of the

fluid contents of the sac is an objection that will hardly be maintained at the present day, however seriously it may have been put forth in Petit's time, when the minds of surgeons were more impressed with the humoral pathology. The fluid is not the result of acute inflammatory action, but of simple engorgement of vessels; the blood enters the intestine or omentum through the arteries, but cannot return by the compressed veins; the serous parts of the blood escape by the exhalent vessels on the peritoneal surface, tinged with the red particles. The absorbents of the peritoneum in all probability take it up, and its presence in the abdominal cavity is not productive of irritation. In every instance where the taxis succeeds in returning a hernia, the fluid, if any be effused, must be returned with it; and the same objection, as Petit justly observes, if it be worth any thing, is equally valid against returning a hernia by the taxis, as against dividing the stricture without the precaution of opening the sac to allow the fluid to escape.

Adhesion of the intestine may possibly

constitute a case that will not admit of it being returned without opening the sac. Soon after an intestine becomes incarcerated and its circulation impeded, effusion of fluid takes place, preventing the bowel coming in contact with the parietes of the sac. If, however, inflammation takes place in the peritoneal covering of the bowel soon after its descent, the effusion is of a plastic kind, and adhesion ensues between the opposed surfaces. The presence of fluid in the sac will in most cases be sufficient to determine the free condition of the bowel, or the slight nature of the adhesion; while its absence, especially if the tumour be hard and tender to the touch, may lead to the suspicion (not to the certainty) of adhesion having taken place. When, under such circumstances, the sac is opened and the bowel exposed, a very slight degree of force is required to separate the adherent intestine. It is true that this separation is not effected by the pressure which the tumour undergoes in the use of the taxis; but if the stricture be divided, and the intestine be free to pass into the abdomen, the adhesions, consist-

ing of a thin pellicle of fibrine of perhaps a few hours' formation, will probably give way as soon as pressure is made upon the tumour. This, however, is only opinion; experience alone can decide it. But should the intestine resist the attempt of the surgeon to disengage it, he has then the alternative of opening the sac and concluding the operation in the usual manner.

Much stress has of late been laid on the importance of separating any recent adhesions that may have formed between the convolutions of the strangulated bowel, before returning it into the abdomen. This practice is founded on the opinion, that such adhesions, if left entire, impede the peristaltic action of the bowel, and cause the destruction of life. That adhesions, when they bind down a portion of intestine at a very acute angle, must check the progress of its fæcal contents, is obvious; but such cases are not common; and many of those cases, in which death has been attributed to a slight adhesion of a convolution, appear to my view to have sunk from the effects of peritonitis consequent upon the

previous strangulation or incarceration, and upon the operation combined. It sometimes happens that a fold of intestine is found in the sac, slightly adherent at its points of contact; the adhesions are separated by the operator, and the bowel returned; the untoward symptoms continue, and the operation fails in giving the patient relief by evacuations per anum: if the patient die, it is found that the bowels exhibit the usual traces of acute peritonitis; and the fold of returned intestine, which may be distinguished by its colour, is seen lying close to the neck of the sac, and its peritoneal surfaces slightly glued together by recent adhesive effusion. It is surely unreasonable to attribute the peritoneal inflammation and the absence of stools to the accidental slight adhesion of the returned bowel; the adhesion is unquestionably the effect of the inflammation and not the cause, for the adhesion must have taken place by means of an inflammatory process established subsequently to the return of the prolapsed bowel. Possibly, in such a case, preserving the intestine from exposure

by keeping the sac entire might render the termination of the case more favourable. Much as I concur in many of the observations of the ingenious author* on inflamed and obstructed herniæ, I cannot but think that he has attributed more to the effects of slight recent agglutination of the bowel than experience will be found to justify, and that he has regarded that as a cause of the mischief, which ought rather to be ascribed to the effect of inflammation.

Adhesion of the bowel at the orifice of the sac would, I believe, require the exposure of the contents, in order to free them from their attachment. Cases that are on record show that there may be considerable risk in returning an intestine that has been long adherent to the mouth of the sac. The adhesions that remain drag the intestine down, and confine it at so acute an angle that a valvular impediment is presented to the passage of the fæces. Such an occurrence is uncommon; but a fatal case occurred in St. Thomas's Hospital, which is thus mentioned by Sir Astley

* Stephens. 1829.

Cooper:—"The sac having been opened, the intestine was found very difficult to reduce, from an adhesion between it and the mouth of the hernial sac; but it was at length apparently returned into the cavity of the abdomen. Two stools were procured by clysters on the following day (27th of February), but from that time till the 9th of March, on which day the patient died, he had no stool. On examination of the body, the ileum, which was the intestine that had been strangulated, was found in the mouth of the hernial sac, and doubled back within it; the small intestine above this portion was inflamed and greatly distended, and the jejunum was in a state of mortification." Such a case as is here described will not admit, with safety to the patient, of the operation being performed without opening the hernial sac. From the difficulty which appears to have attended the return of the bowel after it was exposed and could be freely handled, it is highly probable that its return would have been nearly impossible while the sac remained entire. In the cases in which I have

divided the stricture externally to the sac, the contents have been so readily returned into the abdomen, that if any unusual difficulty appeared to arise in returning them, or if a portion of bowel should be imperfectly returned and should again descend into the sac, I would recommend the operator to desist from any further attempt, and to open the sac, in order to ascertain the precise nature of the resistance. Cases of this nature would not lead the surgeon into any dilemma; for the difficulty he would meet with in returning the intestine, would induce him to resort to the usual mode of operating.

In irreducible intestinal herniæ a difference of opinion may exist, whether it would be advisable to remove the cause of obstruction without opening the sac. When symptoms of strangulation come on in irreducible herniæ, they are found most commonly to depend upon the mechanical obstruction to the passage of the fæces, rather than to any actual strangulation of the vessels of the intestine; when the sac is opened and the bowel exposed, it does not present the

usual venous hue of extreme congestion, but rather a florid colour, indicating an increased activity of circulation, or the first stage of inflammation. That any advantage can attend the opening of the sac, and the exposure of a bowel in this condition, appears to me very questionable. Whatever relief is to be afforded to the distressed bowel, can as well be given by dividing the stricture on the outside of the sac, and thus enlarging the opening of communication with the abdomen. I believe that this mode of freeing the bowel from pressure, and the administration of a dose of calomel and opium to tranquillise for a time the action of the bowel, followed in a few hours by a mild purgative, would be sufficient to restore the function of the intestine and to remove the symptoms of obstruction. The opening of the sac, with a view of removing the adhesions, is an operation, to say the least, hazardous in its consequences, when the division of the adhesions can be effected, and oftentimes useless, as the intestine in old herniæ sometimes adheres so extensively to the pa-

rietes of the sac, that it is impossible to detach them without endangering the bowel; and the practice of returning the intestine with portions of the adherent sac, does not appear to possess any decided advantage, as the cut surface of the sac will, in all probability, contract fresh adhesions to the parts with which it may come in contact.

Where the adhesions are natural, as in the instance of the cæcum forming the contents of the sac, nothing more can be done than to release the bowel by dividing the stricture. I would recommend in such cases the band to be more extensively divided than in a common hernia, in order to allow any indurated fæces to escape into the colon. It is probable that in old irreducible herniæ, the symptoms depend more on obstruction of its contents, than strangulation of its coats.

