(3) There is no constriction of the ankle or pressure on the malleoli.

(4) The foot is maintained at right angles.

(5) The extension is in the right direction, namely, in line with the limb from below the malleoli.

(6) It can be put in position in two seconds.

THE CURE OF INGUINAL HERNIA.

By Lieutenant-Colonel A. J. HULL.
Royal Army Medical Corps.

The high percentage of men who suffer from inguinal hernia has made the problem of their treatment a serious one during the present War. Trusses appear to be most unsatisfactory when used by soldiers. In my personal experience I have rarely seen a truss controlling the hernia. The truss appears to be worn for choice with the hernia unreduced. It may be stated that we regard an inguinal hernia as a congenital deformity due to the presence of an abnormal process of peritoneum. This defect is combined with a lesser acquired defect, namely, an abnormally long process of omentum, or more rarely mesentery. The

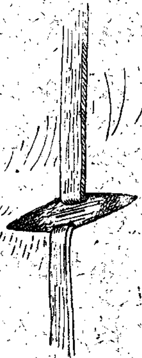

Fig. 1.—An incision about an inch in length has been made, half an inch above Poupart's ligament, over the femoral point. The fibres of the external oblique aponeurosis have been split for a short distance.

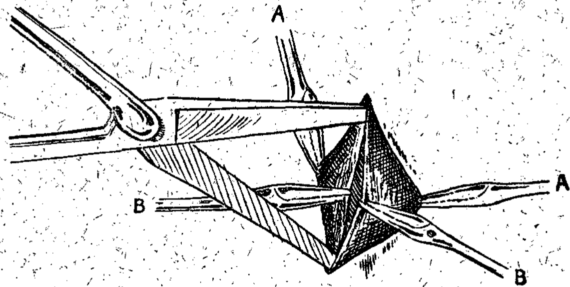

Fig. 2.—The edges of the aperture in the external oblique have been retracted by the forceps, A, exposing the coverings of the spermatic cord. The forceps, B, have been placed upon the aperture in the cremaster, which has been made by inserting the closed points of Mayo's scissors and opening the blades. The spermatic fascia is exposed in the depth of the wound.

treatment indicated appears to be abolition of the abnormal process of peritoneum and removal of the redundant omentum. The choice of an operation which will cure the hernia and render the man fit for service in the shortest possible time becomes desirable. Having had charge of a special department for the cure of hernia, dealing with cases at the rate of about 500 a year, the need for a simple operation giving adequate relief and followed by a rapid convalescence, has been impressed upon me. It occurred to me that much of the trouble following the operation for the radical cure of hernia, and many of the recurrences, were

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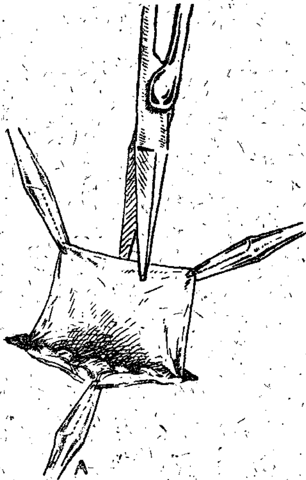

Fig. 3.—After incising the spermatic fascia the sac has been found and drawn out of the wound. The forceps, A, remain on the external oblique during the whole operation.

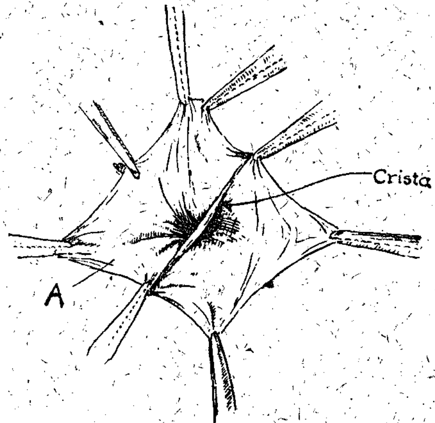

Fig. 4.—The sac has been opened and its aperture retracted by forceps, after having been enlarged by snipping the edges between the forceps. Two apertures are displayed divided by a process of peritoneum. The aperture A leads into the abdomen.

