

A probationary surgical essay, on crural hernia : submitted, by authority of the President and his Council, to the examination of the Royal College of Surgeons of Edinburgh, when candidate for admission into their corporation, in conformity to their regulations respecting the admission of ordinary members / by William Wood.

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A
PROBATIONARY
SURGICAL ESSAY,
ON
CRURAL HERNIA;



SUBMITTED,
BY AUTHORITY OF THE PRESIDENT AND HIS COUNCIL;
TO THE EXAMINATION OF THE
*ROYAL COLLEGE OF SURGEONS OF
EDINBURGH,*
WHEN CANDIDATE
FOR ADMISSION INTO THEIR CORPORATION,
IN CONFORMITY
TO THEIR REGULATIONS RESPECTING THE ADMISSION
OF
ORDINARY MEMBERS.

BY
WILLIAM WOOD,
MEMBER OF THE ROYAL MEDICAL SOCIETY OF EDINBURGH,
AND OF THE PHYSICAL SOCIETY OF LONDON.

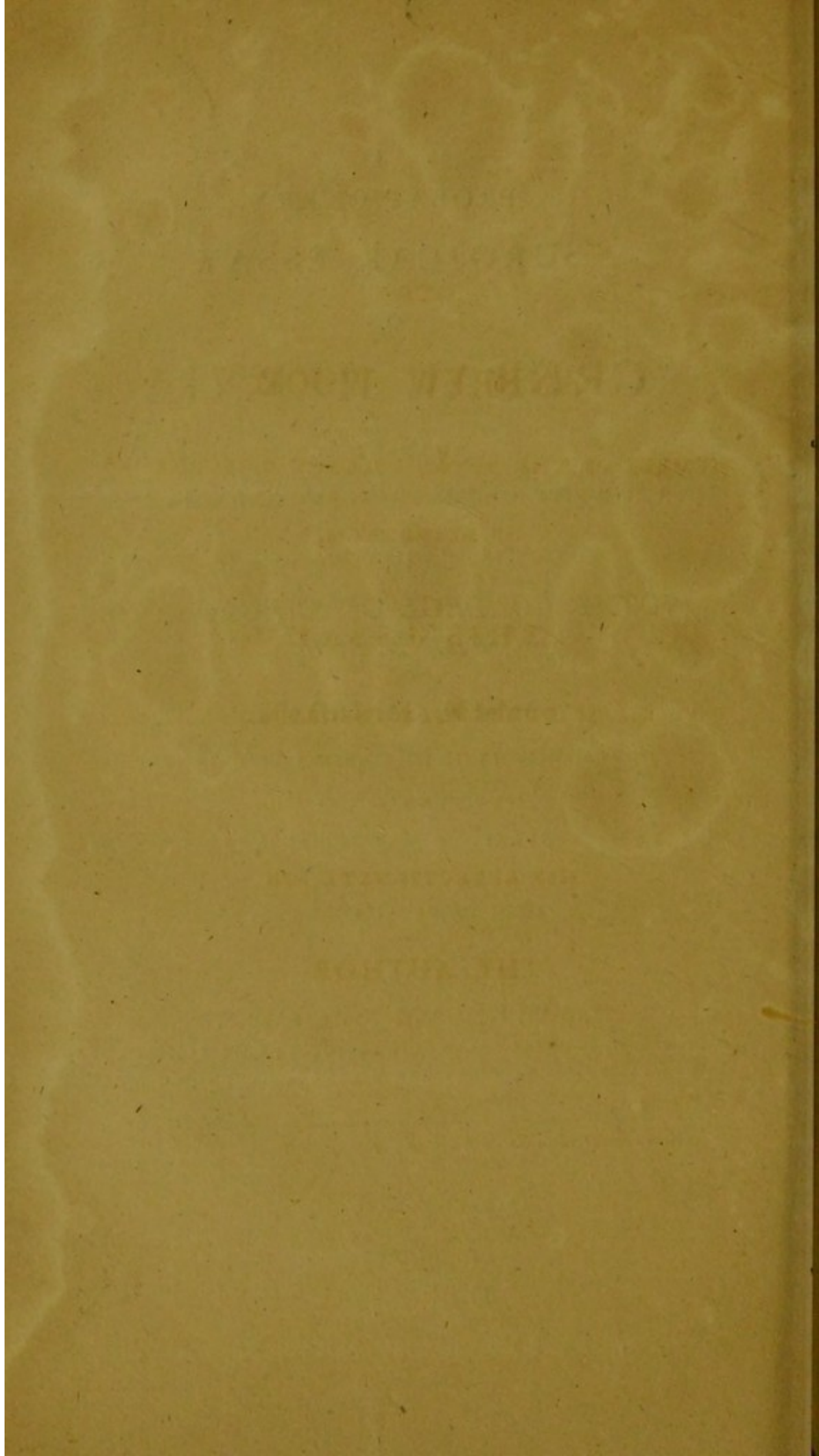
Non recito cuiquam, nisi amicis, idque coactus.

HORACE.

SEPTEMBER 1805.

Edinburgh:

PRINTED BY MURRAY AND COCHRANE.



TO
ANDREW WOOD,
MEMBER OF THE ROYAL COLLEGE OF SURGEONS
OF EDINBURGH,

THIS ESSAY
IS DUTIFULLY INSCRIBED

BY
HIS AFFECTIONATE SON,

THE AUTHOR.

TO

ANDREW WOOD

MEMBER OF THE ROYAL COLLEGE OF PHYSICIANS

OF LONDON

THIS ESSAY

ON THE NATURE AND CAUSES OF

THE DISEASE

OF THE

STOMACH

O N

CRURAL HERNIA.

PROTRUSIONS of any of the viscera from their proper cavity, have been denominated *Herniæ*; but the term has been more particularly applied to tumors formed by the displacement of some of the viscera of the abdomen from that cavity.

Few diseases, to which the human body is subject, have a better claim to the attention of the Surgeon, than the various species of abdominal Hernia; not only from the frequency of their occurrence, but also from the dangerous nature of the disease itself, and of the operation which is, in many cases, necessary for its removal.

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The different species of Herniæ have received different appellations, from the parts through which the viscera protrude, from the place at which the tumor they form is situated, or from the viscera which it contains. In this Essay, I shall confine myself entirely to the consideration of that species, in which some of the viscera of the abdomen pass out of that cavity, under Poupart's ligament, and form a tumor at the upper part of the thigh, denominated *Femoral* or *Crural Hernia*. This is a disease much more frequent in the female than in the male sex, and more so in married than in unmarried women *.

Before proceeding to give a history of this disease, it will be necessary to premise a slight anatomical account of the relative situation and connection of the different parts, at the top of the thigh, and lower and fore part of the abdomen; as this will explain, not only the situation of the tumor, but also the cause of the danger which attends both the disease and the operation which is employed for its removal.

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* Arnaud's Dissertation on Hernias, p. 133.

