

CHAPTER XXIV

DIAGNOSIS OF THE LAYERS AND ANOMALIES ENCOUNTERED DURING THE OPERATION OF HERNIOTOMY

MALGAIGNE'S advice was, Cut down until you can cut no farther, in doing a herniotomy; and the present chapter will prove to be nothing but a paraphrase upon this theme. The implication is to cut down till you reach the gut, but not to injure it, whatever else you do. The problem then narrows down to the query, How do you recognise the gut? Saviard, who lived toward the end of the seventeenth century, and was surgeon at the Hôtel-Dieu in Paris, discussed this subject. Pitha treated the same theme in a masterly manner; and a tried practitioner—Pauli—who died only a few years ago, left a monograph which enters fully into all the details of the question. But, as on the whole the gut can be mistaken only for the hernial sac, the matter narrows down to two questions: 1. How do we recognise the sac? 2. How do we recognise the gut? This division is important, for the young operator who does his first herniotomy will pause in doubt when he reaches the sac. Linhart, following the example of Astley Cooper, calls all the layers lying between the superficial fascia and the sac, fascia propria, while Cooper introduced this name only in femoral hernia. All the layers, no matter whether they originally were

of connective tissue or muscular origin, together form one stratum, which can, however, be split up into many planes. This stratum is recognised by the fact that, after cutting through the superficial fascia, it is exposed as a well-defined and circumscribed covering of the hernia. The superficial fascia accompanies the skin edges of the wound when these are moved to and fro. Moving the skin edges does not influence the fascia propria at all. The development of this fascia varies greatly in different herniæ. Compared to femoral herniæ, umbilical herniæ have only a slightly developed fascia. The duration, also, has its influence: a long-standing hernia has a thick, a newly acquired hernia a thin, fascia propria. An experienced herniotomist will bear most of these points in mind in judging a given case, but the tyro need remember only those rules which will help him to differentiate sac from intestine. The following rules should be remembered: After cutting through the superficial fascia and exposing the circumscribed hernial tumour, divide all succeeding tissues, layer by layer. Raise a fold, incise it, and, after introducing a director, cut down upon this instrument. As long as thin, translucent layers can be raised up between the forefinger and thumb of the left hand the gut is in no danger of injury. By following this rule, a layer is finally reached, from beneath which (after it is incised as described above) a thin stream of fluid spurts out of the small opening, or a small tag of fat prolapses. Usually this signals the opening of the hernial sac. Now enlarge the hole until the finger can be introduced, and then enlarge further by cutting down upon the finger. The fluid that escaped proves to be fluid within the hernial sac

(Bruchwasser); the fat that prolapsed was an omental tag. Only exceptionally does this not hold good. The fluid may come from a cyst adherent to the hernia, from a distended connective-tissue gap, or from a hydrocele (encysted hernia). In these cases we find an empty, closed cavity, and the hernia lies more deeply.

In many cases the beginner will hesitate before opening the sac. The round tumour, which lies before him, will make him pause to decide whether it is gut or hernial sac. Let him remember that the intestine is shiny and smooth as glass, and never has any fat upon its surface. The sac is dull, and its surface may be covered with flat clumps of fat. In addition, the gut never has any transparent areas, while they are frequently found on the sac, especially on its dependent portions. If all these means of recognition are insufficient, he must call the sense of touch to his aid. Let him try to raise a small fold; if he can, and if it prove translucent, let him cut through it without further misgiving. But if the sac is thick, as it sometimes is, moving the fold between the fingers will give the sensation of rubbing two smooth serous surfaces together; if, on the other hand, it is gut, the rubbing of the two mucous surfaces imparts the sensation of rubbing velvet. Further, by pressing deeply into the fold, which is grasped by the finger-tips, a tense structure—the gut—is felt within, if the sac has not been completely opened.

Finally, pass the finger upward to the hernial opening. If the gut has been reached—that is, if we are inside the sac—we come to the incarcerating ring; this ring has such a sharp outline that, once felt, it is never forgotten. If still outside the sac, the ring has no such

sharp edge, and the smooth coverings all merge into the ring.

There are certain other signs which at once decide the question. For instance, if the tumour has an hour-glass form or shows constrictions, nothing but the sac can cause these. Or if, for example, the ring has been incised, and, after reduction of the mass, an empty pocket has been left, this can be nothing but the sac. Again, if the swelling has one or more epiploic appendages on its surface, it certainly is large intestine. The hernial sac is most readily distinguished from intestine if the former is transparent. Dieffenbach, in more than six hundred herniotomies, met with only a single case in which the sac was very thick, but transparent as glass, so that the intestinal loops could be seen through it. Such a pretty demonstration, however, is very rare.

In inguinal hernia, my former assistant, Dr. R. Frank, has recently worked out an astonishingly simple method of orientation.