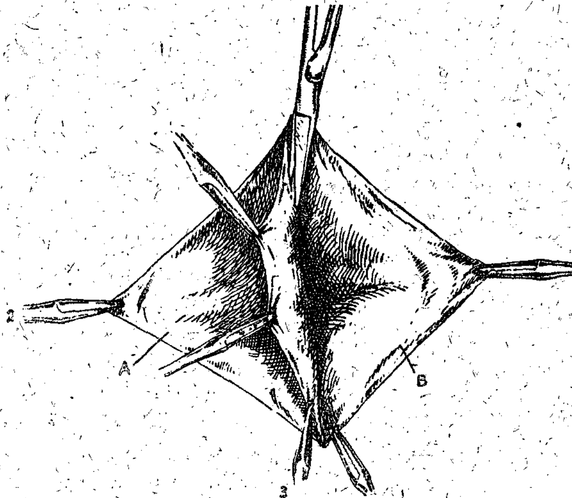

Fig. 5.—Forceps have been placed on the crista; a layer of peritoneum has been picked up on its mesial side and this layer is being cut with scissors. By lifting the forceps 1, 2, 3 the clean neck of the sac will be held ready for ligature, isolated from the remainder of the sac B by this incision.

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due to the well-intentioned but ill-advised efforts of the surgeon to effect repair. Bearing in mind that the success of an operation lies in the simpleness thereof, I evolved the procedure described below. The majority of herniæ occurring in men of military age are amenable to cure by a small operation. The operation described below has been performed as a routine method in all cases. The advantages of this operation as a treatment in the hernia of children will be apparent. The principles borne in mind are to remove the sac at the highest possible level with the minimum disturbance of tissue. The cutting and interference with tissues has been reduced to such a degree, that very rapid convalescence follows, and the reaction associated with hernia operation is obviated. The

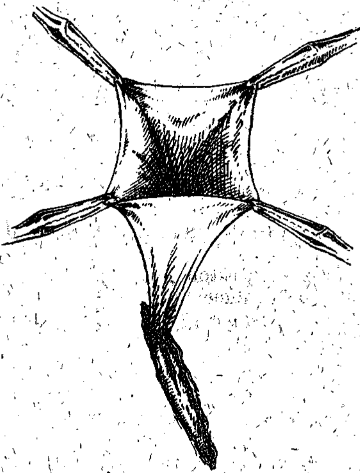

FIG. 6.—The forceps 1, 2, 3 have been raised. The neck of the sac is isolated from the remainder, which has shrunk within the coverings of the cord.

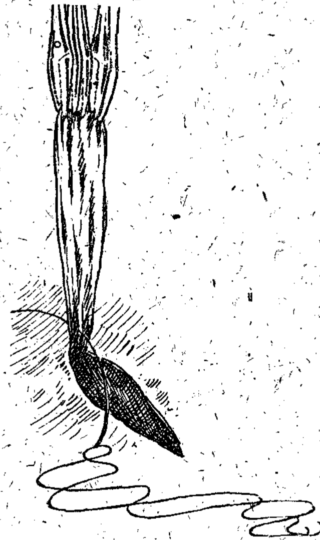

FIG. 7.—Suture of the neck of the sac.

advantages of an operation which reduces the cutting of tissues down to an inch incision in the skin and superficial fascia, and a small incision in the spermatic fascia will be apparent. No dissection of tissues is undertaken, just as Matas in his operation for aneurysm avoided injury and disturbance of surrounding structures by attacking an aneurysm from within the sac, we avoid dissecting cutting, or injuring the delicate or important structures which surround a hernial sac, by attacking the hernia from within the sac.

Without entering on the debatable ground of statistics, I am prepared to state definitely that fewer recurrences occur after this operation than after any other method of which I have experience. In hernia, as in other operations, the results depend largely on the selection of cases, and probably any experienced surgeon could operate upon a number of hernia cases by any method, with only a small percentage of failures if allowed to choose his cases.