ANATOMY OF THE LOWER AND FORE PART OF THE
ABDOMEN, AND UPPER PART OF THE THIGH.

THE cavity of the abdomen is almost completely shut up, at its lower and fore part, by the tendon or aponeurotic expansion of the external oblique muscle, with the various fasciæ which are attached to it. This muscle arises by distinct fleshy heads from the eight inferior ribs; its fibres run obliquely downwards and inwards, to terminate in a broad expanded tendon, which covers the anterior part of the abdomen, in the middle of which it is united to its fellow of the opposite side, forming, by this union, a white line, extending from the ensiform cartilage to the pubes, termed the *Linea Alba*. Another portion of this tendon is inserted into the os pubis and spine of the os ilium. A little above, and to the outer side of the symphysis pubis, the fibres of the tendon of the external oblique muscle separate into two pillars, to form an opening for the passage of the spermatic vessels in the male, and of the round ligament of the uterus, in the female sex. This opening is denominated the External Abdominal Ring; it is strengthened at its upper part by a number of tendinous fibres,

which, running upwards and inwards, cross the parallel fibres of the tendon of the external oblique muscle, and closely connect the two pillars to each other. The superior pillar is inserted into the symphysis pubis. That portion of the tendon which forms the inferior pillar of the ring, is thicker and stronger than the rest; it is termed Poupert's Ligament, or the Crural Arch. This arch, as it has been termed, extends from the anterior, superior, spinous process of the ilium, to the tuberosity of the pubis, and was formerly described as inserted into the bones of the pelvis, at these two points only; but Gimbernat has shown, that in all this track the tendon forms a duplicature inwards, the inner extremity of which is inserted along the superior ramus of the os pubis, for the space of from half an inch to an inch, varying in different subjects*. It is the inner edge of this duplicature, which is in by far the greater number of cases the cause of strangulation in Femoral Hernia; it has been denominated Gimbernat's Ligament†.

To

* See a New Method of Operating for the Femoral Hernia, translated from the Spanish of Don Antonio de Gimbernat.

† Thomson's Lectures on Surgery.

To the crural arch several fasciæ are attached. One of these is situated immediately under the skin and cellular membrane of the fore and under part of the abdomen; it is a thin fascia, which covers the external surface of the external oblique muscle, and from thence passes down over the fore part of the thigh, to be attached to the fascia lata: at the bend of the thigh it becomes considerably thickened, and further down it contains a number of lymphatic glands, imbedded in fat, between its laminæ. It is attached to the crural arch in its whole course from the anterior, superior, spinous process of the ilium to the symphysis pubis. From its situation, this may be denominated the *External* and *Looser Fascia*.

Under it is situated the *fascia lata* of the thigh, which is a strong firm fascia, intimately connected with the outer or cord-like edge of the crural arch, from the ilium to the symphysis pubis, into which latter bone a portion of it is also inserted. From the crural arch it passes downwards, to give a firm covering to the muscles of the thigh.

Under the fascia lata, there is another fascia, which forms the anterior part of the sheath, which

contains the great femoral vessels; it is attached to the internal edge of the middle of the crural arch, from whence it runs downwards over the femoral artery and vein. This fascia is, in most subjects, quite distinct from the fascia lata of the thigh, there being a layer of fat between them. Between the fascia lata and the fascia forming the sheath of the vessels, there is also this distinction, that the former arises from the *outer*, and the latter from the *inner* edge of the crural arch *. In some subjects, however, they are so intimately connected, that it is hardly possible to separate them. The loose fascia, the fascia lata, and the fascia of the femoral vessels, though in general quite distinct from each other at the *middle* of the crural arch, towards its attachment to the os pubis become so intimately united as to form an almost undistinguishable mass.

Besides these three, there are two other fasciæ which require to be known. One of these arises from the internal edge of the crural arch, in its course from the os ilium to that part at which the femoral vessels pass out of the pelvis; it runs upwards over the anterior surface of the internal iliac muscle,

* Thomson's Lectures on Surgery.

muscle, and is inserted into the crest of the ilium. It sends also a portion downwards, behind the femoral vessels, to form the posterior part of the sheath, in which they are contained. It may be denominated the *Internal Iliac Fascia*. This Fascia was first described by Gimbernat.

The remaining Fascia, which is of a thinner texture than the former, arises from the internal edge of the crural arch, and extends upwards over the posterior surface of the transversalis muscle. There is a hole in this fascia, for the transmission of the spermatic vessels in the male, and of the round ligament of the uterus in the female, termed the *Internal Abdominal Ring*; it is situated about an inch and a half above the *external* abdominal ring, in a line drawn from the symphysis pubis to the superior spinous process of the ilium. This fascia may, from its situation, be denominated the *Internal Abdominal Fascia*: its existence and effect in producing strangulation in some cases of *Inguinal Hernia*, have been first pointed out by Mr Cooper of London, in his accurate and splendid work on the different species of *Herniæ* *.

Under the middle of the crural arch, the external iliac artery and vein pass out of the pelvis to the thigh, where they take the name of Femoral. In passing under the arch, they enter into a sheath, the *fore part* of which is formed by the fascia, formerly described as arising from the inner edge of the crural arch; the *back part*, by a portion of the internal iliac fascia. The vein lies on the inner side of the artery, and of course nearer to the symphysis pubis. The saphena major vein enters into the sheath of the femoral vessels, about an inch below the crural arch, to open into the femoral vein. The anterior crural nerve runs down the thigh, on the outside of the sheath of the femoral vessels.

The epigastric artery is given off from the anterior part of the external iliac, a little before this artery enters the femoral sheath, and passing behind the spermatic vessels, or round ligament of the uterus, runs obliquely upwards and a little inwards, to the rectus abdominis muscle.

Immediately on the inner side of the femoral vein, there is a small round aperture in the parietes of the abdomen, formed by the discontinuation of the
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the internal iliac fascia at that place, termed the *Crural Ring*. This aperture was first accurately described by Gimbernath, though it appears to have been known long before his time *, and was called by some of the French anatomists *Le Gouffet Graisseux* †. It seems formed for the passage of a number of lymphatic vessels from the thigh to the pelvis, and is in many subjects filled up by a lymphatic gland.

The spermatic vessels in the male, and the round ligament of the uterus in the female, pass out of the abdomen at the *internal* abdominal ring, situated mid-way between the anterior superior spinous process of the ilium and the symphysis pubis; they run obliquely inwards and downwards, for the space of an inch and a half, in a canal formed in the duplicature of the tendon of the external oblique muscle, termed the *Inguinal Canal* ‡; and then pass through the *external* abdominal ring. In their course, they cross the epigastric artery a little above and to the outer side of the crural ring.

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* Bassuet Mercure de France, 1734.

† Memoires de Chirurgie par George Arnaud, tom. ii. p. 769.

‡ Thomson's Lectures on Surgery.

SITUATION AND CONTENTS OF THE TUMOR IN
CRURAL HERNIA.