When my attention was first directed to this subject, an adherent omentum seemed to me likely to throw some difficulty in the way of reducing a portion of intestine, that might have descended into

the sac and have become strangulated. The difficulty of applying direct pressure to a piece of intestine so circumstanced, and the possibility of it being entangled by the omentum, appeared to me rather to forbid the operation, and to require the sac to be opened. But the very first case in which I attempted to perform it, was an old irreducible umbilical hernia, in which a fold of intestine had recently descended; and to my surprise, instead of finding any difficulty in returning it, the edge of the tendon being divided, very slight pressure made on the sac immediately caused the bowel to return. And I believe that, in many of those cases in which the intestine is apparently entangled by the omentum, a slight division of the stricture would be sufficient to release the bowel and induce it to return; for although, when the sac is opened from the outside, the omentum may seem to entangle and to detain the bowel in the sac, yet in reality the channel from the abdomen by which the intestine has descended may be quite direct,

and the pressure of the omentum on the intestine may be only apparent, and may cease as soon as the tendon is divided. The adhesion of the omentum to the neck of the sac will not add to the difficulty of dividing the stricture.

When the sac is opened, and its contents exposed, the altered condition of the omentum is sometimes such as to render its return into the abdomen improper; and the surgeon is recommended to cut off the diseased or thickened portion, rather than to leave it in the sac, where it may prove a source of irritation. That such a proceeding is impracticable, when the sac is left entire, furnishes no very valid argument against the operation; the danger of irritation is less when the sac remains unopened; nor is the patient left in a worse state than when the hernia is reduced by the taxis, and the thickened and irreducible mass of omentum left in the sac. It would hardly be thought advisable to open the sac for the sole purpose of removing a thickened piece of omentum; they, who would recommend

such a step might, perhaps, think it better not to wait till strangulation of the intestine took place.

The condition of the bowel, that above all others renders it an imperative duty to open the sac, is that of gangrene. To return a portion of mortified intestine with the sac unopened, would expose the patient to almost inevitable destruction. When, therefore, mortification is ascertained to have taken place, or even suspected, the surgeon has no alternative but that of exposing the bowel, and giving free room for the escape of the fæcal contents.

It is a remark made by some surgeons of experience, that the intestine is occasionally found to be in a state of gangrene, when no symptom had existed before the operation to raise a suspicion of mortification having taken place. It does not, however, appear that any pains have been hitherto taken to form a correct diagnosis of the circumstances under which gangrene has actually taken place; nor am I prepared to say that, in all cases, such

a certainty of diagnosis is attainable. I think, however, that if the attention of the profession were more closely directed to the consideration of the condition preceding gangrene, a near approach might be made, sufficiently accurate to direct a surgeon's practice in all cases. In the usual method of operating, it forms no part of the surgeon's object correctly to distinguish between ordinary strangulation and a condition of sphacelus; it is sufficient for him to determine the condition of the bowel after the sac is opened, as his line of proceeding in the operation, until he exposes its contents, is the same whether the intestine is in a healthy or in a diseased state. When no evident advantage is to be derived from accurate diagnosis, the attempt will rarely be made; and hence the diagnosis of gangrenous herniæ has hardly yet attained that precision which, I believe, closer observation will not fail to bestow.

The ordinary characters of a completely sphacelated portion of bowel are distinct enough. The tumour loses its elasticity

and firmness; its surface becomes more tender, or even inflamed; the skin is no longer loose, but adheres more firmly to the subjacent tunics of the hernia; infiltration of fluid in the cellular membrane under the integuments sometimes takes place, so that the part feels œdematous, or sometimes emphysematous, and pits on pressure. If an operation is not performed, the integuments proceed to ulceration, or show here and there spots of gangrene; a discharge of fæces at length ensues, and gives the patient some relief.

This change in the tumour is too characteristic to be mistaken. But it sometimes happens that no such change takes place in the swelling, and then the evidence of gangrene is much more equivocal. In the absence of any change in the state of the tumour, the state of the abdomen is generally considered as furnishing the best evidence of the condition of the strangulated bowel. It may be quite gangrenous, and yet the covering of the sac may have undergone no change, in consequence of effusion of fluid into the sac

at an early period of the strangulation. Contact between the sac and the bowel is thus prevented, and the former participates less in the inflammation than when they are adherent. The abdomen is frequently free from pain or tension, even when the bowel proves to be far advanced towards sphacelus; indeed, the state of the intestinal canal within the abdomen, affords little or no criterion of the state of the bowel in the sac. Sometimes, when the abdomen is exquisitely tender, and shows every sign of acute inflammation, the intestine is found to have undergone very little change. The extent of abdominal inflammation that is caused by a hernia, will depend on the extent to which the intestines are loaded at the time the descent takes place. If the canal above the strictured portion happen to be empty, it will sustain little or no inconvenience, especially as the patient is usually unable to take food; and thus, for several days, symptoms of inflammation do not make their appearance. When the stricture upon the bowel is so tight as rapidly to in-

duce gangrene, without producing general inflammation of the abdomen, the sickness is often very slight, but the patient's powers are more depressed than under ordinary strangulation; more anxiety of countenance, more feebleness of pulse, accompanied with a dampness of skin, and also great indisposition in the patient to have the tumour handled, are found to attend this passive condition of the parts, and afford strong suspicion of the approach of actual existence of gangrene. To use Mr. Pott's expressive language, "the countenance bespeaks death."

In a case that occurred to me last spring a fœtid smell, similar to that described by Sir A. Cooper, was perceptible in the progress of the operation before the sac was opened. An elderly female sent to request the assistance of Mr. Burman, surgeon of East Smithfield, for a violent pain in the region of the stomach, which she attributed to some indiscretion in diet the preceding evening. A dose of calomel with opium was prescribed, and on the following morning a draught of infus. sennæ.

Though her pain was removed, her bowels had not been relieved; and she then mentioned having the day preceding discovered a swelling in the side, which she thought had since disappeared. On examination Mr. Burman discovered a femoral hernia of considerable size, and finding that it would not bear pressure, requested me to visit the patient with him. We found her with a feeble but not quick pulse, the abdomen free from pain, even when pressed, but somewhat distended with flatus; she had vomited only once; she thought she had had her bowels open about two days before our visit; but her account of the appearance of the tumour was so vague, and the state of her bowels so unsatisfactory, that we could draw no inference from the statement as to the length of time the hernia had been down. It was very tender, and her face and skin generally bedewed with perspiration, with great anxiety of countenance. The disproportion which the state of the abdomen bore to the other symptoms threw some doubt, in the event of an operation, on the propriety of re-

turning the hernia without opening the sac. Whatever doubt I might have entertained was soon, however, converted into certainty by the fœtid smell that arose from the swelling as soon as the fascia propria was opened; it was a smell arising from a decomposed portion of bowel and the transudation of its fæcal contents. The intestine proved to be quite gangrenous, being black, devoid of lustre, and lacerable. Such a fœtor might, I apprehend, be discovered in most cases of sphacelus, before the sac is opened; its absence should be ascertained in every case in which the contents of a hernia are to be returned without opening the sac. Before disorganisation of the coats of the intestine takes place, transudation of fluid or of fœtid air is probably prevented. In incipient gangrene, therefore, it is not to be expected.

The length of time during which the symptoms of strangulation have existed, will, of itself, be insufficient to decide the absence or presence of gangrene. Eight and forty hours have, in some cases, been

sufficient to disorganise the bowel; while ten days will, sometimes, be found to have produced no permanent change in its condition. I have operated on an old woman with a femoral hernia strangulated seven days, and found the intestine in a condition to be returned with safety into the abdomen. She recovered. In the following singular case of incarcerated bowel, ten days elapsed before its return, and, it is to be presumed, without the occurrence of gangrene.

