HERNIA THROUGH THE CONJOINED TENDON*

OR

HERNIA OF THE LINEA SEMILUNARIS

By Frank S. Mathews, M.D.
of New York, N. Y.

This paper deals with a type of hernia which in its anatomy, significance to the individual, its prognosis and treatment, differs as much from the ordinary direct hernia as the latter does from indirect hernia. If any hernia lying to the inner side of the epigastric artery is considered a direct hernia, then this type of hernia is also direct, but if included among the direct hernias it would be necessary to divide the latter into two distinct sub-classes. To call them hernias of the linea semilunaris leads to some confusion, because they are located only at one point of the linea semilunaris. Apparently the most accurate designation would be " hernia through the conjoined tendon " using old terminology, or " the falx inguinalis " using the new. This calls attention to its location, and to the fact that the hernia perforates this portion of the abdominal wall and is not a diffuse yielding of it, as is the case with the typical direct hernia.

A brief reference to anatomy may not be out of place. When one opens the inguinal canal of a very muscular subject and removes the cremaster muscle, Hesselbach's triangle is exposed to view. Above, the lowermost fibres of the internal oblique have a thick abrupt margin; the lowermost fibres seem to me to extend inward and but slightly downward to end in the linea semilunaris, and have little connection with the conjoined tendon. The transversalis muscle emerges below the lower border of the internal oblique, and either quite covers or almost covers the space down to the inguinal ligament. These fibres arch downward and inward, and at their termination inward, there is an area at the inner side of the triangle of firm consistency which is called the conjoined tendon, or falx inguinalis. The weakest portion of this posterior wall, according to the anatomists consulted and clinical experience, is just mesial to the deep epigastric artery, and close to the inguinal ligament. Here, even in muscular subjects, muscle fibres may be deficient. When this is the case, the posterior wall is said to be made up of a fascia transversalis. In subjects of weak musculature, the lower portion of the transversalis is poorly developed, and its giving way marks the starting point of a direct hernia. As the hernia enlarges it spreads across the triangle to the edge of the rectus, and in such cases a conjoined tendon is a scarcely demonstrable structure. In subjects, however, with a strong musculature, one at times encounters an opening, usually circular in outline, in a well developed conjoined tendon, lying close to

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the rectus border, with Poupart's ligament below and to its outer side having a fairly firm fibrous margin made of conjoined tendon fibres.

This type of hernia is no doubt much less frequent in its occurrence than the ordinary direct variety, but is not by any means a surgical curiosity; all surgeons of experience with hernias must have encountered it a number of

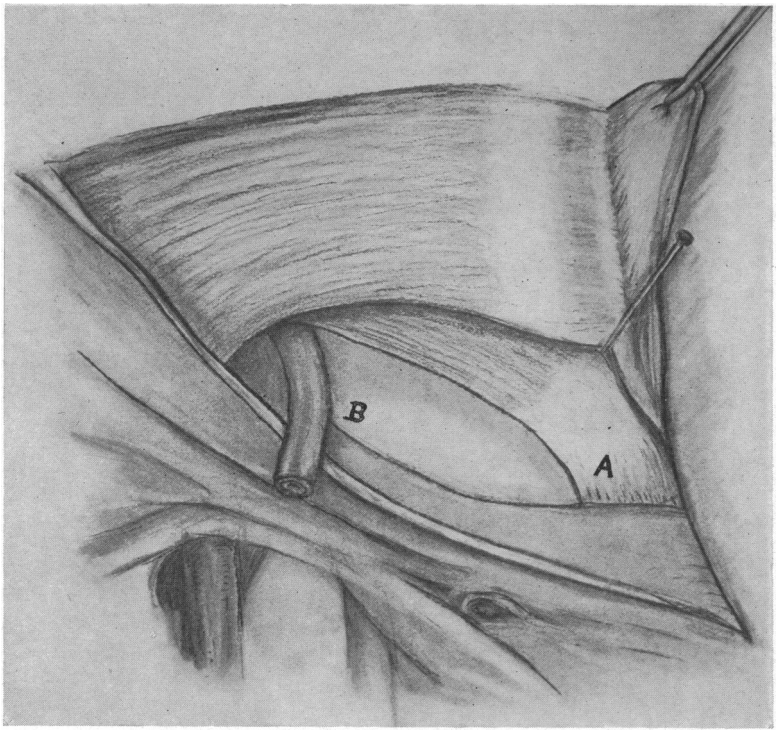

FIG. 1.—Semi-diagrammatic dissection of right inguinal region. *A*. Location of point of emergence of semilunar line hernia. *B*. Usual point of emergence of direct inguinal hernia.

times. In the preparation of this paper the writer has reviewed the records of eleven cases seen within the last three years at St. Luke's Hospital.

It is rather surprising that one sees so little reference to it in the literature. The older editions of Gray's Anatomy clearly contrast the two varieties, and suggest a different relation in the two cases to the obliterated hypogastric artery. Erdmann in a sentence says " direct hernia often emerges through a definite split in the fascia "; Downes clearly distinguishes the two types of hernia, calling the one direct and the other hernia of the linea semilunaris. He brings out both in the text and drawings the different locations and anatomical peculiarities of the two hernias. Most descriptions of direct hernia fail to mention this variety, hence are inaccurate when hernias of the conjoined tendon are included in the direct variety. The clinical side may be best presented by showing the points of similarity and contrast to direct hernia.