IT appears, from the preceding description of the structure of the lower and fore part of the abdomen, that the only place at which any of the viscera can pass out of that cavity, under the crural arch, is at the crural ring.—Between the femoral vessels and the ilium, the union of the internal iliac fascia with the internal edge of the crural arch is so strong, that, in ordinary cases, without laceration, no protrusion can occur.

The crural ring is so situated, that when any of the viscera escape from the cavity of the abdomen at it, they necessarily pass into the sheath of the femoral vessels. If the protruded portion is small, it remains within the sheath ; but if it is large, it forces its way through the fascia forming the sheath and the fasciæ which cover it.

The tumor formed by the protrusion is situated at the bend of the thigh ; it is in general small, round, and extremely moveable, seldom exceeding the size of a hen's egg ; in some cases the portion
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of protruded intestine is so small, as hardly to give the least appearance of tumor externally, so that the patient is, in many cases, ignorant of the existence of his rupture. In a few cases, however, the tumor has been of a considerable size. Mr Thomson mentions a case of a woman labouring under an old irreducible Crural Hernia, in whom the tumor extended half way down the thigh. In this case, the parietes of the abdomen had become so thin, that the peristaltic motion of the intestine could be distinctly perceived *.

The viscera which most frequently form Crural Hernia, are a part of the intestinal canal, of the omentum, or of both. In a few cases, part of the urinary bladder has been protruded. The omentum is more frequently met with in hernia of the left than of the right side, and of old people oftener than of young †.

When the tumor contains only omentum, it is to the feel soft, irregular, and incompressible, little
painful

* Lectures on Surgery.

† Memoires de Chirurgie par Arnaud, tom. ii. p. 447. Traité des Hernies de M. Richter, traduit par J. C. Rougemont, p. 200.

painful when pressed. It is more difficult to return a portion of omentum into the abdomen, than of intestine. When the tumor contains intestine only, it is soft, smooth, and elastic, enlarged in size by the patient coughing; it is more painful on pressure than in omental hernia, its contents are more easily reduced, and the reduction is in general attended with a gurgling noise. When the protruded intestine, however, contains feculent matter, the tumor is to the touch so much like an omental hernia, that by it alone we cannot determine what the contents are. In those cases in which both omentum and intestine are protruded, the omentum generally lies before the intestine, and sometimes completely surrounds it. When the urinary bladder forms the hernia, the tumor varies much in size at different times, being very small after the patient has voided urine; in this case, when the tumor is pressed, the patient feels an inclination to make water.

All the viscera which form Crural Hernia, except the bladder, in passing out of the abdomen, carry along with them a portion of peritonæum, which forms a bag or sac, termed the *Hernial Sac*: this, when recently protruded, is thin and elastic, and

and has no adhesion to the surrounding parts; in some cases it may be returned into the abdomen along with its contents *. But when it has remained long out of the abdomen, it is in general much thickened, and forms such an adhesion to the surrounding parts, as to prevent its being ever returned into the abdomen. That part of the hernial sac nearest to the abdomen is generally much contracted by the pressure of the crural ring, and is usually denominated the neck of the sac.

When the hernia is small, the hernial sac, with its contents, is found, on dissection, within the sheath of the femoral vessels. It is then covered anteriorly by the integuments, the external loose fascia, the fascia lata, and the fascia forming the sheath of the vessels. But when the hernia is of a large size, the lower part of the sac is generally covered by the integuments only, this part of it having forced its way through the fasciæ at a little distance below Poupart's ligament.

Immediately on the inner side of the sac is the insertion of that duplicature of the crural arch into
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* Le Dran's Observations on Surgery, La Faye, Arnaud, Default, &c.

the ramus of the pubis, which has been denominated Gimbernat's Ligament; on its outer side are the femoral vein and artery; though in cases in which the hernial sac acquires a certain size, it lies in part over these vessels. The epigastric artery runs on its anterior and outer part, and the spermatic vessels in the male, or the round ligament of the uterus in the female, on its anterior and inner part. In some cases the sac, after it has passed out of the cavity of the abdomen, is reflected upwards over Poupart's ligament, so as to occupy the situation of the external abdominal ring.

Such is the situation of the sac in Femoral Hernia, with respect to the neighbouring blood-vessels, when they have the common distribution; but this distribution is liable to some variety. In a considerable proportion of cases, the obturator artery, instead of arising, as it usually does, from the internal iliac, comes off from the external iliac, a little before it leaves the pelvis, in a trunk common to it and the epigastric*.

In

* Of thirteen preparations in the possession of Mr Thomson, six have this origin of the obturator artery.

In Femoral Hernia, where there is this distribution of vessels, the obturator has been found to take two different courses. In some cases it runs round the neck of the hernial sac, from its outer to its inner side, to pass down to the foramen Thyroideum. Rougemont, who has translated Richter's Treatise on Hernia into French, and has added many very valuable notes to it, was acquainted with the origin of the obturator artery from the external iliac ; and though he does not seem to have met with any case, in which it ran round the neck of the hernial sac, pointed out the possibility of its doing so. His words are, " Il
 " n'est pas très rare de voir l'artère obturatrice
 " naître avec l'épigastrique, par un tronc commun
 " de l'artère iliaque. J'ai vû cette artère obtura-
 " trice dans un cas semblable se porter derrière
 " la partie interne du ligament de Poupart, et se
 " recourber ensuite pour gagner la partie supé-
 " eure du trou ovalaire, de manière qu'il peut
 " aisément arriver que les parties en s'échappant
 " par l'angle interne du ligament de Poupart
 " (comme c'est le cas le plus ordinaire) passent
 " derrière cette artère, de sorte que le principe du
 " sac soit environné en devant, en dedans par un
 " demi-cercle artériel formé par l'obturatrice, en
 " dehors

“ dehors il y a toujours l'artère épigastrique ;
 “ ainsi la dilatation dans cette circonstance dans
 “ quelque direction qu'on la fasse en dehors, en
 “ dedans, en devant est toujours unie au danger de
 “ blesser une artère assez considérable ; et comme
 “ on ne peut reconnoître cette disposition de l'ar-
 “ tère obturatrice, et comme elle n'est point in-
 “ finement rare, je crois qu'on peut encore con-
 “ sidérer cette variété comme une raison, qui doit
 “ nous engager à tenter la dilatation *.” This
 course of the obturator artery, which Rougemont
 pointed out the probability of its taking, was af-
 terwards demonstrated, in a subject who had la-
 boured under Crural Hernia, by Dr Barclay †.

The obturator artery, in other cases in which it
 arises from the external iliac, instead of running
 round the hernial sac, passes down to the foramen
 Thyroideum on the outside of the sac, leaving the
 sac

* *Traité des Hernies*, p. 131.