The Operation.—We perform this operation under local anæsthesia as a

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routine measure. Local anæsthesia possesses great advantages over general anæsthesia for hernia operations. A half per cent solution of novocain to which a small quantity of adrenalin is added, is used. The needle of the analgesia syringe is entered at a point midway between the anterior superior iliac spine and the spine of pubes ½ inch above Poupart's ligament. The whole anæsthesia is conducted through this puncture without withdrawing the needle. An incision from ½ inch to 1 inch in length is made over the needle puncture and carried down to the aponeurosis of the external oblique. The fibres of the external oblique are split for a distance of ½ inch. The opening in the external oblique should lie directly over the spermatic cord. The cremasteric and spermatic facial coverings of the cord are drawn through the aperture of the external oblique. The cremasteric fibres are separated, and the spermatic fascia incised, the sac is then found lying inside these coverings. Two pairs of fine hæmastatic forceps (Halstead's mosquito forceps) are placed upon the edge of the sac and an incision ½ inch in extent made between them by a snip of a pair of scissors. The two layers of the sac forming the lips of the aperture are now clipped with hæmastatic forceps. The aperture can now be held open by four pairs of forceps and four incisions are made, one between each pair of forceps enlarging the aperture sufficiently to display the interior. If omentum lies in the sac it is drawn out, ligatured, and cut off. The interior of the sac presents for examination two apertures, one, the internal ring passing into the abdomen, the other passing down the inguinal canal. These apertures are separated from one another by a process of peritoneum, the "crista," and in a well-marked case the apertures resemble the muzzle of a double-barrel shot gun. The process of peritoneum called the crista corresponds to the internal margin of the internal ring. Forceps are clipped on to the crista in one or two places. It is now necessary to separate the important tube of peritoneum leading into the abdomen (the neck of the sac) from the unimportant tube leading down the inguinal canal. This is done by cutting along the crista to the mesial side of the forceps, and dividing one layer of peritoneum with scissors. As the result of this incision, the neck of the sac now lies clear, held by the forceps on the crista on its mesial side, and the forceps on the outer side of the sac. The neck of the sac has in this way been completely exposed and freed without dissection. A gauze swab is gently passed down the outer and inner side of the sac. A gentle pull is made upon the neck of the sac whilst it is ligatured as high up as possible. It will be remembered that the crista corresponds to the internal ring and by separating the crista forming the neck of the sac in the manner described above, and pulling upon the sac, it has become possible to ligature the peritoneum, forming the neck of the sac, about two inches above the internal ring. It is unnecessary and undesirable to perform any displacing manœuvre to the neck of the sac. When the sac, is cut off distal to the ligature, the elasticity of the peritoneum will displace the ligatured sac well behind the rectus muscle. In ninety per cent of cases this is all that it is necessary to do, and the skin incision is sutured with silkworm gut passing down to, and taking up the edge of, the external oblique. In cases in which a large internal ring or very thin peritoneum renders a recurrence more possible, the conjoined tendon is drawn over the cord and sutured to Poupart's ligament without enlarging the wound. In exceptional cases it may be considered desirable for similar reasons to convert the operation into a typical Bassini

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operation. This can be done with ease by enlarging the split in the external oblique for another inch or more, lifting the cord and suturing the compound tendon of the internal oblique and transversalis beneath it to Poupart's ligament. Experience has shown that when a recurrence occurs, it is usually an immediate recurrence. The recurrence occurring immediately the patient gets up is due to faulty ligature of the neck of the sac. The elastic peritoneum released after ligature of the aperture is very liable to slip the ligature. This cannot occur if the aperture formed by the neck of the sac is sewn in addition to simply tying the ligature.

The majority of herniæ occurring in men of military age are small bubonoceles or congenital herniæ containing omentum.

I attach considerable importance to the removal of the prolapsed omentum, which is always of abnormal length, with a view to preventing recurrence.

Several sequelæ follow hernia operations which are of more significance than recurrence; I refer to such conditions as hydrocele, retraction of testicle, thickening of the spermatic cord, painful scars, neuralgia and enlargement of the testicle.

These unpleasant and almost incurable results are due to damage to the spermatic cord, the delicate structures of which are adversely affected by much less disturbance than is usually supposed. In the operation described the only content of the cord which is either seen or touched is the sac.

I have found this operation of particular value when dealing with cases of recurrent hernia. The new operation is performed above the matted scar tissue of the old operation and completed by Bassini's method almost with as much ease as a primary operation.

SOME ANÆSTHETIC POINTS.

By Captain C. T. W. HIRSCH,
Royal Army Medical Corps.

In an American Journal I noticed some time ago a rather apt doggerel:—

"The very worse saying
More people betraying
Than anything under the sun,
Is, just give a whiff
Of chloroform, if
There's nothing much to be done."

It came to my mind lately when some doctors said they dreaded to have to give an anæsthetic, and that they would appreciate some tips. Hence this article.

It is said that a motorist has three speeds, viz., that which he tells the police he is driving at, the one he mentions to his friends, and that which he really drives at. So with the anæsthetist, the method the surgeon remarks on, the one the patient comments about on the following day, and lastly, that the administrator imagines he himself is employing. These three, like the automobilist's speeds, do not always coincide.

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