AN INAUGURAL DISSERTATION
ON
Hernia - Simple, complete, oblique inguinal.

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BY

M. D. Blanchard

of

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To
T. R. Jennings M. D., and T. F. Eve M. D.,
Professors of Anatomy and Surgery respectively, from a feeling of the high estimation in which I view your methods of teaching,
this essay is submitted to your inspection and criticism as a testimony of the value I placed upon your many efforts by the
Author.
**Hernia—Simple Complete Oblique Inguinal.**

It is considered to be a protrusion of a viscus through an accidental opening. It occurs most frequently with the contents of the abdomen.

The causes are many—such as tightness being performed on wind instruments, pregnancy, etc. If it occurs during labor it may be very large as the cause is double, i.e., the cavity is small being nearly by the gravid uterus which acts 1st as a cause, 2nd the muscular contractions.

Among the predisposing causes may be mentioned debility, disease, congenital deficiency, age, sex and occupation. Men are said to be the subject of inguinal hernia more frequently than women. It is seen in persons advanced in life, and small children seldom.

There may be hernia of the viscer of either of the cavities. The name of hernia is derived from the name of the part through which it protruded, e.g., when there is a protrusion through the inguinal, femoral, and soon.
it is called inguinal or femoral hernia respectively. The parts subject to this displacement are all that are contained in the cavity; but the most frequent in occurrence are omentum and intestine. When omentum is called epiplocele, intestine enterocle; when both together enterocliplrocele; and so on for other that occur.

During a muscular contraction a portion, usually of intestine is thrust through the wall of the abdomen; if the muscles contract while the intestine is distended, it together with the omentum is a retesting substance. Consequently it courses its way through the layers of the abdomen, though it effects a passage without rupturing the muscles. By passing through the lining of the abdomen and passing down with the cord, it makes its passage and exit similar to that of the cord, through the canal and external abdominal ring. The viscous carries along with it the lining of the belly, which spreads out over it and forms the first and outer complete covering, call the external sac or peritoneal sac.
In the complete form of inguinal hernia the tumour pursues the direction that the testicle does after it reaches the anterior peritoneal layer.

The description of the relations of a rupture to the surrounding parts is difficult to make intelligible, but to make it as near to as possible an enumeration of the parts, from within, out, which form the inguinal region, may be made, and are 1st. Peritoneum, 2nd. The cellular or connective tissue between, and which holds together the peritoneum and transversalis fascia. The latter being the third layer. And 4th. Transversalis muscle, 5th. Internal oblique, 6th. External, 7th. Superficial fascia and 8th. The Skin.

The viscera in coming down come first in contact with the peritoneum at the place where the testicle made its exit. A protrusion at this point is rendered less difficult than any other because of its weakness.

The peritoneum forms a complete lining for the abdomen as well as covering for the intestine. Next, the connective tissue, like the latter is easily disturbed. So when
The intestine is forced against it (in a rupture) and carried along in front, forming a perfect sac, as already mentioned.

Then next is the Transversalis, or infundibuliform fascia. This transversalis fascia forms a strong covering for the peritoneum in its lowermost portion. The part of most importance extends downwards from a line drawn from Poupart's ligament transversely to the rectus muscle above. The internal ring which is in the this fascia situated about midway between the superior anterior spine of the ilium and symphysis pubis about half an inch above Poupart's ligament. The intestine next proceeds downwards coming in contact with the transversalis muscle, which is in direct relation with the transversalis fascia posteriorly and internal oblique muscle anteriorly. As it passes under the margin of the internal oblique and transversalis muscles, it becomes adapted to the cremaster muscle; which is fibres encircling the testicle derived from the two above named muscles as it passes into the scrotum.
In its farther progress it reaches the external oblique muscle;—The tendon of this muscle divides into two portions, called columnar pillars—named external and internal pillars. These columns are connected at the superior portion and angle by a number of fibres which arise from the outer portion of Duport's ligament, passing transversely over the ring as just mentioned and are lost on the inner pillar—that is called the inter-columnar fascia, and it offers a partial covering to the tumour after it has passed through the ring. The next covering is complete, the superficial fascia, it forms an investment for the whole body; it is thicker in the inguinal region than in the other portion of the abdomen; in this region it is composed of laminae and inferiorly attached to Duport's ligament. Thus, lastly the skin. This space—inguinal—is in the form of a triangle, its superior boundary is an imaginary line drawn from the inferior spinous process of the ilium to the linea alba; the internal by the linea alba,
and inferiorly by Poupart's ligament, upon which rests the triangular opening for the passage of the Cord—the external abdominal ring.