† The preparation is in the museum of Dr Barclay. The only other of the same kind which I have heard of, is one which my friend Mr James Wardrop met with in Paris. In dissecting a subject, he found a small Crural Hernia on each side ; in both, the obturator artery ran round the neck of the sac.

sac between it and the symphysis pubis. “ The
 “ obturator artery, when it arises in common with
 “ the epigastric, does not necessarily surround the
 “ neck of the hernial sac; *for, when the common*
 “ *trunk of these two arteries is short,* we have
 “ found the obturator passing down into the pel-
 “ vis, on the outside of the hernial sac *.”

CAUSES OF CRURAL HERNIA.

THE principal causes of Crural Hernia are, like
 those of the other species of hernia, weakness of
 the parietes of the abdomen, and all those circum-
 stances which tend to diminish the cavity of the
 abdomen, or to increase the pressure of the viscera
 against the containing parts.

Relaxation of the crural ring may be produced
 by a rapid absorption of fat having taken place from
 disease; it seems also to be induced by childbear-
 ing, since we find that Crural Hernia is more fre-

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quent

* Edinburgh Review, page 266. vol. i.—See also a very
 accurate plate of Crural Hernia, with the obturator artery
 following this course, in Dr Monro jun.'s Observations on
 Crural Hernia.

quent in married than in unmarried women. To the second set of causes we may refer all those muscular exertions which diminish the cavity of the abdomen ; thus, in lifting a weight, in dancing, leaping, vomiting, &c. the abdominal muscles being thrown into strong action, compress the viscera, part of which are thus apt to be forced through the crural ring. The chief causes which increase the pressure of the viscera against the containing parts, are distention of the intestines by air or aliment, and preternatural enlargement of any of the viscera.

DIAGNOSIS.

IN the greater number of cases, Crural Hernia is so strongly marked by the general symptoms, that it cannot easily be confounded with other diseases. The diagnosis, however, is not easy in all cases. The tumor in Femoral Hernia is so exactly in the seat of Bubo, that it is sometimes difficult to distinguish the one disease from the other. In *Bubo* the tumor is hard, incompressible, and little moveable ; its size is not altered by the patient coughing ; it enlarges gradually, and is not attended with any affection

affection of the bowels : while in *Hernia* it is soft and elastic ; it generally appears suddenly ; it is increased in size by the patient coughing ; and, even when symptoms of strangulation have not come on, there is a degree of pain and uneasiness in the bowels. We shall, in general, be better able to judge of the nature of the disease, by attending to its history, than by the feel alone. There is a case recorded by Mr Elle, in which there was found, on dissection, a portion of intestine strangulated behind an enlarged lymphatic gland. In this case, the swelling of the gland and the protrusion of the sac formed only one tumor *.

Psoas abscess is also liable to be confounded with Crural Hernia, when the matter has made its way under Poupart's ligament, as it then forms a tumor in the same situation with Crural Hernia, which is increased in size by the patient coughing, and is lessened by pressure, part of the puriform matter being pushed into the pelvis. This disease is distinguished from hernia, by the tumor being less circumscribed, and giving the feeling of fluctuation : the patient also in Psoas abscess ex-

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periences,

* Medical Observations and Inquiries, vol. iv.

periences, for some time previous to the appearance of the tumor, severe pain in the loins.

There is, in some cases, considerable difficulty in distinguishing Crural Hernia from Bubonocèle, particularly when the hernial sac is in the former reflected upwards over Poupart's ligament. The tumor is generally smaller in Crural Hernia, more rounded, more moveable, and projects more. When the hernia is recent, the sac may, in Crural Hernia, be removed from the situation of the abdominal ring. There are some cases on record, in which both Bubonocèle and Crural Hernia existed on the same side: in some of these cases they formed two distinct tumors, while in others there was externally the appearance of only one tumor. In the last of these, the real nature of the disease is not known till the integuments are removed*.

When, in a case of hernia, the tumor by pressure can be made to disappear, the protruded viscera being returned into the abdomen, the hernia is said to be in a *reducible* state.

When

* Ludwig *Adversaria Medico-Practica*, vol. i. p. 348.
Arnaud, *Memoires de Chirurgie*, tom. ii. p. 607.

When the viscera cannot be returned, if there are no bad symptoms induced by their remaining out of the abdomen, the hernia is said to be in an *irreducible* state.

But when such a degree of compression is made on the protruded viscera as to obstruct the passage of the fæces, or to impede the circulation of the blood, the hernia is in a state of *strangulation*. Strangulation is particularly liable to take place in Crural Hernia, from the small size of the crural ring, and the unyielding nature of the parts by which it is formed. Strangulation also takes place more frequently in those cases in which the hernia has been suddenly formed, than in those in which it is the consequence of gradual relaxation.

SYMPTOMS OF STRANGULATION.

THE first symptom of a portion of intestine being strangulated, is pain in the tumor shooting from it all over the abdomen, but particularly severe about the umbilicus. This is soon followed by nausea and vomiting, first of the alimentary matter contained in the stomach, and then of bile. The

bowels are in general obstinately constipated ; if there is any discharge of fæces by the anus, it is merely from the inferior part of the great intestines. The patient is extremely restless and uneasy ; in some cases he complains, even in the early stages of strangulation, of coldness, particularly of the lower extremities. The pulse is full, and rather hard. If the stricture is not removed, the symptoms increase in severity ; the vomiting becomes more frequent and severe, and feculent matter is in some cases discharged by the mouth. The patient is distressed with hiccup, the tumor swells, and becomes tender to the touch, the belly soon grows tense, and painful when pressed. The pulse becomes frequent, small, and thready. These symptoms mark inflammation, both of the protruded viscera, and of the viscera within the cavity of the abdomen. The inflammation soon runs on to gangrene. When gangrene has taken place, the vomiting in general ceases, or at least becomes less frequent ; the pulse is still quick, but feeble and irregular, and cold sweats break out all over the patient's body. The tumor, now free from pain, becomes flabby, and of a dark livid colour, crackling under the finger. The abdomen continues tense and painful on pressure.

There

There is often at this time a free discharge of fæces, and the patient feels so much relieved, that he thinks himself out of danger ; but these hopes are of short duration, for his strength gradually sinks, and death soon terminates the scene.

These are the symptoms which are produced by the compression of such a portion of intestine as is sufficient to interrupt the passage of the fæces. But in some cases, only a small portion of the circumference of the intestine is protruded. These are attended with the greatest danger, for a discharge of fæces frequently occurs during the whole course of the disease * : and, from this circumstance, patients have died of strangulated hernia, without the nature of their disease being suspected. But, even in hernia where only a portion of intestine is pinched, there is sometimes obstinate constipation †.

The symptoms of strangulated omental hernia are very similar to those of intestinal, but are not in general so severe, and do not advance so rapid-

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ly.

* Morgagni de Sedibus et Causis Morborum, tom. ii. pag. 48. Garengéot. Littre.