In the year 1822, a man was sent into the hospital by Mr. Robinson with a large inguinal hernia in a state of strangulation, which I could not reduce by the taxis aided by other measures. Sir A. Cooper, who saw him in the evening after surgical lecture, proposed, as the symptoms were becoming urgent, to perform the operation. The patient would not consent, and left the hospital on the following morning. He continued for several days in the most extreme danger, his symptoms denoting the accession of gangrene. His pulse intermittent, small, and varying from 70

to 96; perspiration profuse, countenance most anxious, sickness distressing, and great tenderness and tension of the abdomen. On the ninth day of the strangulation, I was requested to see him, as he was dying; the tumour had been diminished by the ascent of a small portion of the bowel, but his strength was so impaired that he seemed unable to bear an operation. His pulse was hardly perceptible, and he could scarcely take nourishment. On the following day, the whole of the tumour was returned, and from that time he began to recover. Food remained on his stomach, and with the exception of a severe diarrhœa that followed, he soon became convalescent.

It occasionally happens that the intestine sloughs after it is replaced in the abdomen, and the fæces pass for a time through the wound. When at the time of the operation the intestine has appeared healthy I have known this to happen. A man from Woolwich, belonging to the artillery, was admitted into the hospital with strangulated inguinal hernia of three days' standing. The

operation was performed by Sir A. Cooper; and the intestine, though dark-coloured, appearing to be merely congested, was returned into the abdomen. In the evening of the same day he passed stools per anum, and appeared relieved. On the third day, as soon as the poultice was removed, a quantity of fæculent matter was seen issuing from the opening. The discharge of fæces continued for five days, at the end of which time it altogether ceased, and the wound speedily cicatrised.

A young man whom I visited with Mr. Jackson, of Spitalfields, was the subject of a strangulated congenital hernia, which was so tender as to require the operation to be performed without delay. The intestine was very dark, but retained its lustre, and was returned into the cavity of the abdomen. On the fourth day, Mr. Jackson found, on examining the part, that a copious discharge of fæces had taken place at the wound. The abdomen had remained tender since the operation, but he had passes fæces per anum. The discharge did not cease for several days, and de-

layed the healing of the wound. But at the end of about sixteen days he became convalescent, and the wound entirely closed.

Such cases are not very uncommon; the records of surgery furnish many; and the practice of many surgeons may, possibly, bring under their notice cases in which the operation has been followed by a temporary discharge of fæces. It is the consequence of a small slough forming in the bowel: in one case which I had an opportunity of examining after death the slough was about the size of a sixpence; the edges of the aperture had contracted adhesion to the neighbouring peritoneal surface, and the breach in the bowel was filled up by the serous membrane. The aspect of such cases is at first unfavourable to the operation of returning the intestine without opening the sac and leaving an aperture for the escape of the fæces. If the intestine slough, and the fæces do not find an outlet at the external wound, extravasation over the abdominal cavity may be apprehended. To what is the sloughing of the bowel to be

attributed? Not solely to the strangulation that has preceded the operation, but to the inflammation which the handling and exposure of the bowel has produced. If in such cases the bowel were to be returned by the taxis at the moment the operation was performed, in all probability the circulation in the vessels of the bowel would be restored, and the coats recover their former healthy condition. The exposure of the bowel to causes of inflammation in its weakened condition leads to gangrene. It appears to me that the operation of leaving the sac entire is peculiarly applicable to such cases; inflammation is prevented, and the risk of gangrene much diminished.

A remarkable case of this kind, that occurred to Mr. Ramsden, is mentioned by Mr. Lawrence. The strangulation had been of two days' standing; and the bowel, which was much discoloured, was returned without difficulty. For six weeks she occasionally exhibited symptoms of intestinal mischief, which ended in a discharge of fæces at the wound. Her appetite and strength failing

her, she died on the eighth day after the appearance of the fæces. A small ulcerated aperture was discovered in a portion of ileum, the coats of which were greatly thickened, and its canal much contracted.

Even were gangrene to take place after its return into the abdomen, it is by no means certain that fæcal extravasation would ensue. The peritoneal covering of the bowel would adhere to the contiguous surface, and thus its contents would be prevented escaping. Nature would conduct her operation of securing the abdomen from extravasation when the eschar separates, with more certainty, if there is no wound in the peritoneum, than when undue inflammation is excited by opening the sac. In a case of Dessault's, quoted by Mr. Lawrence from the Parisian Surgical Journal, it appears that a portion of intestine was returned into the abdomen with an eschar in its coats an inch in diameter. No subsequent symptoms occurred to denote the separation of the slough; and Dessault conceives that the inflammation of the part surrounding the eschar agglutinated it to

the parietes of the abdomen; and that the slough passed along the intestinal canal.

The risk then attending the operation of not opening the sac, as far as gangrene of the intestine is concerned, appears to diminish, when the subject is fairly and fully considered. I have noticed three states of bowel that in this operation particularly interest the surgeon, and in which there seem to be at the first view insuperable objections to returning the contents of the hernia with the sac unopened. First, That in which gangrene has actually supervened, the signs denoting it being either an altered condition of the coverings of the tumour, a fœtid exhalation before the sac is exposed, or some unequivocal constitutional symptoms. Such a state cannot lead the surgeon astray from his obvious duty of opening the sac. Secondly, That approach of the bowel towards a state of sphacelus which would induce a surgeon, if the bowel were exposed, to place it at the neck of the sac in the expectation of it falling into a state of mortification. I will not advance against the chance of gangrene coming on

many cases that I have seen so treated, and in which, contrary to the opinion of the surgeon, the bowel soon regained its healthy condition; for a stronger argument in its favour is to be found in the risk of sphacelus being infinitely diminished by the non-exposure of the bowel, and, even should gangrene take place, in the probability of a small eschar being cast into the canal of the intestine without any extravasation. Thirdly, The bowel being found at the time of the operation in a healthy state, and in a few days passing into a state of sphacelus accompanied by a discharge of fæces at the wound. This occurrence the preserving the sac entire is peculiarly calculated to prevent, by diminishing the chance of inflammation, which in the weakened condition of the bowel is the cause of the subsequent sloughing of its coats.

From the difficulty which occasionally attends the return of a large mass of omentum, it is not improbable that the sac of an omental hernia will often require to be opened, when the descended portion is

voluminous and the inguinal canal narrow. Even when the abdominal rings do not produce pressure sufficient to cause strangulation, it is often very difficult to return by the taxis a mass of incarcerated omentum after a descent of only a few hours. The return of an enterocele is readily effected from the regular and smooth surface of the intestine; but the lobular form and irregularity of the omentum require a more prolonged manipulation, and allow of it being reduced as it were only piecemeal: unless the rings are very wide, it does not slip up at once, and not unfrequently requires some days before the whole mass can be completely reduced. Some years ago I experienced so much difficulty in returning it after dividing the stricture, that I was obliged to open the sac. This case I have occasion to refer to when describing the operation for inguinal hernia. Should a portion of intestine have descended behind the omentum, the former might be returned, first, by making pressure on the back part of the swelling, and this would facilitate the return of the

omentum. After the stricture is divided, the intestine would readily recede if pressure be made directly upon it, and more space would be afforded for the reduction of the omental mass.

I will not omit the remote chance of the neck of the hernial sac being thickened and causing strangulation of the bowel: when the stricture arises from this cause, the sac must of necessity be opened before it can be divided. A stricture from thickening of the neck of the sac I believe to be a very rare occurrence; and it is not improbable, that in some of the cases in which the stricture has been attributed to this cause, the supposed thickening of the peritoneum arose from the band of fascia propria girting the neck of the sac. Before the anatomy of femoral hernia was well understood, the stricture was thought to be produced either by Gimbernat's ligament, or, if the stricture remained after that were removed, by some alteration in the condition of the peritoneal sac. There are very few femoral herniæ in which a firm stricture will not be found to remain after

Gimbernat's ligament has been divided or even dissected away, produced by the tendinous band at the mouth of the sheath of the femoral vessels. Thickening of the neck of the sac, therefore, may have been thought to be a much more common occurrence than it is now known to be. It may however happen; and when the stricture is caused by it, the sac must be opened to accomplish its division, as the contents of the hernia cannot be otherwise returned. In femoral hernia it is said to be more common than in inguinal. In any kind of hernia I believe it to be a rare occurrence.