1. Neither direct nor conjoined tendon hernia is seen in children. Direct

hernia is practically confined to adult males. Conjoined tendon hernia is seen, but less frequently, in females.

2. Direct hernia has a wide and lax neck often difficult to define accurately. Conjoined tendon hernia has a small tight neck formed by the fibres of the tendon.

3. Conjoined tendon hernia is unilateral; direct hernia is usually bilateral, and is the result of muscular weakness.

4. Direct hernia may be associated on the same or opposite side with indirect hernia; the same has been observed in conjoined tendon hernias. I have even seen a conjoined tendon hernia associated with a fairly definite direct weakness.

5. One of the most important contrasts concerns the liability to strangulation, the small conjoined tendon hernia strangulating with the same ease as does the femoral hernia, while the direct hernia has little tendency to incarceration.

6. They vary also as regards the content of the hernia. The direct hernia may be said to always have a sac; conjoined tendon hernia may consist and frequently does consist only of a mass of prolapsing fat. The bladder is frequently present either with or without a true peritoneal sac.

7. In operating on direct hernia one often sees the obliterated hypogastric artery lying to the inner side of the sac, or arching over its inner portion. In conjoined tendon hernias the hypogastric cord, if seen, has usually been found on the outer side of the neck of the sac. In other cases with a true peritoneal sac present, the hypogastric cord has not been in evidence, but I have been able to satisfy myself that it must lie to the inner side of the hernia. The attempt to draw a distinction between the two types of hernia according to their relation to the hypogastric cord, has seemed to fail as an exact criterion, though it is probably true that the hypogastric nearly always lies to the inner side of a direct hernia, and frequently, at least, to the outer side of the conjoined tendon hernia.

8. The prognosis of conjoined tendon hernia is better and the treatment simpler than that of direct hernia.

9. This hernia presents an oval inguinal swelling quite similar to that of direct hernia, and lies beneath the external oblique aponeurosis, with the conspicuous difference that the swelling is unilateral and usually noted in muscular subjects.

10. As regards diagnosis it may be said that prior to operation, we have several times suspected the conjoined tendon variety and found it, but in a much larger number of cases have suspected this variety and found the diagnosis incorrect, operation revealing a direct hernia, or an ordinary inguinal bubonocele.

Of the eleven recent cases forming the basis of this report, the ages varied from 33 to 62 at the time of operation, the average being 43 plus years. The

bladder was present in the herniation a number of times, and was accidentally injured once.

The size of the hernia has varied, a number being quite small, the largest not larger than a hen's egg; four have been incarcerated or strangulated; two strangulated while in the hospital awaiting operation, and were operated upon in the course of a few hours; each contained a knuckle of small intestine. One patient, a woman aged forty, complained of a hernia in the left groin, which whenever it protruded, became very hard and painful, compelling her to lie down and maintain pressure until the swelling disappeared. Other conditions made an abdominal section necessary, at which a calcified tumor in the left ovary was discovered as large as a walnut. This could be readily pressed up into the hernial sac, which had a tight neck just admitting two fingers, and which lay to the inner side of the obliterated hypogastric.

One hernia of this group recurred promptly after operation. The patient was a man aged fifty, who had worn a truss for some years; for three days he had had a tender mass at the external ring, and there had been vomiting and general abdominal pain. Operation revealed a strangulated herniated mass protruding through an opening in the tendon three-fourths of an inch in diameter. The mass appeared to be inflamed fat; on investigating this mass in the search for a hernial sac, a cavity was found containing considerable turbid fibrinous fluid. A finger inserted into this cavity entered the abdomen; further investigation, however, showed that the finger had not entered the peritoneal cavity. A sound in the bladder demonstrated that that organ was not in the hernia, and that it had not been injured. The hernia then consisted of a mass of fat from the prevesical space which had become strangulated, with considerable fluid exudation both within the abdomen and outside the constricting ring. Three stitches closed the opening and a Bassini operation was added. A drain was left in the lower angle of the wound. The hernia has recurred and is partially controlled by a truss. The patient's lower abdomen is very fat and prominent.

This is the only recurrence in the group of eleven cases, but I recall another hernia of this type in a woman operated on more than ten years ago which required a subsequent operation, and so far as I know has since remained cured.

The treatment of this type of hernia is comparatively simple. One should be careful not to let a conjoined tendon hernia escape observation when operating for an indirect inguinal hernia. This might very well occur when the hernia is small in size, and would give one the impression later that the original hernia had recurred. When the opening is small, it is readily closed by one or more mattress sutures. At times the upper margin may be brought down to Poupart's ligament. One of the ordinary operations for strengthening the posterior wall of the canal may be added. The question comes as to what should be done with the hernias of larger opening, or recurrent hernias like the one mentioned above. In addition to closing the opening in the fascia, one might consider the lateral displacement of the rectus margin, suturing it

to Poupart's ligament, thus attempting to bring this muscle behind the opening in the conjoined tendon. Another possibility would be to fortify the opening by a reflected portion of the anterior rectus sheath. It would add additional security to this region if the cord were brought out superficial to the external oblique, with closure of the external abdominal ring.

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