† Louis, Académie de Chirurgie, t. viii. p. 36.

ly. In some cases of strangulation of the omentum the bowels remain open, while in others the irritation communicated to the intestine is so great as to induce constipation *. The omentum, when strangulated, generally becomes gangrenous, but in some cases it suppurates †.

SEAT OF THE STRICTURE.

THE symptoms of strangulation are all induced by compression of the protruded viscera. In by far the greater number of cases of Crural Hernia, this compression is made by Gimbernat's ligament. But in some cases it would seem to have been produced by the fascia lata of the thigh, at the distance of from one to two inches, or more, below Poupart's ligament. This fascia is said by Arnaud to be frequently the seat of stricture. His words are, “ Tout chirurgien doit sçavoir, qu'il
 “ arrive assez ordinairement que certains paquets
 “ des fibres du fascia lata, plus ou moins multi-
 “ pliées, sont capables de faire étranglement dans
 “ la Hernie Crurale, et même dans l'Inguinale.
 “ J'ai

* Arnaud, Mem. de Chirurg. t. ii. p. 540.

† Richter, p. 212.

“ J’ai sur ce fait des observations singulières à pro-
 “ duire. Il est quelquefois arrivé aussi, qu’aussitôt
 “ que ces fibres ont été coupées, les hernies sont
 “ rentrées très aisément. C’est à M. de Garen-
 “ geot à qui nous sommes redevables de cette dé-
 “ couverte *. In another place he says, “ Quel-
 “ ques fibres du fascia lata s’étendent en travers
 “ dans certains sujets, et vont s’attacher sur l’os
 “ pubis. Voy. la Splanchnologie de Garengeot,
 “ p. 116. vol. 1. Ces fibres se multiplient dans
 “ quelques sujets, et forment au dessous de l’Ar-
 “ cade des bandes ligamenteuses, capables de for-
 “ mer un étranglement, lorsque le sac herniaire
 “ trouve la liberté de s’insinuer par dessous ce
 “ trouffseau. J’en citerai un exemple très re-
 “ marquable dans le memoire sur les hernies avec
 “ mortification, où l’intestin qui s’étoit introduit
 “ sous ces fibres, formoit une hernie avec étrangle-
 “ ment, à quatre travers de doigt au dessous du
 “ ligament, sans aucune apparence de tumeur
 “ dans l’aîne †.”

Gimbernats ligament, therefore, and the fibres
 of the fascia lata, are the only two seats of stric-
 ture in Crural Hernia which are external to the
 hernial

* Arnaud, tom. ii. p. 776.

† Ib. p. 606.

hernial sac. And the stricture may occur in one of these seats only, or in both at the same time.

In a few cases, however, the stricture is formed by the neck of the hernial sac, this having become hard and contracted by the pressure of the crural ring.

Occasionally the stricture exists within the hernial sac. It is then formed, either by the omentum, or by membranous bands which run across the sac.

In large old herniæ, all the symptoms of strangulation are sometimes induced by accumulation of feces within the protruded intestine. When this is the case, the tumor enlarges and becomes harder than usual for some time previous to its being at all painful. This is the least dangerous cause of strangulation, as inflammation is not speedily produced by it; in most cases also it is easily removed.

TREAT-

TREATMENT.

IN reducible Crural Hernia, the protruded viscera are to be returned into the cavity of the abdomen, and their future descent is to be carefully guarded against, by the application of a spring truss.

In irreducible Femoral Hernia, when the tumor is small, it has been proposed to apply a truss hollowed out like a saucer, to prevent further descent: but it is not quite obvious that any material advantage could be derived from this practice.

In the treatment of strangulated Crural Hernia, our object is to remove, as soon as possible, the pressure on the protruded parts, which is the cause of all the symptoms.

For this purpose, an attempt must be made to return the contents of the hernial sac into the abdomen. The patient being laid on his back, with his head and pelvis a little elevated, and the thigh of the side on which the hernia is, bent nearly at right angles to his body, in order to relax the
fascia

fascia lata ; “ the operator should stand close by
 “ the bed, on the same side with the hernia : with
 “ the hand next the patient’s abdomen, he should
 “ grasp the tumor at its base and upper part, and
 “ compressing it moderately on the side by his
 “ three foremost fingers, he should, at the same
 “ time, with the other hand, push the lower end
 “ of the tumor upwards and inwards, to direct it
 “ towards the crural ring *.”

When the hernial sac is reflected upwards over Poupart’s ligament, it is necessary that the pressure should, in the first instance, be made directly downwards. When there are no symptoms of inflammation in the tumor, and when it gives little or no pain when handled, a degree of pressure ought to be kept up for a considerable length of time. Gimbernat says he has succeeded in producing the reduction of the protruded viscera, by continuing the pressure for upwards of an hour †. These attempts at reduction are not attended with any bad consequence, when made previous to the appearance of inflammation ; but whenever this has commenced, all such attempts ought to be made in the most gentle manner, and must not be persisted in ;
 otherwise,

* Gimbernat, p. 41.

† Ibid. p. 42.

otherwise, by increasing the inflammation, we shall hasten its progress towards gangrene.

When we succeed in the reduction in the early stages of strangulation, the patient is suddenly relieved, the symptoms disappear, and there is generally in a few hours a free discharge of fæces. But in some of those cases in which a degree of inflammation has taken place, the symptoms continue to increase after the reduction, and the bowels remain constipated; in these cases, purgatives must be given to procure a free evacuation of the bowels, and if there is much pain in the abdomen, with a small frequent pulse, blood-letting, (unless there are particular circumstances which contra-indicate its use), should be had recourse to; the quantity of blood to be drawn depending on the habit of body of the patient and the violence of the symptoms.

If the first attempts at reduction prove unsuccessful, immediate recourse should be had to *Blood-letting*, which is in many cases useful, by the general relaxation which it induces. The patient should be bled in an upright posture, and from a large orifice, to encourage fainting. The attempts

attempts at reduction should now be repeated; and they sometimes prove successful after a quantity of blood has been drawn, in cases where they had failed before. Even if the reduction should not be effected by the blood-letting, it is of great use in allaying the inflammation, and retarding its progress towards gangrene. We are not to be deterred from the use of the lancet by coldness of the patient's extremities, nor by smallness of his pulse, as this state of the pulse is induced by inflammation of the intestine arising from any other cause.

The *warm bath* has been much used in strangulated hernia, from the general relaxation which it induces. It may prove useful, in those cases of scrotal or inguinal hernia, in which the stricture is formed by a spasmodic contraction of the muscular fibres situated at the internal abdominal ring; but in Crural Hernia it does not promise to be of the same advantage, as the stricture cannot in this species, from the situation of the hernial sac, depend on muscular contraction.