A surgeon is sometimes embarrassed by the symptoms of strangulation remaining unmitigated after the tumour has disappeared under the use of the taxis; and when an operation is performed, or a *post mortem* examination is instituted, the intestine is found to have been returned with the stricture still girting it. Such a case demands prompt and decisive measures: the sac must be opened, and its orifice explored, after means to reduce inflammation have been fully tried, and have failed to relieve the symptoms.

French surgery attaches more importance than English to the risk of *réduction en bloc.* The possibility of returning a hernial tumour with its sac is fully established by Le Dran and Scarpa. I have witnessed an operation for crural hernia, in which the operator attempted to return the tumour, having mistaken the sac for the intestine. Great force was used, and, at length, the tumour disappeared; but the symptoms of strangulation were not relieved; and, on a *post mortem* examination, the sac, with its contents, was found doubled upon itself, and forced under the fascia transversalis. I have never known this to take place when the hernia has been reduced by the taxis. In the operation which I propose, it is impossible to return the hernia with its sac, and leave the stricture upon the bowel. Great force must be used to accomplish the reduction under such circumstances; but the pressure required to return the contents of the tumour, after dividing the stricture on the outside of the sac, is not more than is employed in reducing a hernia where strangu-

lation does not exist. I would not advise more than this degree of pressure to be used. If the surgeon find that a free division of the stricture does not enable the bowel to be readily returned, he should relinquish the attempt. When the force ordinarily employed in the taxis has failed to return the hernia with its sac, no apprehension need be entertained of this accident occurring under a more moderate degree of pressure.* Such a condition of a hernia is hardly to be contemplated as a possible occurrence.

Having given this brief historical notice of the operation, and having stated the ar-

* For cases of this kind, I will refer the reader to Lawrence's work on Hernia, pp. 142. 89. Cloquet's "Recherches Anatomiques sur les Hernies." Mr. Lawrence observes, "I have never seen a rupture reduced in a mass in the way just described (alluding to M. Cloquet's description), nor have I met with any preparation or specimen of such a reduction. Hence, as well as from considering all the circumstances of the case, I conclude it must be extremely rare. Its possibility will hardly have any influence on our practical proceedings."

guments that may be adduced in its favour, as well as those that seem to be unfavourable to its success, I shall now detail my own experience of it, and the steps of the operation in the three most common forms of the disease.

My mind had been very early impressed with the advantages which leaving the sac entire seemed to hold out; but, notwithstanding it is so strongly recommended by the best surgeons, during the whole period of my attendance at the Borough Hospitals, since the year 1812, the operation had never been performed.

In 1829, a man, named Bessell, æt. 32, was admitted into the hospital, June 28., with a large inguinal hernia in a state of strangulation. He had been the subject of hernia for five years, during which period it had descended six or seven times. On the day preceding his admission, it suddenly came down, and, from the pain and sickness it occasioned, he was obliged to be carried home. He was bled largely, and the taxis employed without success.

In consequence of the long trial of the

taxis to which he had been subjected, the tobacco infusion was thrown up before another attempt was made; and, while he was under the full effects of the narcotic, firm pressure was steadily made upon the tumour for a quarter of an hour, but without diminishing the size of the swelling. As the symptoms were urgent, and the tenderness of the abdomen was considerable, I proceeded to perform the operation without laying open the sac. Having laid bare the external ring by a free incision in the integuments, I passed a common director under the edge of the ring, and divided the tendon upon it until the edge of the internal oblique and transversalis muscles was exposed. The bistoury was then passed upon the director under the cremaster, until it reached the constricting band of the transversalis tendon, which was divided to a certain extent. Having, as I conceived, divided the stricture, I endeavoured to return the contents of the tumour by making moderate pressure upon it; but could not succeed. Supposing, therefore, that the stricture had not been sufficiently removed,

I proceeded to divide a few more fibres on the neck of the sac. In doing this, I made a small opening in the peritoneum, and therefore proceeded to open the sac in the usual manner. The stricture had been completely divided; and the impediment to the return of the contents seemed to arise from the very large portion of omentum, which concealed a fold of small intestine at the posterior part of the sac. The event fully justified my fears of opening the sac, and the attempt to preserve it entire; for inflammation of the peritoneum soon prostrated his powers, and he only lived thirty hours after the operation. The surface of the intestines showed signs of active inflammation, the peritoneum being injected with blood, and covered with an opaque serous effusion. The omentum, which was ecchymosed in several points, also presented signs of inflammation.

This being the first attempt to perform such an operation, I was not surprised at being foiled, as want of experience deprived me of that confidence in the operation which subsequent consideration and

practice have produced. Were such a case to occur again, I should be disposed to persevere longer in the attempt to reduce the contents, after I had fully satisfied myself that the stricture had been divided. If the mass contained in the tumour could be ascertained to be omentum, and the symptoms at the same time gave reason to suspect that a portion of intestine was also included in the stricture, pressure should be made on the posterior part of the sac, in order to return the intestine first: this would readily slip up after being released from the pressure of the stricture, and would enable the operator to return the omentum with less difficulty. It may further be remarked, that the operation was not conducted in the manner in which I now perform it, and I had not the assistance of a properly constructed director, on which much of the facility of the operation depends.

This case, so far from discouraging me in the operation, served to show its importance, and that better conducted attempts might still enable the operator to succeed.

Within a few days after the above operation, a man was brought into the hospital with a strangulated bubonocele, in consequence of suddenly getting out of bed. He was an elderly person, and had laboured under asthma for two years. He had several times noticed a protrusion at the external ring, but, never having experienced any inconvenience, had not paid much attention to it. His symptoms, at the time of admission, were very urgent — complete constipation, rejection of every thing that he attempted to take, and constant distressing attempts to vomit. Having employed all the measures I thought advisable to adopt, and kept up the taxis for a great length of time, I reluctantly had recourse to the operation. The man's unfavourable aspect, which indicated visceral disease, and the extreme tenderness of the belly, seemed to promise but little chance of recovery, if the abdomen were opened, and the bowel exposed. I therefore endeavoured to lay bare the transversalis tendon, and to divide it; but not being able to discover it, I divided such tendinous fibres as I could find girting

the sac. The stricture continuing firm as before, and not having a flat director that I could insinuate between the neck of the sac and the very tight band of tendon that was imbedded in it, I had no alternative but opening the sac. A dark small knuckle of intestine was laid bare, and confined by the tightest stricture I have ever had to divide in any form of hernia. It felt like a string tied round the gut, and the director was with difficulty passed under it. Its division was followed by a gush of fluid, apparently the result of ascites. The patient passed a good night after the operation, and had free evacuations from his bowels; but in less than forty-six hours, he sunk from the effects of abdominal inflammation. The difficulty of dividing the stricture was explained by the peculiar nature of the hernia.

The protrusion was found to be of the direct kind, the intestine having made its way through the external ring on the inner side of the epigastric artery; and the stricture was formed by a separation of the fibres of the transversalis tendon, which

surrounded and tightly girt the neck of the sac.

Subsequent experience and observation in my own practice, as well as the result of cases of hernia in the practice of other surgeons, having strengthened my impression in favour of leaving the sac entire, I took the first opportunity of trying the operation in a case of strangulated umbilical hernia: the success attending this case induced me to make trial of it in one of femoral hernia that occurred in the practice of Mr. Randall. The following is the account given by Mr. R. before I saw the patient.

CASE.

"Joseph Pavey, ætatis 44, a short, thick-set man, of a sallow complexion, was, on the morning of February 14th, 1832, suddenly seized with hæmatemesis.

