

## CHAPTER IX.

### STRANGULATED HERNIA.

Causes and Symptoms of Strangulation.—Ileus.—Volvulus.—Taxis.—Operations for Inguinal and Femoral Herniae.

THE escape of any viscus from its natural cavity is called a *hernia*. The term is in a measure restricted to the protrusion of a portion of intestine or omentum from the abdominal cavity. The affection is of common occurrence. In ordinary cases it is attended with little inconvenience or danger. If, however, a constriction takes place at the neck of the hernial sac, which cuts off the circulation of blood, and obstructs the passage of fecal matter through the intestines, the patient's life is at once in jeopardy. The portion of intestines so constricted is termed a strangulated hernia.

Hernial protrusions usually occur at the inguinal or crural canals; but they may pass through the umbilicus, or other part of the abdominal walls.

A hernia may become strangulated: 1. From the additional protrusion of intestines or omentum into the sac during the act of straining, or other violent exertions which bring the abdominal muscles into violent action.

2. Thickening of the sac or its contents by cell-proliferation, or deposit of adipose tissue.

3. Contraction of bands of fibrine over the neck of the sac.

4. Spasmodic contraction of the muscular fibres at the same point.

5. Contraction of the ring, from growth of new tissue.

All of these causes may combine to induce strangulation. In inguinal hernia the constriction is usually situated at the internal or external abdominal rings. In femoral hernia it may be at the crural ring, or the saphenous opening.

The strangulation is first manifested by pain over the hernial tumor. The pain increases in intensity, and rapidly spreads to other portions of the abdomen. Soon there are nausea and vomiting. The vomited materials consist first of the contents of the stomach, and then of stercoraceous matter. The bowels are obstinately constipated. Cathartics fail to influence them. The pulse is rapid, increasing in feebleness as the strangulation continues. The abdomen is tympanitic, and pressure at any part is attended with great pain. This indicates the extension of the peritoneal inflammation. Finally, the extremities become cold and clammy, and the pulse can scarcely be distinguished at the wrist. All the signs of collapse are present, and death rapidly ensues unless the strangulation be relieved. When collapse sets in, operative measures are of little avail.

In all cases where a patient is vomiting, and complaining of pain in the abdomen, an examination should be instituted for hernia. Fatal mistakes are made by neglecting this precaution, and the sick person treated for colic and indigestion. At the same time it is well to avoid the other extreme, and take care not to cut into an inflamed bubo, or an inflamed incarcerated hernia, on the supposition that

strangulation exists. These things are occasionally done even by men of standing. If obstinate constipation and vomiting of fecal matter exist, there is little room for mistake; neither of these will be connected with a bubo or inflamed hernial sac.

The intestines may be constricted without leaving the abdominal cavity. Portions of the colon may twist upon themselves (*ileus*), in such a manner as to cut off the circulation. The twisting is usually found at the sigmoid flexure. It is recognized as a prominent tympanitic tumor over the part affected, and by accompanying signs of strangulation.

A portion of intestine may become invaginated or inverted (*volvulus*), like the finger of a glove doubled in, and occasion all the symptoms and danger of strangulation. Volvulus may occur at any age, but it is most common in childhood. It occurs suddenly, with pain located at the point of constriction. In addition to the ordinary signs of strangulation, there are frequent desire to go to stool, and discharges of blood and mucus from the bowels. The invaginated part may slough off—the two ends of the intestines unite, and the patient recover. If allowed to remain until sloughing occurs, a favorable termination is not likely to ensue.

*Treatment.*—The injection of air or fluids into the intestines is highly recommended in volvulus. The injected material, by distending the gut, forces up the invaginated part. Some recommend cutting down upon the intestines at the part where the pain exists, and drawing out the inverted intestine. A similar course may be adopted in the treatment of ileus.

In ordinary strangulated hernia, efforts should be made

to reduce it by manipulation (*taxis*). The muscles are first relaxed by opium, hot baths, or anæsthetics. The thigh is then partially flexed and adducted, and the body of the patient raised in bed. Firm pressure is then made with the right hand on the tumor, while the left is placed at the neck of the sac, to keep it from bending or doubling upon itself in the reduction. Taxis must not be kept up too long, or performed with violence. Great pressure may force the hernia, constriction and all, back into the peritoneal cavity. Such an accident complicates matters. Should the manipulations be without avail, the constriction must be removed at once by an operation. The patient is first put under the influence of an anæsthetic. If the hernia be of the oblique, inguinal variety, an incision is made through the integument in the long diameter of the sac. The succeeding layers are opened on a director. They are in order from without, inward—two layers of superficial fascia, intercolumnar fascia, cremaster muscle, infundibuliform fascia, subserous areolar tissue, and peritonæum. When the tissues are thickened, a greater number of layers may be made by splitting up the fascia with the director. These layers are not always recognizable. Some surgeons repudiate them altogether, and rely upon the appearance of the sac or its contents as a guide. The peritonæum is recognized (provided it is not thickened by inflammation) by its tension, and the arborescent arrangement of its blood-vessels. If the peritonæum cannot be recognized before, it may be after it is cut through, by the escape of dark-colored serum, which generally exists inside the sac. The intestines are known by their dark color and polished surface. When the intestine is exposed, the little-finger of the left

hand is passed up to the part of stricture which can be felt like a "hard, bony ring" at the neck of the sac. A hernia-knife, or an ordinary bistoury, with its point protected by adhesive plaster, is then introduced on its flat surface, between the nail of the little finger and the constriction. When it has passed under, the edge of the blade is turned up, and the stricture cut directly upward. By cutting in this direction, the epigastric artery, which runs up between the two rings, is avoided.

If the intestine is in a fit condition to return to the abdomen, it will change color soon after the stricture is relieved. In this case it is returned slowly—the part which came out last being replaced first. Should gangrene have set in, there will be a fetid odor, the intestine will be of a dark-gray color, and may crepitate on pressure, from the presence of putrefactive gases in the walls. The gangrenous portion is to be removed, and an artificial anus made by sewing the cut ends to the edge of the opening.

In direct inguinal hernia, the layers are somewhat different, but the operation is precisely similar. Instead of the cremaster muscle, the conjoined tendon of the internal, oblique, and transversalis muscles is substituted, and the infundibuliform fascia is replaced by the fascia transversalis.

In operating for femoral hernia, a crucial or a T-shaped incision is made—the first one in the long diameter of the sac, parallel with Poupart's ligament, and the second meeting the first at right angles. The layers to be divided are: The integument, superficial fascia, cribriform fascia, crural sheath, septum crurale, subserous areolar tissue, and peritonæum. The stricture is divided by cutting upward and inward. In order to avoid cutting the obturator artery,

which occasionally runs along the inner edge of Gimbernat's ligament—the edge of the knife may be blunted prior to the operation. When this is done, the artery will be pushed before the knife, instead of being wounded.

Taxis is employed in femoral hernia, by first flexing the thigh, rotating it inward, and pressing the protrusion downward, backward, and then upward.