Purgative medicines have been found useful, in procuring the reduction of the protruded intestine,
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in cases of large herniæ, in which the symptoms of strangulation depended on an accumulation of fæces. In recent cases, they are sometimes used with advantage, in the very early stages of strangulation, previous to the occurrence of inflammation. But whenever inflammation has commenced, purgatives are very hurtful, and add much to the distress of the patient, by increasing the frequency and the severity of the vomiting. The late Dr Monro says, “ I have many times made a rupture reduce, by giving powder of the jallap root and sweet mercury, when neither hands nor emollients did any good *.” When purgative medicines are to be employed, they are to be given along with an opiate, which renders them less likely to be rejected by vomiting.

Purgative injections are less powerful in procuring the reduction of the protruded viscera than purgatives given by the mouth; but they may be used with safety in all stages of the disease.

Injections of an infusion of *tobacco* in water have been very much recommended of late years; they induce nausea, cold sweat, and great general relaxation,

* Medical Essays and Observations, vol. v. p. 283.

relaxation, during which the viscera have in some cases been returned into the abdomen. They ought to be employed in the early stages of the disease only; in its later stages they may prove hurtful, by delaying the operation, on the speedy performance of which the patient's life in many cases depends, as he is left, for some time after their administration, in a very unfit state to undergo an operation.

Opium, which is so useful in procuring the reduction of the viscera in inguinal or scrotal hernia depending on spasm, may be employed with great advantage in Crural Hernia, to allay the vomiting and hiccup, which are so distressing to the patient.

Of the various local remedies which have at different times been recommended for the cure of strangulated hernia, the application of *cold* seems at present to be most frequently employed. It is applied in the form of ice or snow to the tumor. These should be used in the early stages of the disease only, and should not be applied for any considerable length of time, as all the good effects which can be expected from them may be had in a
very

very short time, and their continuance is attended with danger, as they have been found in a few hours to freeze the integuments, and thus to induce inflammation and gangrene.

Dashing *cold water* on the patient's abdomen is another method of applying cold, which has been frequently employed, and which is said to have sometimes proved successful. It appears to me a much safer practice than the application of ice or snow to the tumor.

These are the principal remedies which have been employed to procure the reduction of strangulated hernia. Unfortunately they are not often successful in *Crural Hernia*; because in this species, when strangulation has taken place, the stricture is in the greater number of cases so tight, that it can only be removed by an operation.

This operation should be had recourse to as soon as the other means have had a fair trial. It is seldom of use, unless performed early; for the inflammation of the intestine in general runs very quickly on to gangrene. The time from the occurrence of strangulation, at which gangrene com-

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mences,

mences, is extremely uncertain, depending on the degree of stricture, the habit of body of the patient, and the kind of treatment which has been had recourse to. In some cases the protruded intestine has become gangrenous in the course of one day from its first expulsion*.

Though the operation should always be had recourse to early, no period of the disease is too late for its performance. Even when gangrene has taken place, by procuring a free discharge of fæces from the wound, we give the patient a chance of life, by the formation of an artificial anus.

OPERATION FOR CRURAL HERNIA.

THE patient having evacuated the contents of the bladder, and being placed in a proper position, an incision is to be made through the integuments, from a little above Poupart's ligament to the lower part of the tumor. If any blood-vessel is divided by this incision, it ought to be secured before proceeding further.

The

* Bell's System of Surgery.

The integuments being divided, when the hernial sac is small, it is necessary to divide the external loose fascia, the fascia lata, and the fascia forming the sheath of the femoral vessels, in order to expose the sac. These should be divided, with the help of a director, from the crural arch downwards to the bottom of the sac. In cutting the external fascia, care must be taken to avoid wounding the lymphatic glands contained between its laminae; and in laying open the sheath of the vessels, we must take care not to divide the saphena major vein. In those cases in which the hernial sac is of a larger size, and has forced its way through the fasciæ, the under part of the sac is exposed by the incision through the integuments; it is then necessary to divide the fasciæ covering its upper part. The hernial sac being exposed in its whole extent, an opening is to be cautiously made into its lower part, by pinching it up from the contained viscera with the finger and thumb, and cutting horizontally, unless there is too great tension to allow of our doing this: if this is the case, an opening must be very cautiously made by repeated scratches of the knife. In the greater number of cases, as soon as the knife has penetrated into the cavity of the sac, a small quantity of serum rushes out. Into the

opening the finger is to be introduced, and on it the division of the sac is to be continued in its whole extent *.

If the protruded viscera are in a sound state, an attempt should now be made to return them into the cavity of the abdomen, which can be done in those cases in which the stricture is formed by the fasciæ covering the sac, as this is removed when they are divided as high up as Poupart's ligament. “ Souvent il n'est pas nécessaire de faire l'incision
“ du *ligament*, parceque le plus ordinairement les
“ *Hernies Crurales* sont fort petites, soit qu'elles
“ soient faites d'intestin ou d'epiploon, et qu'elles
“ se réduisent assez facilement, lorsque l'on a coupé
“ les *fibres* transversales qui se détachent du *facia-*
“ *lata*, ou lorsque le *sac* est ouvert †.”

If

* It was proposed by Petit, in operating for strangulated hernia, in some cases to leave the sac unopened. But surgeons are now very generally of opinion, that the safest practice is in all cases to open the sac. See Petit, *Traité des Maladies Chirurgicales*, tom. ii. p. 370. *Medical Essays and Observations*, vol. v. p. 285. *Observations on Crural Hernia* by Dr Monro jun.

† Gunzius. See Arnaud, *Memoires de Chirurgie*, tom. ii, p. 775.

If the reduction cannot be accomplished after the hernial sac has been opened, the stricture, which will in general be found to be formed by the crural arch, must be removed. This part of the operation, from the situation of the hernial sac with respect to the neighbouring blood-vessels, is attended with a considerable degree of danger. While the stricture was supposed to be formed by the *outer edge* of the crural arch, denominated Poupart's ligament, it was hardly possible to remove it with a cutting instrument without injuring some blood-vessel, as an incision made into that ligament *upwards and outwards* divides the epigastric artery, while if made *directly upwards*, or *upwards and inwards*, it divides the spermatic vessels in the male, and the round ligament of the uterus, with its accompanying artery, in the female.

Aware of these dangers, different methods have been proposed by different authors, of cutting Poupart's ligament without dividing any of the vessels *. All these, however, are not only far from being free from the danger which they were intended to obviate, but are now found to be un-

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necessary,

* Bell's System of Surgery. Monro, on the Bursæ Mucosæ.

necessary, as the stricture is not formed by Poupart's ligament.

Arnaud, with a view to avoid the danger of making an incision into Poupart's ligament, proposed, by means of a blunt hook introduced under that ligament, to raise it up, and thus to dilate the passage through which the viscera protrude. In this way, he says, he has been able to remove the stricture. But as the stricture is formed, not by Poupart's ligament, but by the *internal edge* of the crural arch, the blunt hook of Arnaud ought to be introduced under it. By stretching this, it is possible that a small degree of dilatation of the crural ring may be produced, and that thus the viscera may be returned into the abdomen. As this method of using the tenaculum of Arnaud is attended with no danger, and may in some cases prove successful, it ought to be tried, before proceeding to cut that part of the crural arch which forms the stricture.