The simple uncomplicated form of Hernia may be known from its place of occurrence, by the time of its existence, its peculiar sensation; and from Hernial Hernia by the following: When an inguinal Hernia is traced upwards in the direction of the Femoral Canal, its neck will become suddenly dipped down into the ring. But if it be femoral and has arisen above Poupart's ligament, and an attempt at resection in the course of the Femoral Canal be made, the tumour will increase in size. The treatment of reducible Hernia is the employment of Taxis and its retention, by the use of the Tweezers. Before using taxis it is best to give an injection in order that the bowels below the rupture may be emptied as much as possible.

After the patient is prepared, he is to be placed upon a table or bed. The thigh smartly flexed and adducted
to admit nothing except the Surgeon's arm between them. The tumour is now gently grasped with the right hand, the palmar surface resting upon its base. Pressure is now made in a steady mode in the direction of the Canal. No violence must be used for fear of inflammation or rupture of the intestine. If our first effort at reduction fails we are not to quit for perseverance often overcomes the resistance offered and the intestine is distinctly heard to slip back into the cavity. After its reduction the aid of the nurse is required which should have a firmly stuffed surface; convex, to present to the abdomen which must press firmly on the whole length of the Canal, and a flat one opposite this point posteriorly. This is to be used continuously for a period of two years. After the employment of the above means without accomplishing the desired effect the Hernia is said to be irreducible.
After the use of very active remedies such as hot baths, tobacco injection and so on, then the tumor must be adapted to the tumor, well fitted, a tuck with a concave surface; it must cover the whole tumor. The pressure must not be so powerful as to cause uneasiness but just so much as to retain the tumor in its proper limits. In procuring a tuck must be prepared with regard to the size and occupation of the patient. When the tuck is fixed upon the patient, if he is made to stand or sit and lean forwards and cough without any protrusion, it is sufficient for a protection. If like, in reducible Hernia, must be worn continuously a lighter one may be used on going to bed. Irreducible or often of considerable magnitude and long standing. Its non-reduction is dependent on its adhesion, shape &c. This Hernia may be partially reduced when both gut andomentum protrude. The intestine returns, butomentum adheres.
Although the tumor cannot be reduced it frequently increases, especially if not protected. It may acquire such a size as to hide the genitalia. This giving rise in convenient attended with heavy dragging pain and weakness, patient never free from examined. When it acquired such a size, suspension in a bandage is the proper treatment.

Inflammation may occur as a consequence, from irritation or, from a blow, fall and so on. It may commence at any point in the sac and diffuse itself into the abdominal cavity in the form of peritonitis, or it may confine itself to the tumor. The parts become dry hot and swollen also painful.

There are symptoms of peritonitis spreading from the vicinity. Sometimes there is vomiting, never feculent, nor purulent, constipation in complete, urine passing by the anus. It is of great importance to note that the inflammation commenced in the sac and not in the abdomen. The treatment lies to the sac and neck, cold, hot, opium, injection and due
regard to regimen and rest. If inflammation extensive we may resort to general bleeding.

In some instances the passage of the intestinal contents is obstructed by the accumulation of flatus, or by some undigested particles having gotten into the cheek of the tumor. This obstruction gives rise to the name of incarcerated hernia, it exhibits itself in old persons in whom the tumor has been of long standing. It is attended with constant constipation and vomiting; with pain night and morning about the tumor. Sometimes pain is absent at first, consequently it may exist for a length of time without detection. The treatment is the administration of an enema followed high up the rectum by means of a long elastic tube. If on handling the tumor or gargling fluid is present, ice may be applied for half an hour and then ice etc. under the administration of Chloroform. Cathartic should not be resorted to until the tumor is returned.
From what has been spoken of, we are now brought to a consideration (partial) of strangulated hernia. This form may occur as it generally does in a tumor of long standing hitherto irreducible. But from some violence there is a fresh portion of gut thrust outward; the abdomen consequent upon which strangulation is a frequent result. This strangury, may occur in the first rupture.

A tumor is strangulated when its neck is so constricted that it cannot be returned into the abdomen. The passage of the alimentary canal is obstructed and vitality in the part for the time is nearly or quite destroyed, and if relief is not had death—gangrene quickly supervenes.