"In a few seconds he rejected from his stomach nearly a quart of blood. He was immediately taken to his own residence in Abchurch Lane, when I was sent for, and found him bleached and much exhausted,

having a second time vomited blood of a grumous character, and, I should say, full a quart in quantity. I immediately ordered him acidulated drinks, ices, &c., and gave him large doses of nitric acid, which treatment for a time seemed effectual in suspending the discharge of blood. At about 9 P. M. he again vomited about a pint and a half, and on the following morning, the 15th instant, a full quart was rejected, consisting partly of fluids he had taken, but by far the greater portion blood. A considerable quantity was also passed from the bowels in connection with fæculent matter.

"Slight returns of vomiting took place during this day, and on the morning of the 16th he rejected a full quart, by far the greater portion of which appeared blood.

"This last attack left him for some time extremely exhausted, and for a short period apparently lifeless. After an hour or two, he began to revive. I then gave him a very strong solution of sulphate of alum, in small quantities, and frequently repeated. From this time we had no discharge of blood from the stomach, and what passed from the bowels daily diminished in quantity, and

on the 20th had quite disappeared, leaving the evacuations of a healthy character.

"The patient went on well till the morning of the 1st of March, when his bowels became a little irritable, and he had three rather loose evacuations within a couple of hours, the last about 8 A. M.; after which he suffered considerable pain in the lower part of the abdomen.

"I saw him about noon, and his report was, 'that he had been remarkably well till about 9 o'clock in the morning, when he was suddenly seized with pain at the bottom of his belly, which he considered to have been greatly relieved by a little brandy and warm applications.'

"I pressed the belly without removing the bedclothes, and finding the bowels had been free, and that there was no sickness mentioned, and the belly by no means very tender, I left him, advising him to take a little medicine to allay the irritable state of his bowels, to which he had referred his pain.

"About 9 P. M. I was sent for in a hurry, and found that the pain had increased, and

that he kept nothing on the stomach. I immediately threw aside the clothes, and was perfectly convinced that a small knuckle of intestine had descended into the right groin, and was strangulated.

"The man could not believe that his sufferings proceeded from the small swelling in his groin, for that had existed for years, even when he was a boy at sea. Being confident as to the nature of the malady, I made such pressure on the tumour as the man could bear, but could not return it. Mr. Key, whom I consulted, recommended the application of ice to the part through the night, after the exhibition of calomel and opium, and appointed to meet me at 8 the following morning."

In the morning I proceeded to visit the patient with Mr. Randall, and found him very ill, with a small jerking pulse, occasional vomiting of a dark bilious matter, and the abdomen very tense and tender. The tumour in the groin was not large, but so extremely sensitive when pressed, that he could not bear the taxis to be continued for any length of time. The operation, therefore, became indispensable. In his weak

condition, it was clear that a very slight degree of peritoneal inflammation would destroy him, and also, that a morbid condition of liver, which was probably the cause of the previous hæmatemesis, rendered him predisposed to inflammation. I proposed, therefore, to endeavour to return the contents without opening the sac. The usual incision having laid bare the fascia propria of the tumour, I made a small opening in it, sufficient to introduce a director up to the seat of stricture under Poupart's ligament. As soon as the director reached the neck of the tumour, its progress was impeded; but, by pressing the point downwards, it readily passed under the stricture, which was divided by a bistoury carried along its groove. Passing the edge of the knife under the stricture was sufficient to release the bowel; very moderate pressure being made on the swelling, the bowel could be immediately felt to slip back into the abdominal cavity: scarcely any blood was lost during the operation.

The symptoms of strangulation subsided, the wound quickly became cicatrised, and

in a short time, with the assistance of a truss, he was enabled to follow his usual occupation.

The inconvenient form of a common director induced me to have one constructed of the shape represented in the first drawing. The depth at which the stricture lies, and the prominence of the tumour, render it somewhat difficult to pass a straight instrument betwixt Poupart's ligament and the neck of the sac. The blade is below the level of the handle, and is slightly curved; the extremity being flattened, to enable it to pass with more facility under a firm stricture. The point of a common director might lacerate the peritoneum, on account of the pressure required to pass it under the stricture. When I constructed this director I had not read Petit's account of the one which he employed, which, from his description, must resemble that which I use.

CASE.

Early on the morning of the 17th of December, 1832, I was requested to see

Mrs. I——, ætat. 61, in consequence of a femoral rupture that gave her some uneasiness. She had consulted me about two years since, for a femoral hernia on the left side, which I had some difficulty in reducing, and for which I enjoined her to wear a truss. She now requested me to see her, in consequence of the tumour having again descended, and her not being able to return it. When she was at the water-closet in the morning, she was suddenly seized with pain in the lower part of the abdomen; and, on placing her hand to relieve the pain, she felt the tumour in the groin. I made an attempt to return it by keeping up pressure on it for twenty minutes, but without success. Ice was then applied till the evening, and the taxis repeated, with no better result. Some Dover's powder was given her at bed-time, and in the morning a castor oil enema was ordered. In the course of the night she had vomited several times, and the abdomen was becoming more tender. The castor oil had not brought away any fæculent matter. The circumstance of the hernia not

having descended during the last two years, although she had neglected to wear a truss, rendered it probable that the aperture was very small, and that there was not much chance of reducing it, especially as the tumour was too tender to bear much pressure; and, as she was too feeble to bear the effect of tobacco or any considerable bloodletting, I had recourse to the operation without further delay.

With the assistance of my dresser, Mr. Langley, I exposed by means of a crucial incision the fascia propria of the tumour, and, making an opening into it so as to expose the fatty investment of the sac, I endeavoured to pass the director towards the stricture; but, owing to the angle formed by the tumour with Poupart's ligament, I was obliged to divide the fascia more freely towards the neck of the sac, in order to reach the seat of stricture. The director was then passed without difficulty between the fatty covering of the sac and the outer layer of the fascia propria, and carried under the stricture. The blade of the bistoury was then passed along the groove, and the stricture divided in a direction towards

the umbilicus. The intestine was immediately released from pressure; for, by applying a very moderate force to the tumour, the intestine immediately slipped up; and a small piece of omentum that remained, was readily returned by a little farther manipulation.

Her bowels were freely relieved after the operation, without the aid of medicine; and she continued to go on well, till the 22d, with the exception of a slight tendency to diarrhœa. On this day a blush of erysipelas was perceptible about the wound, and the discharge assumed an ichorous appearance. Under the use of quinine, and a mild form of opiate at bed time, she mended, and by the 29th the wound began to form healthy granulations. On the 8th of January, a truss was applied, the wound being nearly cicatrised.

The occurrence of erisypelas was evidence of that disposition to inflammatory action, which so often renders the operation for hernia fatal. If the intestine had been exposed, the inflammatory disposition would, probably, have shown itself in the form of

peritonitis, and, in her feeble state, must have at least placed her life in danger.

At three o'clock on the morning of Sunday, the 13th of January of this year, I was requested, by Mr. Désormeaux, surgeon of Pentonville, to see a lady whose hernia had become strangulated. The account with which Mr. D. has favoured me, is as follows:—

"Mrs. T., about fifty years of age, sent for me on Saturday, the 12th of January, on account of a femoral hernia, which she stated to have existed for several years, but which she had been able to keep up with a common truss. It had occasionally descended, in consequence of the truss not fitting her. In making some exertion, it suddenly came down this afternoon, but felt, as usual, when it happened to make its appearance, soft and free from pain. In a short time it became much harder and painful, producing a great sense of tightness across the belly, with nausea, which soon ended in vomiting. I saw her in the evening, and found her suffering great pain with the hardest hernia I had ever felt.