The idea of dilating the parts through which the viscera protrude in strangulated hernia, suggested by Arnaud, was followed up by Le Blanc, who invented for that purpose an instrument termed

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ed his Dilator *. But it is evident, that in strangulated Crural Hernia, it would be extremely difficult, if not impossible, to introduce the dilator of Le Blanc into the crural ring ; and if it could be introduced, a degree of force necessary for the dilatation could not be made, without very great danger of injuring either the protruded intestine or the femoral vessels.

Gimbernat, to whom the merit is due of having first pointed out, that the stricture in Femoral Hernia is formed, not by the ligament of Poupart, but by the inner edge of the duplicature of the crural arch, near its insertion into the ramus of the pubis, proposed that this part should be divided in the following manner. “ Introduce, along
 “ the internal side of the intestine, a canulated or
 “ grooved sound, with a blunt end, and a chan-
 “ nel of sufficient depth. This is to be directed
 “ obliquely inwards, till it enter the crural ring,
 “ which will be known by the increased resist-
 “ ance ; as also when its point rests upon the
 “ branch of the os pubis. Then suspend the in-
 “ troduction ; and keeping the sound (with your
 “ left hand, if you are operating on the right side,

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“ and

* Le Blanc's Operations of Surgery.

“ and *v. v.*) firmly resting upon the branch of the
 “ os pubis, so that its back shall be turned to-
 “ wards the intestine, and its canal to the sym-
 “ physis pubis, introduce gently with your other
 “ hand into the groove of the sound, a bistoury
 “ with a narrow blade and blunt end, till it en-
 “ ter the ring: its entry will be known, as be-
 “ fore, by a little increase of resistance. Cau-
 “ tiously press the bistoury to the end of the ca-
 “ nal; and employing your two hands at once,
 “ carry both instruments close along the branch
 “ to the body of the pubis, drawing them out at
 “ the same time. By this easy operation, you
 “ will divide the internal edge of the crural arch
 “ at its extremity, and within four or five lines of
 “ its duplicature, the remainder continuing firmly
 “ attached by the inferior band or pillar, of which
 “ it is the continuation. This simple incision be-
 “ ing thus made without the smallest danger, the
 “ internal border of the arch, which forms the
 “ strangulation, will be considerably relaxed, and
 “ the parts will be reduced with the greatest ease.

“ By this new method, the operation for the
 “ Crural Hernia, which the most celebrated sur-
 “ geons have justly accounted extremely danger-
 “ ous,

“ ous, is rendered the most simple and safe of
 “ all that are practised in cases of strangulated
 “ hernia.

“ The Fallopian ligament is not at all concerned
 “ in this operation; neither can the spermatic cord
 “ or spermatic artery, much less the epigastric, be
 “ divided; for all these parts are left at the shoul-
 “ ders of the sound, and far remote from the edge
 “ of the bistoury. The same may be said of the
 “ obturatrix artery, when it arises from the great
 “ secondary external iliac, though it passes over
 “ the branch of the pubis in its way to the fora-
 “ men obturator *.”

This method of operating possesses many advantages over those which had been proposed previous to the publication of Gimbernat's essay, as by it the fibres which are the cause of the strangulation, and these only, are divided, without the least risk of injuring either the spermatic vessels or epigastric artery. In ordinary cases of Crural Hernia, therefore, this operation would be, as Gimbernat asserts, *free from all danger.*

To

* Gimbernat, p. 45.

To Mr Thomson we are indebted for having first pointed out a danger to which this operation is liable. He demonstrated, that in those cases in which the obturator artery runs round the neck of the hernial sac, the operation of Gimbernat must divide that artery*.

Gimbernat, though aware of the origin of the obturator artery from the external iliac, was not acquainted with the course which it follows when the trunk common to the epigastric and it is long; otherwise he could not have said that it cannot be divided in his operation, because it is left at the shoulders of the sound, far remote from the edge of the bistoury.

As the division of the obturator artery would, from its size, prove equally fatal with that of the epigastric, and as it is impossible to ascertain, previous to the removal of the stricture, what course it takes, the operation of Gimbernat must therefore be laid aside.

Mr Hey of Leeds, in his very valuable Observations in Surgery, has proposed an operation for
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* Thomson's Surgical Lectures.

the removal of the stricture in Crural Hernia, somewhat different from that of Gimbernat.

His method of dividing the part forming the stricture, which he denominates the *Femoral Ligament*, but which, from his description *, appears to be the internal edge of the crural arch, now denominated Gimbernat's Ligament, he describes in the following words. " The stricture made upon
 " the prolapsed parts is very great, as I have al-
 " ready observed ; but if the tip of the finger can
 " be introduced within the femoral ring, to guide
 " the bubonocèle knife, a small incision (for the
 " ring is narrow) will be sufficient to set the parts
 " at liberty. If the tip of the finger cannot be
 " introduced at the proper place, a director with
 " a deep groove must be used instead of the fin-
 " ger ; but I prefer the latter. The finger or
 " director should not be introduced very near the
 " great vessels, but on that side of the intestine or
 " omentum which is nearest to the symphysis of
 " the ossa pubis. The incision may then be made
 " directly upwards †."

He

* Practical Observations in Surgery, by William Hey, Esq; F. R. S. p. 151.

† Ibid. p. 155.

He adds, “ It is much more easy to divide the
 “ *abdominal* (Poupart’s) than the *femoral* liga-
 “ ment; but it is the division of the latter only
 “ that will set the prolapsed parts at liberty *.”

In this operation, Mr Hey seems to divide the same part that Gimbernat recommends to be divided, but in a somewhat different direction. This method is equally free from the danger of wounding either the spermatic vessels or epigastric artery with that of Gimbernat, provided care is taken that the incision does not extend higher than Poupart’s ligament; but it is equally liable to the danger of dividing the obturator artery in those cases in which it surrounds the neck of the hernial sac.

Mr Thomson, in reflecting on the danger of wounding the obturator artery with which these two methods of operating is attended, was led to propose another, with a view to avoid that danger; but a similar method, as he afterwards found, had been recommended by the late Mr Elfe and by Mr Cline, though with a different view. By them it was proposed, merely to avoid wounding the epigastric artery in dividing Poupart’s ligament. This operation is to be performed in the following

* P. 156.

following manner. A small opening is to be made in the parallel fibres of the tendon of the external oblique muscle, immediately above Poupart's ligament, by separating these by very slight scratches of the knife. Into the opening, the point of a curved grooved director is to be introduced, which is to be passed downwards, so as to be brought out at the crural ring. Great care must be taken, in passing the director, to keep its point closely pressed to the fibres of the crural arch, to prevent its getting behind the obturator artery when it happens to surround the hernial sac. The director will then lie immediately behind the ligament of Gimbernat, which may be divided on it, without the risk of wounding any blood-vessel *.

