ORIGINAl COMMUNICATIONS.

THE RADICAL CURE OF FEMORAL HERNIA.

By William H. Battle, F.R.C.S., Surgeon to St. Thomas's Hospital, London.

The methods employed, or which have been invented, with the object of effecting a radical cure in femoral hernia, are not only very numerous, but extremely diversified. The ingenuity of the authors of these methods is an expression of the surgical activity of the day, but it also forms a comment on the want of success experienced by those who have to deal with these cases in any numbers. It is now several years (1899) since I performed an operation which, so far as I was aware, differed in principle from others which preceded it, and in my own opinion offered a prospect of success greater than that obtained by any of the methods then advocated or practised in this country. It is due to the profession that the author of any new surgical procedure shall justify it, when experience warrants this, or, on the other hand, show reason why it has failed to effect the good result foreshadowed at its inception. The methods which have been employed are, as I have said, numerous, and it would not be of very great benefit to anyone if I were to give them all in detail, but some reference is required, however brief, to the principal ones.

In all it is important to close the neck of the sack (shutting off the peritoneal cavity), and reduce this again into the abdomen after clearing it out of the canal. This is not sufficient, however, to ensure a radical cure in a femoral any more than it is in an inguinal hernia: it renders the peritoneum more or less flush on the abdominal aspect, but does not prevent the formation and descent of another sac, if no means are taken to close the passage through which it had come. The original cause of the hernia is not the formation of a peritoneal pouch, that is secondary to other things. I think that far too much has been made of the method of treatment of the hernial sac in suggestions for radical cure, so that occasionally too little attention has been given to the management of the fibrous structures which surround the canal in cases of femoral hernia. If the sac be pulled down and ligatured as high up as possible, there will be no depression left on the abdominal surface when it returns to its proper position.

After the somewhat varied treatment of the sac (which we may omit), many methods have been invented to close the femoral ring or canal.

(A) By Means of Sutures.—1. Wood.—Probably one of the first of them was the method of John Wood. "A curved needle in a handle is forced through the pubic portion of the fascia lata,
just internally to the femoral vein, which is carefully protected by the finger. The point of the needle is then carried upwards and forwards, across the crural canal, and is made to penetrate Poupart's ligament, and then brought out at the upper end of the wound. It is then threaded and withdrawn. Having been freed from the ligature, the needle is then passed again through the pubic portion of the fascia lata in a direction inwards and forwards so as to skirt the border of Gimbernat's ligament, and again penetrate Poupart's ligament and appear in the wound. The upper end of the ligature is next passed through the eye of the needle, which is then withdrawn. The two ends are then tied firmly in a reef knot. The result is to close the ring by the approximation of the inner end of Poupart's ligament to the pubic portion of the fascia lata."

2. Bassini.—Here interrupted sutures are passed, the first three through Poupart's ligament and the pectineal fascia. These are left untied until three or four more have been passed to unite the falciform ligament to the pectineal fascia, the lowermost being put close in to the saphena vein.

3. Lockwood.—In this operation the sutures are passed through Cooper's ligament, commencing to the outer edge of Gimbernat's ligament, taking up some of the pectineal fascia. The outer suture lies at the inner edge of the common femoral vein. Two to five sutures will be required. The upper ends of the sutures are passed through Hey's ligament close to its junction with Poupart's ligament, and then tied.

4. Kocher.—Here the inner part of Poupart's ligament is stitched to Cooper's ligament and the pectineal fascia and muscle. De Gamo's method of operation after closure of the sac is hardly to be told from this.

5. Cushing, Curtis, Coley.—The purse-string method, as this is called, differs in principle very little from that of John Wood, as described above, with the exception that a kangaroo tendon suture is used, and it is passed through the fibrous septum to inner side of vein. "This stitch is introduced through Poupart's ligament near its inner end, then through the pectineus fascia and muscle, the fibrous septum of the femoral sheath, internal to the femoral vein, and afterwards through Poupart's ligament about a quarter of an inch from the point of entry. This suture can be passed more safely in the opposite direction, the femoral vein being more easily avoided." ¹

