TORSION OF THE GREAT OMENTUM*

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Torsion of the great omentum was first referred to in the literature by Pierre de Marchettis in 1851. We owe the first full description of the clinical picture and operative findings to Oberst who published an account of torsion of the omentum caused by an adhesive band to the right inguinal canal, in 1882. A similar case was reported by Bayer in 1898. The next account in the literature was by Hochenegg in 1900 whose report and treatise were very full.

Up to the present time there have been reported twenty-two cases of so-called "idiopathic" omental torsion, and 147 associated with inguinal hernia. This meagreness of reported cases is by no means indicative of the frequency of its occurrence. It is probable that many surgeons have encountered this pathology without reporting it. I am not discussing this subject because of the rarity of its occurrence but to urge its consideration in the differential diagnosis of the acute abdomen; especially in the male with pre-existing inguinal hernia and a leucocyte count too low for the clinical picture of acute appendicitis.

In the acute surgical abdomen a positive diagnosis is ofttimes admitted to be difficult and the list of possibilities is a long one. The differential diagnosis of Henock's purpura and intussusception, acute pancreatitis and enterospasm or organic intestinal obstruction, appendicitis and tuberculous peritonitis have only to be mentioned as examples of pitfalls into which the surgeon may stumble in his attempt to make an accurate pre-operative diagnosis.

Many acute surgical conditions of the abdomen present the same symptoms and signs in their earliest stages and this fact increases the difficulty of an accurate diagnosis.

Torsion of the omentum is not to be found mentioned in surgical text-books under the differential diagnosis of acute appendicitis or acute cholecystitis and few text-books mention it at all. Keen's *System of Surgery* mentions it. Thomson and Miles, sixth edition, gives a complete but short description of the disease.

Torsion of the omentum has usually been diagnosed acute cholecystitis or acute appendicitis. A pre-operative diagnosis of acute epiploitis may have been guessed but it has never been made with any degree of certainty, according to the literature.

Let us briefly consider the comparison of the clinical pictures of acute

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epiploitis due to torsion and acute appendicitis. Age is not a factor. Omental torsion has occurred between the ages of fourteen and sixty-three years.

	Omental Torsion	*Acute Appendicitis*
Sex	Predominately male	Not so predominately male
Early pain	Right iliac fossa 88 per cent.	Mid-abdominal more often
Vomiting	Infrequent	Common
Nausea	Infrequent	Frequent
Pulse	80-100	Rapid rising
Temperature	98°-100° F.	99°-102° F.
Rigidity	Less marked	Early
Tumor	Sudden and large	Slow development
Percussion	Dull	Resonant at first

The clinical picture presented by a patient suffering from an omental torsion will lead the experienced surgeon to operate at once, and this is only one of the many examples of how our treatment of acute abdominal disease has advanced beyond our powers of diagnosis.

Upon opening the abdomen in most of these cases previously reported, it was invariably noticed that the parietal peritoneum was œdematous and that upon opening the peritoneum there was a gush of sero-sanguinous fluid. This finding would be of some value to the operator where the incision was a McBurney, although we must remember that torsion of other viscera may cause sero-sanguinous peritoneal fluid.

The histology of the affected omentum in these cases reveals a venous thrombosis and a perivascular infiltration of mononuclear leucocytes, lymphocytes, and an occasional polymorphonuclear leucocyte. In no case have bacteria been found.

Omental torsion has been grouped under three distinct classes. The first class is the abdominal type where no hernia exists and there is no apparent cause for the torsion. The second class is the hernial type where a piece of twisted omentum lies in the hernial sac above, is associated with other viscera, or where the omental tip is connected to the inguinal canal by an adhesive band. The third class is that type secondary to other intra-abdominal pathology, most often appendicitis, where the right lower portion of the omentum is not in contact with the diseased appendix yet it is torsed on its pedicle and is gangrenous.

Cases have been reported in which a portion of the omentum was twisted on a pedicle from one to nine turns, also cases in which the entire great omentum was torsed on a pedicle.

There are many theories advanced as to the etiology of torsion of the omentum. The most plausible of these theories are:

1. Adhesions of the tip of the omentum causing the omentum to swing and twist a pedicle for itself as would a triangularly folded handkerchief when held between two hands and swung.

2. Exaggeration of normal movements such as a sudden strain, twist of the body or a jump. This theory is the most plausible one because in

most reported cases there is neither a contributing anatomic cause nor a history of trauma, while in a few reported cases, and one of my own, a history of sudden straining and twisting of the body was followed by pain.

3. Increased intestinal peristalsis is thought by some to cause omental twisting.

4. Some believe the anatomical arrangement of the blood vessels predisposes to torsion.

5. Others believe that a previous inflammatory process leaving a localized area of omental thickening is the cause of the twisting. The explanation being that the thickened portion would be more cumbersome in its movements than would be the normal portions.

These explanations are all, however, only theoretical. The accurate answer as to the true etiology may be either one, a combination, or something entirely different.

There is not a single case on record of omental torsion due to an adhesive band in a femoral hernial sac.

The operative mortality on all reported cases since 1882 has been about 5 per cent. Of these seven deaths five were due to post-operative pneumonia and two were due to peritonitis.