The tumour seemed to be filled with a mass of hard indigested substances, which could be felt through the skin, the coverings being very thin. I attempted to reduce it by the taxis, which was steadily kept up for twenty minutes, and then she tried to reduce it in her usual way, but without success. It appeared to me impossible to reduce the tumour, without first kneading the solid contents of the bowel through the femoral ring, which, from the great solidity of the matter, appeared to me almost hopeless. I took from the arm as much blood as brought on a fit of fainting, and then made a second attempt to reduce it. Conceiving that all measures would be useless while the contents could not be moved, I proposed having further advice."

When I saw Mrs. T. on the following morning, I found, in the right groin, as Mr. D. had described, one of the hardest tumours I had ever felt, about the size of a small orange, very tender, and the symptoms altogether urgent. She was in a favourable state for the return of the tumour, and I kept up considerable pres-

sure, but could not make any impression on it. In the extremely hard state of the swelling, and the smallness of the neck of the sac, which could be distinguished in her spare person, I thought that no advantage could be gained by delay, and explained to her the little hope we entertained of being able to reduce it. She willingly acceded to the operation.

The integuments were so loose over the tumour, that a transverse incision was sufficient to expose the closer investments of the sac; and the fascia propria being exposed, an aperture was made into it, and the director passed as high as the stricture. The cellular membrane and adipose structure were abundant, which allowed the director to be passed readily between the layers; but it was necessary to depress the point very much, in order to pass it under the stricture. As soon as the knife was passed along the groove, both Mr. Désormeaux and myself distinctly heard the stricture yield; and at the instant that pressure was made on the swelling, the contents retired into the abdomen.

The integuments were brought together without suture.

Mr. D. gives me the following account of his patient: —

"Ten o'clock, A. M. 13th. The pain and vomiting have ceased, but no stools have passed. Pulse 110. The following draught every three hours, till the bowels are relieved: —

Mag. Sulph. ʒij. Mag. Carb. ℈j. Aq. Menth, ℥j.

In the evening the bowels still remained torpid, and she complained of tenderness in the abdomen, but without sickness. Later in the evening the bowels were freely moved.

"Monday 14th. No pain; tongue clean; pulse eighty-four; and she is doing well in every respect.

"Tuesday. She has passed a bad night, and complains of much pain in the abdomen, and of a sense of tightness across the lower part. Pulse 110. I ordered the abdomen to be freely leeched, and the draughts to be continued to evacuate her bowels more completely. At night she took a draught, containing ʒ iss. Liq.

Ammon. Acetat., with ten grs. of Pulv. Ipecac. Comp.

"On the two following days she was much improved in all respects; the pain in the belly having ceased, and her pulse being reduced in frequency. The wound is healing by the first intention."

By the 18th she was pronounced to be convalescent.

The extent, as well as the form of the incision through the integuments, may seem of minor importance, except as far as it tends to facilitate the after steps of the operation; yet it may be as well to disturb the subjacent cellular membrane as little as possible, as inflammation is less likely to follow, and to assume the form of erisypelas. For this reason, the inverted T incision, usual in the operation for femoral hernia, may be in most cases reduced to a single incision, either at right angles to Poupart's ligament, or in a transverse direction across the tumour. In patients who are spare, and in whom the neck of the sac lies at no great depth from the surface, it is unnecessary to disturb the

cellular membrane by turning aside the flaps of the integument. This will diminish the suppurative inflammation, and in such cases will afford ample room for the operation. I have not made trial of the perpendicular form of incision, but a single transverse one I have found sufficient, when the integuments have been loose, and the tumour not large. The superficial fascia adheres firmly to the common integuments, and is usually turned aside with them, especially when the latter are pinched up for the purpose of making the first incision. The fascia propria is, therefore, quickly exposed, and forms the first distinct covering of the tumour, being darker than the more superficial cellular investment. It is under the outer layer of this fascia that the adipose structure is formed, and which often assumes the appearance of omentum. The director easily makes its way under this fatty matter as far as the neck of the sac, which lies deeper than the operator at first supposes. The point of the director should be applied rather to the inner than to the outer part of the neck of the sac, as it will

be found more easily to pass under the stricture at this part. It should not at first be attempted to be thrust under the stricture, as the firmness of the parts forming the stricture would resist it. But the seat of stricture being felt, the operator should depress the end of the director upon the sac, which will yield before it, and then, by an onward movement, the director slides under the stricture. The usual seat of stricture in a femoral hernia is too familiar to need any elaborate description. The appearance of the stricture, and its connection with the fascia propria, are shown in the Fourth Plate, fig. 3., of Sir A. Cooper's work on Hernia, Part II. The sac is removed, and the fascia propria, with Poupart's ligament, is left entire. The tendinous band of the sheath, where it joins with Poupart's ligament, is most accurately delineated in Plate 2. fig. 3., and in Plate 3. fig. 5. In these views Poupart's ligament, has been removed, and the natural structure of the sheath of the vessels which forms the fascia propria of hernia is clearly exhibited.

The band that produces the constriction

at the femoral aperture is not entirely a process from Poupart's ligament, but is also formed by a tendinous band on the fore part of the femoral sheath, where the fascia transversalis passes in a funnel form behind Gimbernat's ligament, to be inserted into the pubis. The thin tendinous border that descends backwards from Poupart's ligament is attached to the front part of the sheath of the femoral vessels; and any attempt to push a director under this thin border, anteriorly to the sheath, would meet with great resistance; and, if it were successful, its division would not sufficiently liberate the sac from pressure.

Drawing 1. is a dissected view of the fascia propria of a femoral hernia in the male subject, with the inguinal canal and spermatic cord exposed. An opening has been made into the fascia, and the director passed under it. The integuments have been removed; but the superficial fascia is left attached to Poupart's ligament, and is seen separated from the fascia propria by a piece of bristle. The sac, covered by a layer of adipose and cellular

matter, is seen under the director. The stricture is not brought into view. The drawing will serve to illustrate the preceding description of the operation.

In the male subject, no apprehension need be entertained of wounding the spermatic cord, as it lies far away from the parts forming the stricture; and the extent of incision required for its complete division is much too small to bring into danger the parts situated above Poupart's ligament.

In inguinal hernia the incision may be so conducted as to enable the surgeon to divide the stricture either at the internal or at the external ring. The opening in the skin must be made higher than is usual in the ordinary operation on a bubonocele. The incision should begin at the neck of the tumour, or where it seems to quit the abdomen, and should be continued downward for about an inch and a half. This will lay bare the lower portion of the external oblique tendon, where it forms the

ring. A small opening should then be made in the tendon, just above the ring, sufficient to admit the end of the director, which will enable the operator to ascertain if the stricture be at the lower or upper opening. The size of the hernia, and the length of time it has existed, will, in some measure, serve to guide him; but he may immediately decide the point by passing the director downward under the edge of the external ring, and feeling whether it embraces the tumour firmly or not; or, by making pressure on the swelling below, he may feel if the fluid contents of the tumour can be forced upward above the ring, so as to distend the sac in the inguinal canal. This point being decided, if the stricture be at the lower ring, he has only to pass his director under its margin, and to divide it to a sufficient extent.

If the stricture exists higher up at the neck of the sac, where it will be found in the majority of herniæ of this description, the opening in the tendon should be enlarged to the extent shown in the second drawing, for the purpose of passing the di-

rector under the deeper stricture. The lower margin of the two muscles will be brought into view, with some of the descending fibres of the cremaster. These may be separated by disturbing the cellular membrane with the end of the director; and the instrument may then be introduced under the transversalis muscle till it reaches the stricture. In the subject, the director, when introduced in this manner, passes before the transversalis fascia; this will diminish what little risk there may be of wounding the peritoneum, and will carry the knife further from the epigastric artery; the tenuity, however, of this fascia, will, perhaps, often allow the director to pass beneath it. The instrument should be depressed upon the sac, in order to carry its point under the border of the transversalis, which may be divided to the extent required. This operation is more difficult than the division of the stricture in femoral hernia; the principal difficulty lies in the accurate separation of the lower edge of the internal oblique muscle, for the easy passage of the director. Drawing II.

represents the parts, with the instrument passed under its edge. The stricture, however, is not so firm in inguinal as in femoral hernia, and the introduction of the director under the transversalis tendon will not be difficult, where it is fairly passed up to the neck of the sac before the attempt is made. The steps of the operation will be much the same in those smaller hernia, which are lodged in the inguinal canal. When the stricture is divided, a greater degree of pressure will be required to return the contents of a large inguinal hernia, on account of the distance from the neck of the sac to the bottom of the tumour, and especially when the omentum forms a part of its contents.