6. Nicoll.—The sac being treated in a special manner, an incision is made from the femoral vein to Gimbernat's ligament through the pectineal fascia and periosteam just below the ilio pectineal line, exposing the horizontal ramus of the pubis. Two drill holes are now made in the bone, one near Gimbernat's ligament, and the other near the femoral vein; they are about ⅘ in. apart. A

¹ Jacobson's "Operations of Surgery."
A stout loop of catgut is passed through one of the apertures from before backwards by means of a silver probe with an eye very near its extremity, the loop is divided and the probe withdrawn. The posterior ends of the sutures are passed as mattress sutures through Poupart’s ligament at different levels by means of a curved surgical needle. The ends are then drawn forwards through the second aperture in the bone with the aid of the pliable probe. The stitches are tied. The pectineus muscle and fascia which form the lower lip of the wound made to expose the bone, are joined to Poupart’s ligament by catgut sutures.

Care has to be taken to avoid wounds of deep epigastric artery and the cord, whilst no compression of the vein should be possible when the deep stitches are tied. Professor Nicoll claims that it is less severe than Roux’s operation, that the amount of closure can be better regulated, and that the risks of complications arising later are much less. It must, however, be very difficult in a patient of any stoutness.

The objection to sutures only in the closure of the femoral ring is that the fibrous walls by which it is surrounded are ill adapted to retain their enforced position when the holding power of the sutures has diminished through absorption. In cases where the hernia is of recent standing, more especially in young subjects, our aim can be obtained in this way. Where the ring is large, and has been dilated for a long time, the structures are stiffened and less yielding, and the pull of Poupart’s ligament in body movements, in coughing, vomiting, etc., more insistent. Moreover, in old-standing cases, the pectineal fascia is often fatty and atrophied, whilst the ligament of Cooper is also smaller and less dependable than usual as a result of the pressure of the hernial swelling.

(B) THE USE OF FLAPS TO CLOSE THE CANAL.—The formation of a flap from the pectineal fascia and its implantation into the femoral ring was practised by Salzer. This fascia is often fatty, thin, and of little strength. The formation of a flap from the pectineus muscle and the fascia covering it, and its implantation in the canal, was advocated by Watson Cheyne. The muscle flap occasionally atrophies, leaving an opening larger than before the operation.

(C) THE FORMATION OF A CICATRICIAL BLOCK. —I do not know that any one has recommended this method as a routine procedure, it is only to be employed in urgent and special cases. It consists in division of the anterior wall of the canal including Poupart’s ligament, directly upwards into the abdominal wall as high as may be necessary to permit of the reduction of a large irreducible hernia, or to allow the surgeon to adequately deal with a gangrenous piece of gut. On the conclusion of the operation the divided structures are carefully sutured to the posterior wall of the canal, including Cooper’s ligament and the fascia over the
pectineus, so that the canal may be obliterated by the formation of a dense cicatricial mass. I have used this incision and method on occasions, the result has been good after some years, but I have not had a favourable report of it from other surgeons. It is essentially an emergency operation.

\(D\) The Use of a Foreign Substance.—Roux.—After treatment of the sac, a metal staple is driven through Poupart’s ligament and the femoral canal into the horizontal ramus of the pubis, thus closing the canal high up. The staple must not be hammered in too tightly. Crawford Renton has spoken well of this method, which in his hands and those of Professor Roux has given good results. It has been suggested against it that the staple may act as a foreign body, the bone may be injured and necrose; the femoral vessels may be damaged, or the staple may cause pain. There is no doubt that its insertion would not be easy in a stout patient.

\(E\) Closure of the Canal at the Upper End.—There can be very little doubt that a closure of the canal at the upper end gives a promise of greater success in the radical cure of femoral hernia than any amount of suturing below. Better access is obtained to the neck of the sac of which a higher ligature is possible, unless it is well pulled down in the ordinary operation. This is, however, but a small matter, for it is unlikely that the ligatured point corresponds afterwards accurately with the upper end of the canal.