In conclusion let me repeat that omental torsion is not a rarity among intra-abdominal lesions. It has probably been encountered a number of times by most surgeons and the surgical treatment is very satisfactory. It would be diagnosed more frequently if considered in the differentiation of acute abdominal conditions.

Four cases of omental torsion are herewith reported. Two of these cases belong to the abdominal or so-called idiopathic type, of which one was operated upon the clinical diagnosis of acute cholecystitis and the other for acute appendicitis. Of the other two cases, one belongs to the type associated with inguinal hernia while the last one belongs to the type associated with other intra-abdominal pathology, in this case an acute appendicitis. Each of these four cases is a typical representative of its type.

CASE I.—C. C., male, aged forty-seven, was admitted to the Lankenau Hospital. His chief complaint was abdominal pain of forty-eight hours' duration. Prior to the onset of the pain, which was gradual, he had been perfectly well. There had been no vomiting. He was sent to the hospital with the diagnosis of acute appendicitis. On admission the temperature, pulse, and respirations were 98.6° F., 80 and 20 respectively. The abdomen was moderately distended and there was some rigidity of the lower right rectus. The pain was exaggerated upon coughing and on deep inspiration. The blood count showed a leucocytosis of 11,600 with a normal differential count. The diagnosis of acute appendicitis made by the referring physicians was concurred in.

At operation a segment of omentum practically gangrenous was located just to the right of the umbilicus; the mass was twisted three times upon itself and adherent to the anterior parietal peritoneum. The affected portion of the omentum was excised. A normal appendix was removed coincidentally. The abdomen was closed without

drainage and the patient was discharged on the tenth post-operative day after an uneventful convalescence.

CASE II.—F. S., male, aged thirty-three was admitted to the Lankenau Hospital. His chief complaint was pain in the right upper abdomen of two days' duration. The pain appeared suddenly and did not radiate. There was slight abatement after belching large amounts of gas but the pain returned more severely than previously. His physician sent him into the hospital diagnosed acute cholecystitis. On admission the temperature, pulse, and respiration were 98.2° F., 102, and 18 respectively. He was obese. The abdomen revealed marked tenderness over the gall-bladder area and pain occurred there upon pressing any part of the abdomen. No tenderness over McBurney's point. The blood count showed a white cell count of 7,600 with 75 per cent. polymorphonuclears. The icteric index was 6 while the van den Bergh was normal. The diagnosis of acute cholecystitis was concurred in. At operation a piece of slaty blue gangrenous omentum about the size of a silver dollar was found twisted twice on its pedicle just below the hepatic flexure of the colon. Gall-bladder and appendix were normal. The affected piece of omentum was excised. Abdomen closed without drainage and the patient discharged on the twelfth post-operative day after a normal convalescence.

CASE III.—C. D., male, age thirty-seven, was admitted to the Lankenau Hospital. His chief complaint was lower right abdominal pain of seven days' duration. The pain was diffuse at first and the onset was gradual. No nausea or vomiting. Has had a right inguinal hernia for eighteen years and a truss would not retain the rupture. His family physician was called in, diagnosed acute appendicitis, and ordered him to the hospital at once. On admission the temperature, pulse, and respiration were 100° F., 104, and 24 respectively. The abdomen was obese and full. Peristalsis was tinkling in character. In the right lower quadrant a very tender mass could be palpated. There was moderate lower right rectus rigidity. A hernial sac could be palpated on the right side as the patient coughed. There was a leucocytosis of 11,900 with a normal differential. The pre-operative diagnosis in this case was appendiceal abscess and right inguinal hernia.

At operation the right lower tip of the omentum was hæmorrhagic and gangrenous, forming the mass in the right lower abdomen. The distal tip of omentum was twisted into a narrow strand extending down into the right hernial sac. The omentum was excised well above the affected area. A normal appendix was removed coincidentally. The abdomen was closed to a cigarette drain in the pelvis. Drainage was out on the seventh day and the patient discharged on the eleventh day.

CASE IV.—H. T., male, age twenty-three, admitted to the Lankenau Hospital. His chief complaint was right lower abdominal pain of two days' duration and of gradual onset. He was somewhat nauseated but did not vomit. His physician was called in, diagnosed acute appendicitis and sent him to the hospital at once. On admission the temperature, pulse, and respiration were 98.4° F., 120, and 24 respectively. The examination of the abdomen revealed pain, tenderness, and rigidity in the right lower quadrant. No herniæ. The blood count showed a leucocytosis of 16,200 with 67 per cent. polymorphonuclears, 25 per cent. lymphocytes, and 8 large monocytes. The referring physician's diagnosis of acute appendicitis was concurred in.

At operation a very mildly inflamed subcæcal appendix was removed. A piece of strangulated, gangrenous omentum, twisted on its pedicle twice, was removed. This affected omentum was about four inches away from the appendix. The abdominal wall was closed without drainage and the patient was discharged in nine days.

In each of these cases upon opening the peritoneum, sero-sanguinous peritoneal fluid was encountered and in the last three cases there was localized œdema of the parietal peritoneum.

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