This strangulation always appears in a part tendinous, the firmness of which will not admit of distention for the reduction.

The cause of strangulation appear to be these:

From some cause there is a new restriction of outlet.
The force has been such as to push so great a portion of fluid through the walls that the part is bruised off by the stricture. The venous flow of blood is obstructed and forced to pass from the tumor. But the stricture is not always so complete as to stop the arterial supply to the part irritated. This blood is sent with some velocity, but loses it in the capillary circuits, the stricture is such as to cut off the attraction of the capillary curettes. Consequently, the circulation towards the large venous trunks, if obstructed, the vein is too light to propel the blood through these smaller vessels; consequently, congestion.-Arterialization is the result, and with this effusion into the sac or intestine.
The stricture is most frequently situated around the neck of the tumor in the tendinous or ligamentous structure in its vicinity. Not infrequently it occurs in the altered and thickened subserous cellular tissue. It is often seen in the neck of the sac which becomes elongated.
The structure may exist in the body of the sac if it have assumed an hour-glass shape, or inside the sac consisting of bands of adhesions stretched across, or in the omentum itself, if the rupture depend (after an old one) upon a protrusion of intestine edges through the omentum, whose shall have become tendinous.

In a subject in which it is acute the structure will be deeply marked. This appearance is produced by the powerful congestion of the tumor. The first change then is congestion and inflammation (third strangulation) and third gangrene deformation. In congestion, the part is said to be of a purplish brown color with thickening from effusion into its structure or cellular tissue. In inflammation the intestine retains the same appearance except sometimes it acquires a lymphatic covering. But the omentum is injected with red and there is effusion of liquor into the sac.
If gangrene enter the bowel, lose that appearance and assume in its stead a deep grayish-black aspect; its layers become easily separated. The mepitum will become of a purplish color, during this time the sac contained a quantity of dark offensive serum.
If this be left to the action of nature, gangrene of the skin with the intervening structures ensues, disintegration of the sac and discharge of gas through the softened tissues and the patient may recover with an artificial anus.

The symptoms are divided into two classes, first those arising from the tumor, and 2d. those from the system at large.

The 1st Class. If the tumor be of long standing its life is increased from the congestion, becoming hard and tense also painful, if the tumor is extensive it becomes rounded and circumscribed, but if extensive, it is often kept giving to the feel a brawny sensation, although it is contracted.
There is no fresh protrusion after strangulation, consequently no increase in size, except from effusion. The tumor is irreducible, and there is no impulse on coughing.

Systemic symptoms — when it first appears — the patient becomes anxious and restless, and if the attack be active the patient will be seized with acute pain in the part, extending into the abdomen, producing symptoms of general peritonitis.

The structure, off the circulation, the passage of feces and fluids; the patient is seized with colicky pains, constipation, eructation and vomiting. Vomiting is one of the first, most reliable and dangerous, constant and severe symptoms; attended with retching and straining; yet, affording little or no relief. At first consists of mucus and contents of the stomach, but presently it becomes feculent and the constipation caused by the inverted peristaltic action of the bowels. There may be a slight discharge from the bowels below the structure, but never above.
These symptoms are all more severe when the rupture is intestinal and attack acute than when it is vesical and subcutaneous. The peritonitis supervening. Strangulation is attended with the usual signs—tenderness of the abdomen, tension of its muscles and acute lancinating pains. The pulse is small, quick and hard, with heavy dull and pale countenance attended with inflammatory fever.

Strangulated hernia may be diagnosed from: 1. Obstructive irreducible, 2. from Inflamed irreducible, 3. general peritonitis conjoined with hernia, and 4. from double hernias in which one is strangulated only. By observing the following—The 1st will generally be large and old, subcutaneous and but little swollen and tender except it be pressed upon. Some impulsive or coughing, but little constipation or vomiting except it be-meal or bile. The mean for its relief (which are already given) is its best diagnostic sign.

The 2nd has great tenderness and pain in the tumescent general peritonitis. The vomiting of any, is less frequent.
and violent than if the peritonitis were the effect of transection. Some fees may fall for the constitution is not entire. The third—here it is extremely difficult, but the peritonitis is most intense at a point distant from the rupture. The vomiting will consist of mucus of the contents of the stomach;—the constipation will yield to ordinary means.