In 1898, Lotheissen described the following operation:—An incision is made half an inch above and parallel to the inner half of Poupart’s ligament, separating the fibres of the external oblique aponeurosis. The edges of this incision are retracted, and the neck of the sac exposed and isolated just above the femoral ring and below the margin of the internal oblique and conjoined tendon. The sac is pulled up when possible and a ligature applied high up. The lower margins of the internal oblique and transversalis are then sutured to Cooper’s ligament by means of chronicised catgut or kangaroo tendon. About four are required; the innermost being placed close to Gimbernat’s ligament, the outermost against the vein. The wound in the external oblique is closed by a continuous catgut suture.

Jacobson and Rowlands in recommending this operation state that they afterwards close the saphenous opening, and regard a vertical incision as better than a horizontal one.

R. H. Parry, in 1901, introduced a similar operation, in which the conjoined tendon and transversalis fascia are sutured to Cooper’s ligament and to the pectineal fascia, and then two or three sutures are used to connect the conjoined tendon to Poupart’s ligament.

Cantas, in 1906, recommended rather an elaborate operation. In this, through a transverse incision, Gimbernat’s ligament is cut across and the sac treated. The aponeurosis of external oblique
is incised parallel to and a little above Poupart's ligament. The pectineus muscle is detached from the pubis. The inner part of Poupart's ligament is fixed by sutures to the horizontal branch of os pubis, and through the orifice in the external oblique the detached margin of the pectineus is passed, and fixed by sutures to the margins of internal oblique and transversalis and conjoined tendon. The upper margin of the opening in the external oblique is brought down over the pectineus and sutured to the fascia in front of the thigh.

In 1899 the following operation was devised and first performed:—After a thorough cleansing of the parts, a vertical incision is made over the sac and portion of abdominal wall adjoining it, directly over the line of the femoral canal. The sac is exposed, isolated, opened, and its interior examined. Any contents are reduced if possible, adherent or diseased omentum ligatured and removed. After the sac has been emptied it is freed from its bed, and the neck drawn down and ligatured as high as possible with a silk ligature. The body of the sac is cut off below, and the ligature left uncut for a time. The upper end of the incision has exposed the aponeurosis of the external oblique, and by the use of a retractor the external ring is easily defined. Fatty tissue is cleared away from the surface of the aponeurosis, and an incision made outwards and somewhat upwards from the middle of this ring for a varying distance, probably an inch and a half on the average. By this means there are two aponeurotic flaps formed, upper and lower, and the object of the operation is to glide the upper behind the lower and secure it to the posterior part of the femoral ring, so that the strong aponeurotic shutter thus formed may cover the upper end of the canal and receive the weight of any structure attempting to pass through the canal.

The external pillar of the ring with the portion of aponeurosis attached to it (lower flap) is now separated from the contents of the inguinal canal, so that the part of Poupart's ligament which crosses the canal is well exposed to the view of the operator. If the transversalis fascia about Poupart's ligament is thin, a pair of artery forceps is passed through it from the femoral canal and opened immediately above the ligament. If the fascia is better
developed it may be necessary to incise it; this should be done with some care, otherwise a vessel in the underlying neck of the sac may be wounded above the ligature and cause a little trouble. Through the opening thus made the neck of the sac is drawn by means of the ligature, which was purposely left long. The femoral canal is now free and the neck of the sac entirely intra-abdominal. The ligature is cut off close to the knot. A silk suture is then passed through the pectineal fascia (and Cooper's ligament in most cases) through the femoral canal and the opening in the fascia above Poupart's ligament; it then passes through the lower edge of the upper flap at a point which corresponds to the centre of the canal, and is carried back through the canal, when the needle is removed and a pair of forceps placed on the two ends of the ligature. A second suture of the same material is passed to the inner side of the first from above through Gimbernat's ligament and the inner part of the flap of the aponeurosis. A third is placed to the outer side about half an inch from the central one, and unites that part of the flap to Poupart's ligament. The outer and inner of these are tied and afterwards the central one. The aponeurotic shutter easily glides into its new position. As a rule, only one suture is required to attach it to the pectineal fascia, but occasionally two are required, according to the size of the opening. By this means a shutter, or flap, of great strength is placed below the ligatured neck, and across the upper end of the femoral canal; it is, moreover, composed of living tissue which will not atrophy from pressure or die from want of nourishment.