As sac *and* vas deferens both are contained in the tunica vaginalis communis, an incision which exposes the vas must also lay bare the sac which forms the tumour found next to the vas. In order to reach the cord, which is the guiding structure, without delay, the incision is made into the inguinal canal, and *not* over the tumour. By cutting down into the depths, the vas is reached, and here in the canal the sac can readily be separated from the seminal cord. By this step we prepare for a radical cure after the strangulation has been relieved, for the neck of the sac is dissected free along its entire circumference without opening its lumen. In most cases the hernia may then be reduced without opening the sac, because in the majority of in-

stances the cause of strangulation is more often situated without than within the sac itself. If reduction is resisted, the sac is now opened, but at a more dependent site. This is readily accomplished, for, after the neck has been laid bare, the remainder can be reached by cutting down on a grooved director. This innovation is a great advancement in the technic of herniotomy. Its significance is as follows: Even in dealing with a strangulated hernia, plan your operation as if you were preparing to do a radical cure on a reducible hernia. If this method is followed, no difficulty will be experienced in operating in cases of strangulation.

It is readily understood that this method can be employed in femoral hernia as well. The neck of the hernia, as Gussenbauer's pupils have shown, should be laid bare by Bassini's incision. When the subserous space has been reached and the neck freed, it is pulled from under Poupart's as if from under a bridge. If strangulated, the strangulation should first be relieved by nicking the ring.

It is just as well to know the more ancient rules of classic herniotomy, because they will be found a better guide in atypical cases, for which we should always be prepared.

When no longer in doubt whether the sac has been opened, certain diagnostic tests must also be made upon the hernial contents.

How do we recognise that the loop is or will become gangrenous at some small point? A gangrenous patch is gray, cold, collapsed, and lustreless. A blackish spot will also become gangrenous, and requires precautionary measures on the part of the operator.

The other points of diagnosis will not bear general discussion, for they border upon casuistry. Wattman opened a hernia; fæces flowed out. He at once con-

cluded that he had opened the gut. The string-like process which he felt upon the tumour he diagnosed as appendix, the mass itself as cæcum. He inserted his finger and reached a cleft; this he took to be the ileocæcal valve. His deductions were logical, yet the supposed cæcum proved to be the hernial sac, the supposed appendix a connective-tissue adhesion, and the supposed ileocæcal valve a tear in the prolapsed loop of small intestine. This shows the possibility of error. But, though Skey found omentum and gall-bladder in a femoral hernia, this is not sufficient reason to conclude at once that we have happened upon the most unexpected. Danzel's aphorism, "In every herniotomy prepare for a new experience," hits the mark.

Two points I desire to emphasize. Examine every mass of omentum carefully, for a loop of intestine may be concealed within it. After reduction, the finger should be passed into the peritoneal cavity and the whole circumference of the ring carefully palpated. If it is found free, the finger is withdrawn, and the interior of the sac is now palpated in order to determine the presence or absence of diverticula. If these precautions are neglected, we visit the patient several times in the course of the next few hours, in order to guard against a continuance of the symptoms of strangulation. The cause of further trouble varies greatly. A detailed account may be found in Streubel's classical article, "On Apparent Reductions" ("Scheinreduction"). Danzel says of herniotomy: "The clear and indisputable indication of this measure, its certainty and rapid means of relief, are attributes which make herniotomy a valuable and favourite operation to the surgeon." Though we agree with him, let us take the

above-mentioned book and—*nocturna versate manu, versate diurna!*

The following will conclude my remarks: A special form of reduction is *reduction en bloc*. Any one may have the ill-luck to reduce the hernia with its sac, and the strangulation will then continue unrelieved within the peritoneal cavity. Many such cases have been diagnosed and operated upon. The diagnosis can be made from the fact that (1) an irreducible hernia with symptoms of strangulation was found; (2) taxis was difficult; (3) reduction was accomplished suddenly, perhaps accompanied by a tearing sound, and without gurgling; (4) symptoms of incarceration persisted; (5) careful inspection of the abdomen, in cases of inguinal hernia of the scrotum also, shows a retraction (in inguinal hernia the testicle is drawn up); (6) in the neighbourhood of the hernial ring the belly is full and tense. Occasionally coughing will cause the hernia to reappear. If not, incision of the abdomen will show the whole sac in the preperitoneal space. Draw it out, open it, and relieve the strangulation.

CHAPTER XXV

SCROTAL TUMOURS

MAKE it a rule to determine at the outset from which side a scrotal tumour takes its origin. In simple cases, inspection alone suffices; in doubtful cases, the sound side will enlighten. That side on which only the testicle and its adnexa are found is the healthy one. Whether this is the right or left, can be determined by following up the vas to the inguinal canal. This test may be necessary in some scrotal tumours—for instance, in eventrations—in which the raphe has been obliterated, and the testicle of the sound side pulled or crowded in any direction. This examination will also show whether both testicles are present or not.

The next manipulation is intended to test the limits of the tumour in relation to the external ring. Let us assume that the surgeon stands to the right of the recumbent patient. He should place the four fingers of his left hand beneath the scrotum, and, so to speak, load the tumour upon them; the thumb is placed on the anterior surface of the swelling, close to the external ring. By combined pressure, anteriorly with the thumb, posteriorly with the index-finger, the swelling can be palpated and allowed to glide between these two tactile surfaces. This will enable us to judge