The fourth—about the neck of the structured one greatest tenderness and tension is felt here.

Now in transection we have a combination or a complexity of these symptoms and even more.

There is hardness, tension and soundness, especially if it be intestinal. It is not increased in size for a fresh perforation cannot take place, but it becomes distended by the infiltration of liquor.

The patient becomes sick, dizzy with pain—the intestinal action is inverted and vomiting soon becomes stereotactic.

The diagnosis is simple complete Oblique Inguinal Hernia.
from other diseases occurring in the vicinity—both inguinal and scrotal regions. 1. from Adhesions it may descend from the interior of the abdomen or pelvis through the canal and out at the ring—this on reduction does not present firmness or solidity or gurgling in its reduction.

2. from Hydrocele of the Cord— in this the tumor is circumcised no pulsation on coughing—there may be a small oval swelling on the cord which may apparently be reduced but returns again on coughing.

3. from fatty or other tumors formed on the Cord, its circumscription, irreducibility and the absence of impulse on coughing marks the distinction between them and Hernia.

4. from Lodgment of testicle in the canal by the absence of it in the Scrotum on its side. The peculiar tickling upon pressure, no gurgling, and irreducible.

5. from Hydrocele—in this the tumor is circumcised below the Cord, no fluctuation on coughing, no gurgling in attempts to reduce it.
6 from Varicelle. This, the tumor may very be reduced, but if the fingers be placed upon the ring, the patient be allowed to stand up, the tumor will gradually return through the spermatic arteries.

7 from Tumor of the Testicle and Haezmatcele. By their circumscibution and the absence of impulse on coughing, the treatment for simply a protrusion is already seen. Sched of--

If though there be symptoms of strangulation and we have clearly diagnosed it to be Hernia, an operation, after the failure of those other potent remedies we have considered is immediately to be performed under the administration of anaethelia. This consists in cutting through the soft parts down to the Structure and dividing it. This Structure, as we know, occurs in various parts, thus in the ring. Themselves, the cellular tissue, the neck of the test, or if the intestine be strangulated by its protrusion through the omenvum it may be in
This opening, hence the necessity of opening the far though gangrene be absent. If from inflammation the fluidic diffusion has caused adhesions of any parts within the sac, they are to be dissected apart, with much care. The structure is to be divided and returned into the abdomen. In the first place an incision is made through the skin by pinching up a fold over the external ring, a puncture through the fold is made with the cutting edge of the bistoury, looking towards the ureter, then cutting oes. This wound is to be continued to the extent of 20-30 inches in the direction of the canal extending downwards into the scrotum and in a direction upwards and outwards over the external ring, down to the superficial fascia, it is to be the fascia divided with care, which will bring to view the intercolumnar fascia; this is to be divided upon a grooved director, enlarging the external ring. This incision may divide the structure, internal to the latter lies the cremaster muscle; it is often
thickened and forms an incomplete covering—its is effected like the latter; internal to this lies the transversalis fascia and inter-cellular substance which must in like manner be divided, with great care. If the structure exist in the internal ring, or at either a slight rib of the knife, it is sufficient for its division. This will avoid the divisions of the epigastric artery which comes off from the external iliac and lies under the transversalis fascia, between the rings external to the external and internal to the internal one.

The Lescia Knife is to glide along the finger and directed within the structure by aid of the finger nail, and slight cut will suffice; but if the structure be inside the sac, it is pinched up a puncture made director introduce and the opened to the structure which must be divided as already spoken of, and the tumor reduced slowly and with great caution.
After that the parts must be closed by two interrupted sutures and adhesive flaps. There must be left a small opening for the escape of pus which may be formed from the inflammation or suppuration, to prevent its reflex into the abdomen which would inevitably give rise to peritonitis. Over the plaster should be spread a layer of patent lint secured by bandage. After 3 or 4 days the sutures should be removed and cold water dousing applied.

The patient must be suffered to rest quietly. Keep all symptoms of peritonitis abated etc. The bowels will act in 24 hours, if not give gruel injection but never purg. The patient, of course, must be kept upon the complete and most uninviting but, indeed. Should only be allowed barley water and ice for the first day or two, afterwards some beef tea, but no solid food till all risk of peritonitis have passed.

Our chief object is to keep patient quiet, remove irritation, local or constitutional; and prevent the development of extensive inflammation.