As it is obvious that this shutter, forming part of the abdominal wall as it does, would have a great strain thrown on its new attachments should vomiting occur after the anaesthetic, or the patient be troubled with a cough, provision is made against this by suturing the free margin of the aponeurosis composing the lower flap to the surface of the external oblique in such a manner that the
underneath portion (now the shutter), which closes the femoral canal, is in a relaxed condition. By this simple device any pull on the parts is transferred directly to Poupart’s ligament, and does not affect the flap. The external wall of the inguinal canal is doubled in thickness throughout most of its extent, and the external ring diminished in size. Sometimes a couple of sutures are placed between the pectineal fascia and Poupart’s (including Hey’s) ligament, thus further closing the canal. The superficial wound is closed without drainage.

My notes show that I have now performed this method of radical cure in some eighty-one instances—fourteen male, sixty-seven female. In seven the operation was performed on both sides at the same sitting. Of the total number there were forty-three on the right and thirty-eight on the left side. The youngest patient was under 20 years of age, whilst the oldest was 78. The duration of the hernia varied from a few days to over thirty years. The clinical character of the hernia was as follows: reducible, forty-three; irreducible, thirty-four; strangulated, four.

The condition of the sac varied considerably; in most it was thickened, whilst in several it was very fatty. In one the peritoneal surfaces of the sac were irregularly adherent; in seven there was a definite hydrocele of the sac. In seventeen a portion of the omentum required excision. In three instances the case was complicated with inguinal hernia, operation for which was also performed at the same time. In one the operation of removal of the appendix was carried out at the same sitting, whilst in two others the appendix had been previously removed. In one, operation had been performed for femoral hernia on the other side. One patient was suffering from cardiac disease, a second had albuminuria, a third myxœdema, and a fourth acromegaly.

As regards the immediate result of the operation, in only five instances did any suppuration ensue in the course of the after-treatment, one was in a very stout patient with double operation, another was the subject of myxœdema, as well as considerable adipose deposit. There are no other complications to report. There were no deaths.

As regards the ultimate result it is difficult to speak definitely, for I have not been able to keep in touch with all of the patients.
So far as I can trace them, no recurrence has been found. Some are doing hard labouring work, and present a firm, healthy scar years after operation.

It has been urged against this operation, "but it is somewhat difficult to bring the tendinous external oblique down to the pectineal fascia, and to retain it there without undue tension." ¹

This statement is not quite accurate; theoretically it should be difficult, but practically it is not so, for the aponeurosis of the external oblique glides quite easily to a much greater distance than the point to which it is sutured in this operation. This must be known to any one performing the operation of radical cure of inguinal hernia at all frequently. There is no drag on the portion which forms the shutter; in the first place, it is held down by the sutures which pass through Gimbernat's ligament internally and Poupart's ligament externally; in the second place, it is kept quite lax and without any pull on the suture or sutures uniting it to the posterior boundary of the femoral canal, by the stitches which pass between the aponeurosis above and the upper margin of the lower flap. The object is to interpose a healthy living barrier to the descent of any hernia, one which is adequate from its strength at every age, and never undergoes fatty degeneration. It constitutes practically a sling of indestructible material, which does not depend upon the deep stitches to do more than secure its adhesion behind the ring, pressure being received by the curtain itself, not by the suture line. I have not found it difficult to perform this operation on stout patients, and the fact that the aponeurosis is not liable to degeneration such as is found in so many of the subjects of this hernia in the muscular and other structures sutured together in other forms of radical cure, gives it a great initial advantage, which I believe is maintained afterwards.

A METHOD OF OPERATION IN CASES OF MELANOTIC TUMOURS OF THE SKIN.

By J. Hogarth Pringle, F.R.C.S., Surgeon, Glasgow Royal Infirmary.

Melanotic tumours of the skin are comparatively rare. Among a considerable number of neoplasms of the skin that have been under my care, there have only been three cases of melanotic tumour.

This class of tumour is interesting from both the pathological and the clinical aspects. Formerly they were always spoken of as melanotic "sarcomata," but it is probable that many more of them are actually carcinomata than was once thought to be the

¹ Jacobson, "Operations of Surgery," vol. ii. p. 99.