In small bubonocele, where the protrusion has scarcely reached the external ring, and accompanied, as it commonly is, with an imperfect descent of the testicle, the same manner of operating may be followed.

I prefer making the opening in the tendon in the manner described in the drawing to slitting up the external ring, as the opening in the tendon will afterwards unite

more firmly if the ring be left entire, and will not dispose the patient more to the disease than when the operation is performed in the usual way.

Umbilical hernia is, of all forms of this disease, one that most requires the sac to be preserved entire. Of all operations, it is on the whole the least successful in preserving life. The intestinal canal is peculiarly susceptible of inflammation in persons who are the subjects of umbilical rupture; corpulent females are especially the persons in whom it takes place; and when strangulation occurs, inflammation quickly ensues, and is generally rendered more active by the operation.

The division of the tendinous margin of the umbilical aperture is not difficult; it requires care, on account of the extreme thinness of the sac; and the operation, therefore, consists in a cautious exposure of the linea alba, where the tumour emerges from the abdomen. The orifice of the sac is rendered readily accessible at its upper

part by the descent of the swelling towards the pubes; the sac, when it emerges from the abdomen, does not extend equally in all directions, but gradually makes its way downwards, in consequence of the weight of its contents; and therefore, in old large herniæ, though the aperture in the tendon bears but a small comparison to the size of the tumour, it is scarcely at all overlapped by it at the upper part.

The case in which I first had occasion to perform the operation was one of long standing, with a large portion of irreducible omentum. The inflammatory symptoms that came on after the operation were produced by a disposition to erysipelas, which, had the sac been opened, would, in all probability, have assumed the form of peritonitis. The following account of the particulars are given in the words of my dresser, Mr. Nunnelly.

CASE.

Sarah Pyer, aged sixty-seven, admitted in the morning of the 21st February, 1832, into Guy's, under Mr. Key, with a very

large strangulated umbilical hernia. She states that the hernia has existed for forty-two years; that it occurred during her second labour. She has never worn a truss, but latterly, in consequence of the large size of it, she has commonly worn a shawl tied round her body. At night the hernia usually became smaller, but never entirely disappeared, and for a long time has never been less than an orange in size. About ten days ago she was not quite well, and took some purgative medicine, which acted very violently, during which the rupture became larger and very painful; this subsided spontaneously after two days, and she became much as usual, with the exception of a troublesome cough. Last night, in going to bed, she felt the hernia larger and more painful than usual, and was prevented from sleeping by the pain. On attempting to get up this morning, she was unable to stand, and soon afterwards was conveyed to the hospital. When admitted, the hernia was very large, tense, and excessively painful on the least pressure, as was the abdomen above the navel; pulse small, feeble,

and jerking; countenance anxious and depressed; very cold and shivering; constant nausea, vomiting, and eructations; bowels opened yesterday.

One P. M. Seen by Sir A. Cooper, who made attempts to reduce it for some time, and with considerable force, without success; he wished every means to be tried to return it without operation, saying, "that it was a very unfavourable case for it, and if tried, would probably end fatally."

Ice to be applied.

Eight P. M. Nausea and eructations continue; pain and tenderness have increased; pulse 80, and very depressed. Attempts were made by Mr. Key to reduce it by the taxis, but no impression could be made upon it: he therefore proposed to operate without opening the sac, thinking, with Sir A. Cooper, that if the peritoneum were laid open, but little hope could be entertained of her recovery. The woman readily assented to the operation, saying, "she would rather be cut to pieces than have the taxis applied, so painful was the hernia." A

tranverse incision, about three inches long, was made across the upper part of the hernia, through the integuments; this was met at a right angle by a longitudinal one, two inches long, above the rupture; a director was then carefully insinuated under the tendinous opening, and the stricture divided without opening the sac. So much of the hernia as was reducible was easily and readily returned, its reduction being evident to the bystanders by the gurgling noise; the size of it was much lessened; the woman received immediate relief, and, on putting her hand to it, said, it had not been smaller for two or three years.

℞. Post horam unam, Magnesiæ sulphatis, ʒiij; Magnesiæ Calcinatis, ʒss. aquæ ℥iss., et repet. 3ter quaque horâ; enema, ℥j., Ol. Ricini injiciendum.

Twelve P. M. Is fast asleep.

22d, A. M. Has slept well; bowels have been freely opened; has taken four doses of the medicine; tongue rather furred; pulse 84, with more power; says she is much easier, but on pressing the hernia she complains of great pain; there is also some tenderness over the abdomen generally; no

vomiting; it is less distended. Medicine to be omitted, and to take —

Opii, g. ½. Antim. Tart. ¼.; Hydr. Submur. g. 1. statim. venæsectio ad ℥xiv.

P. M. Complains of acute pain on pressure; the hernia is certainly smaller, and not so tense as before the operation; very thirsty; tongue drier; she has nearly lost her voice, and has some catarrhal affection, apparently from taking cold last night, in going into the operating theatre.

Rep. Pilula.

23d, A. M. Slept, or rather dozed the greater part of the night; blood drawn yesterday not inflamed; pulse 84, small and jerking; pain in the hernia and upper part of the abdomen very acute on the slightest pressure; tongue covered with dry brown fur; lies in a stupid state, half asleep; bowels not opened since yesterday. Seen by Dr. Cholmeley, who ordered her —

Opii, g. 1. Hydr. Submur. gr. 1. 4ter quaque horâ; enema Olei Ricini statim, with fomentations to the belly.

P. M. Much the same; pulse has not quite so much power; the bowels not being re-

lieved by the castor oil enema, an injection of house medicine (senna and salts) has been thrown up, and produced one evacuation. Pills to be omitted, as the opium appears to affect the head.

24th, A. M. Lies in a lethargic state; if spoken to, rouses and answers, but immediately drops off again; says she is in no pain while lying still, but if she attempts to move, or is slightly pressed upon the hernia or upper part of the abdomen, she complains of great pain; tongue dry and red; pulse 85, weaker; skin cool; bowels not open.

R. Ol. Ricini, ʒvj.

P. M. Discharge of pus from the wound not being healthy, the plaster removed and a poppy poultice applied; pulse 88.

R. Calomel, g. ij.; Opii, g. i.

To be allowed arrow-root, with a small quantity of wine in it. Catarrhal symptoms better.

25th. Bowels have been once opened; pulse 80, compressible; sac softer; still complains of much pain on pressure; tongue

dry and red; head feels very stupid, and if given any thing to eat, she falls asleep with it in her mouth.

Emplastri Lyttæ. Rep. Pilula, Cal., Opio, horâ somni.

26th. Is rather better; head not quite so heavy; pulse 74; tongue much the same; skin cool; not so much pain on pressure over the abdomen generally, but, on the left side of the sac, there is an erysipelatous blush of inflammation, with a good deal of hardness; bowels have been, during the night, much relaxed; evacuations green and slimy.

R. Mistura Acetos; enema Amyli. Tinc. Opii, ℥xx injiciendum.

P. M. Purging continues.

Opii, g. j. statim. Aromat. c̄., Misturâ Acet.