The only other method of dividing the ligament of Gimbernat which has, as far as I know, been proposed with the view of avoiding the obturator artery, is the following. The hernial sac being laid open, a curved grooved director is to be introduced into the crural ring, and directed inwards to the symphysis pubis, as recommended by Gimbernat, but on the *outside* of the hernial sac : care must be taken

* The operation has been performed successfully in this way, in two cases in the Royal Infirmary, by Mr Law.

taken, in introducing the director, to keep its point closely pressed to the ligament of Gimbernat; on it a few of the fibres forming that ligament are to be divided *. The division of a very few fibres will generally be sufficient to allow of the return of the prolapsed parts. This operation differs from that of Gimbernat, in the director being passed on the *outside* of the hernial sac. By this means the director lies between the ligament of Gimbernat and the obturator artery, which will therefore be completely removed from the edge of the knife. One objection to this method of operating is, that in cases in which inflammation has taken place previous to the performance of the operation, the hernial sac is apt to adhere to the crural ring; so that in such it would be impossible to pass a director between them.

Gimbernat's ligament being divided by one of these two last-mentioned operations, the stricture will, in the greater number of cases, be removed. But in those rare cases in which the stricture is formed by the neck of the sac, it will not be possible to return the protruded viscera till this is dilated.

* Cooper's Lectures on Surgery. Thomson's Lectures on Surgery.

lated. An attempt should be made to dilate the neck of the sac by means of the finger ; but if this fails, recourse must be had to the knife. The incision must be made in a direction towards the symphysis pubis, after the sac has been pulled out a little from the cavity of the abdomen, and after we have ascertained by the feel the course of the obturator artery, which is to be cautiously avoided.

The protruded viscera are now to be carefully examined, and, if found in a sound state, and free from adhesions, are to be immediately returned into the cavity of the abdomen. In returning the intestine, it must be very gently handled ; and that part is to be returned first which has been last protruded. The intestine is generally found of a dark colour ; but this should not prevent its return, provided its structure is entire.

In cases in which the viscera have remained long out of the abdomen, and in those in which a considerable degree of inflammation has taken place previous to the performance of the operation, adhesions are frequently found of the protruded viscera, either to each other or to the hernial sac.

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The adhesions, when recent, are of a soft gelatinous nature, being formed of effused coagulable lymph. But when they have existed for some time, they are organized, of a firm consistence, and very similar to those adhesions which so frequently take place between the pleura costalis and pleura pulmonalis; in some cases they are filamentous, in others membranous.

Whenever the adhesions are slight, the adhering parts ought to be separated with the finger; but in the most gentle manner, lest the intestine should be torn. When the viscera have formed an attachment to each other, or to the sac by filaments, these filaments may be safely divided with the knife.

When there is a membranous adhesion between a portion of intestine and the hernial sac, or the omentum, these should be separated, as we can use freedom in cutting away a part either of the sac or omentum. But when two folds of intestine adhere closely and firmly, it is better to return them into the abdomen in their adhering state, than run the risk of wounding them by the separation.

When

When the omentum is found in a gangrenous state, all the dead part is to be removed, which is to be done with the knife. Hæmorrhage seldom takes place. If one or more arteries should bleed, they are to be secured by ligatures. But a ligature should never be applied to a portion of omentum, with a view to remove it by obstructing the circulation of the blood, as it is apt to induce nausea, vomiting, and other violent symptoms *.

When the intestines are found in a gangrenous state, the patient is in a very dangerous condition; but he ought by no means to be given up by the surgeon, as there are many cases on record of patients recovering even after the removal of a considerable portion of intestine by sphacelation.

The treatment of gangrenous intestines varies according to the extent of the gangrene. If only a portion of the cylinder of the intestinal tube be removed, the intestine is to be returned into the abdomen; but that portion in which the gangrene

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exists

* Pott on Ruptures.

exists is to be secured by stitches passed through the intestine and mouth of the hernial sac, near to the external wound, that the fæces may be discharged by it. In some cases of this kind the patient has survived, and an artificial anus has been formed at the wound, by which the fæces have continued to be discharged during life; while in others they have passed by the wound for some time, but have gradually resumed their natural course, and a complete cure has been effected*.

When the whole cylinder of the intestine is in a gangrenous state, all the dead portion is to be removed; the intestine is to be returned into the abdomen, but its divided edges are to be retained near each other and the external wound, by ligatures passed through the mesentery and mouth of the sac. This is a practice which has in many cases proved successful.

Mr Cooper of London has recommended, that an attempt should be made to procure reunion of the divided edges of the intestine. The practice
which

* Medical Essays, Gooch's Cases in Surgery, &c. &c.

which he has recommended he was led to adopt, from the successful result of some very interesting experiments made on animals by Mr Thomson and himself *. “ The practice, therefore, (says Mr Cooper) which ought to be followed in an intestine divided by mortification, is to cut off its mortified extremities, and then to pass four stitches through them, one at the mesentery, and the three others at equal distances round the intestine. Then returning it to the mouth of the hernial sac, which should be opened higher up than usual, it must be there firmly confined, by a ligature being passed through the mesentery, in the manner already directed. If stools pass the ligatures, and the patient goes on well, the ligatures may remain until they are thrown off by ulceration ; but if there are no stools, and the patient suffers from a distended abdomen, three of the stitches should be cut away, leaving that which attaches the intestine to the hernial sac, as well as that which joins its edges at the mesentery. The fæces can then readily escape at the external wound ; and as granulations arise and the wound heals, the

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“ mouths

* See Cooper on Hernia.

“ mouths of the divided intestine will become
 “ united, so that the fæces will take their natural
 “ course *.”

When the operation is completed, if the viscera have been returned into the abdomen in a sound state, the lips of the wound, being cleared of blood, are to be brought together, and retained by slips of adhesive plaster, and a compress and bandage are to be applied.

In general, the patient feels great relief after the operation, and he has, in a few hours, a free discharge of fæces. If this should not soon take place, mild laxatives and purging injections should be administered.

When the intestines have been in a state of inflammation at the time they were returned into the cavity of the abdomen, it is apt to continue, and has, in many cases, proved fatal. Whenever, therefore, the patient, after the operation, complains of severe pain in the abdomen, which is not removed by purgative medicines, particularly if the pulse is small and hard, blood-letting, unless
 it

* Cooper, p. 36.

it is contra-indicated, should be had recourse to, and should be repeated, in proportion to the strength of the patient and the severity of the symptoms.

From the irritable state of the stomach and bowels, in some cases vomiting, in others diarrhœa, comes on after the operation. These are to be removed by the exhibition of opium.

Having brought this Essay to a conclusion, it only remains for me to acknowledge how much I am indebted to Mr Thomson, Professor of Surgery to the Royal College of Surgeons of Edinburgh, for the information which I have received on the subject, not only from his valuable Lectures, but also from his very accurate dissections of the parts concerned in the disease, which he was so kind as to allow me to witness.

FINIS.