27th. Bowels better; tongue much the same; pain in the belly less; inflammatory blush gone, but the induration continues; pus discharged from the wound; head better; pulse 70, good; very thirsty.

Rep. Pil. Opii, horâ somni. To have beef tea.

28th. Has had two good natural evacuations; pain on pressure of the sac and

abdomen still continues, but in a less degree; rather more sleepy than yesterday.

March 1st. Is not quite so well as yesterday; has a little more tenderness; bowels open, and tongue cleaning.

2d. Is better again to-day; less pain and tenderness; pus good from the wound; tongue better; pulse 80, and good; has entirely lost the stupidity; says she can eat.

4th. Going on remarkably well; tenderness in a great measure subsided, with the exception of the left side of the belly, where the induration continues, and threatens suppuration; it appears now entirely confined to the subcutaneous cellular membrane; appetite good. To have a mutton chop, and ℥iv. of Port wine.

10th. Suppuration, with a little sloughing of the cellular membrane, has taken place at the indurated part; there is a free outlet at the umbilical opening; pulse good; bowels regular, and tongue clean; she eats well, and sleeps all night; no hardness or pain of the abdomen.

20th. Is now able to get up; the suppuration is diminishing; the parts are strapped up and supported with a bandage;

in every other respect she is perfectly well, being, of course, rather weak. The hernia is not at all tender, and is of the size it has been for the last three years.

I have given this case at greater length than may seem necessary; but such was the unfavourable condition of the patient at the time of operation, such the inflamed condition of the parts within the abdomen, as well as of those in the sac, and such the tendency to inflammation, evinced by the erysipelatous inflammation and subsequent suppuration, that, from the result of hernia operations which I have seen, I am convinced that, had the sac been opened, the patient, instead of recovering, would have afforded another instance of the danger and fatality attending the usual operation in inflamed umbilical hernia.

In small umbilical herniæ, a perpendicular incision will be sufficient to expose the tendon, especially when the abdomen is not loaded with adeps: and there will be some advantage in this simple form of incision, as less suppuration will follow.

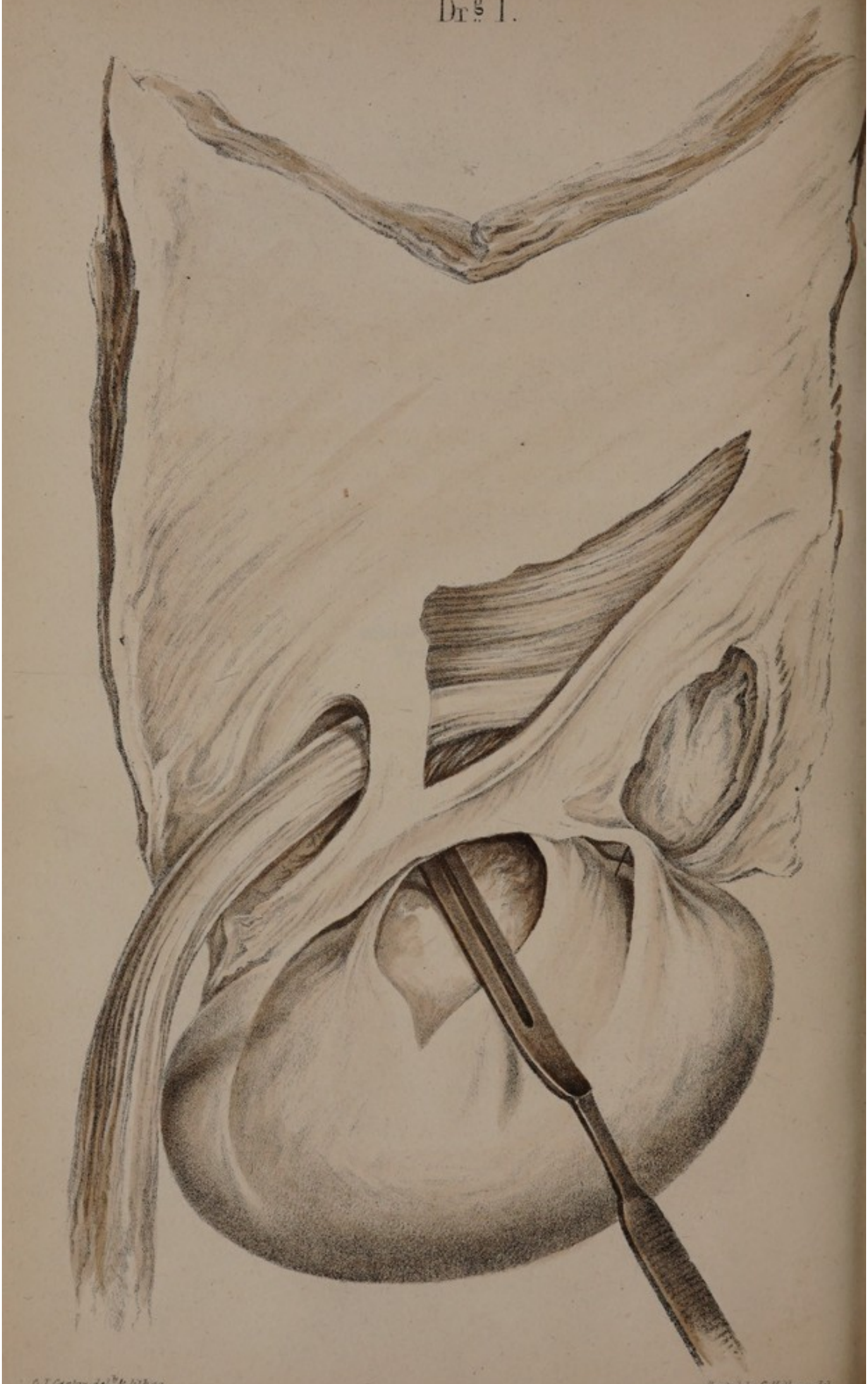
The subcutaneous covering of the sac is so thin, that there will be some risk of opening it, unless the operator is careful. The drawing, No. 3., represents the edge of the tendon exposed, and the sac laid bare by an incision made in its cellular investment; but, in the operation, it would be right not to expose the sac so much as is here shown. The tendon alone ought to be brought into view, and the surface of the sac disturbed as little as possible, on account of its extreme tenuity. Having brought into view the tendon, and its edge, where it bounds the opening, being felt with the director, the operator may carry his director under it, either by making a small incision in the tendon at a little distance from the margin, or may separate the edge of the tendon from the sac, and then divide it to the requisite extent. The former method is shown in the drawing, and is that which I have employed, as there is less risk of wounding the sac. In this, as in other forms of hernia, a very slight division of the tendon is sufficient to liberate the contents of the tumour.

It will be seen, from the foregoing observations, that the operation of excluding the sac in the division of the stricture is applicable to the majority of cases of herniæ. It is not intended to advocate its indiscriminate use in all cases. The discretion of the surgeon must be exercised, in order to draw a distinction between such forms of the disease as will admit of its application, and those varieties in which it could not or ought not to be employed. My object is, to recommend an operation that will render strangulated hernia a less fatal disease than it has proved to be under the most skilful treatment; and if, in the practice of other surgeons, it be successful, my end in writing these pages will be accomplished.

THE END.

London:
Printed by A. Spottiswoode,
New-Street-Square.

Dr.s 1.



O.J. Carlson del.t & lithog.

Printed by C. Hullmandel.

DRAWING I.

This drawing represents a femoral hernia dissected, in order to show its coverings, and the mode of passing the director. The superficial fascia coming from Poupart's ligament is partly removed, to show the fascia propria; a portion of bristle being passed under it, to separate it from the latter fascia. An incision has been made into the fascia propria, for the passage of the director under the stricture. The stricture is not brought into view. The inguinal canal is opened, to show that the cord is not endangered in the division of the stricture. See page 129.