INTRA-ABDOMINAL OMENTAL TORSION

REPORT OF THREE CASES

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OMENTAL torsion is a pathologic condition that has long been recognized and frequently described. In 1851, Marchette reported a case, and Oberst[41a] one in 1882. Later on a distinction was made between cases with a hernia combined with a torsion within or outside of the hernial sac and those without any definite hernia. Most of the cases occurred in the former group, the strictly abdominal or idiopathic omental torsion being a rarity. Corner and Pinches[9a] (1905) found among 41 cases reported only four without a hernia. There have probably been more than 200 cases reported up to the present time, but of these, scarcely more than 40 were of the strictly abdominal type. The latter can, therefore, hardly be considered worth the publication of a single case, but as only a very few cases have been published previously, as having occurred in Sweden, the following observations and appended case reports were thought to be of interest.

Classification.—Omental torsions have been classified into different groups by many authors (Aimes,[1] Pretzsch,[45] Skeel,[56] *et al.*), but the classification of Payr[42] (1906) is probably the most satisfactory, and is herewith appended:

I. Without a Hernia (entirely intra-abdominal).
   (a) Simple omental torsion; only the omentum itself being rotated.
   (b) Complicated torsion; the omentum having adhered to some other abdominal organ together with which the rotation takes place.

II. With a Hernia.
   (a) Intra-abdominal torsion, without symptoms from the hernia.
   (b) Intra-abdominal torsion, with previous inflammation or symptoms of kinking which have resolved spontaneously. The torsion is in this case entirely intra-abdominal.
   (c) Entirely hernial (saccular) torsion; only the portions of the omentum inside the hernial sac being rotated.
   (d) Combinations of the above.

Usually only a minor part of the great omentum is twisted, but cases have been described of total omental torsion. The fact that the twisted part of the omentum is nearly always found in the right part of the abdomen has been ascribed to anatomic conditions. Some authors direct attention

Submitted for publication March 25, 1938.

to the frequency of appendicitis in the anamnesis of patients with omental torsion, a previous irritation of the peritoneum in such cases possibly having a localizing importance. Most of the hernial cases were right-sided inguinal herniae, seldom femoral.

Incidence and Age.—A critical survey of the cases published up to the present time shows that the occurrence of omental torsions is greater in men than in women. The condition can occur at any age; the youngest case was three years of age, the oldest 79. However, by far the greatest part of the cases are between 30 and 50 years of age.

Concomitant Pathology.—The presence of a hernia together with an omental torsion facilitates our comprehension of the factors governing the formation of the omental tumor, which must be considered the postulate for the creation of a torsion. Through atrophy and conversion into connective tissue the portion of the omentum strangulated in the hernial sac becomes firmer, the weight of this tumor favoring the formation of a stalk. Through torsion of the latter a typical condition of acute omental torsion is caused, with disturbances in nutrition and circulation. The omentum frequently becomes attached to the hernial sac by adhesions, and sometimes rotates around two axes.

Etiologic Factors.—The etiologic factors in the cases of free omental torsions, without the presence of a hernia, are not clear, however, and several theories have been offered, some based upon experimental investigations, the best known of which are those of Payr[42] and Sellheim.[52a]

Payr ascribes the formation of an intra-abdominal torsion to hemodynamic forces. In the stalk of the omental tumor, following an inflammation or from some other cause, a change in its relative position may cause kinking. The stasis resulting in the tortuous veins favors the completion of the torsion, and finally occlusion of the straight arterial blood vessels occurs. The different specific gravity in the several parts of the omental tumor is said to predispose to the formation of torsions.

Sellheim[52a] is of the opinion that rotatory movements of the whole body are transmitted to the visceral organs. At the cessation of the rotatory movement of the body, the visceral organs continue that movement in different degrees. The same author puts great etiologic importance on the fluctuations in intra-abdominal pressure and intestinal peristalsis. In the several cases omental torsions were observed following violent movements of the body, such as occur in sports and gymnastics, a fact supporting the correctness of his theory.

Jüngling[27a] calls attention to the possibility of a primary, congenital omental stalk. Other authors are of the opinion that thrombotic and embolic processes in the vessels of the omentum should be considered as etiologic factors. The importance of an antecedent appendicitis has been mentioned before (Melchior, Boss). Betz[3] points out the protective faculties of the omentum during infections in the abdominal cavity and its

self-sacrificing activity in this connection. Porzelt[44] stresses the etiologic importance of a weakness in the walls of the blood vessels themselves.

A clear and satisfactory explanation, therefore, of the etiologic mechanism of these torsions has not yet been rendered; possibly the truth may lie in a combination of all of the theories offered. Probably, however different etiologic factors dominate in different cases.

Symptomatology.—The symptomatology of the omental torsions in the beginning evidences, not infrequently, a shorter or longer period of diffuse abdominal complaints (indisposition, pains, obstipation, *etc.*). An acute torsion is followed by rather severe pain in the right iliac fossa, sometimes however, spread more diffusely. Vomiting and nausea are reported in most cases. Inhibited passing of flatus is not uncommon. Temperature and pulse are usually only moderately increased. The leukocytes are reported to be low, but in most of the published cases they were definitely increased, in consideration of which a definite opinion cannot be stated. Blood counts sometimes showed a displacement to the left. The fact that the clinical aspect is very similar to an acute appendicitis is apparent on consideration that nearly all known cases have been operated upon under this tentative diagnosis. Corresponding to the tenderness in the right iliac fossa one often finds some muscular resistance, and in many cases a resistant mass more medially located than is usual in perityphlitis. The localization of the omental torsion can sometimes give rise to a suspicion of cholecystitis or a twisted ovarian cyst. Riedel[46] reports a case with a resistant mass in the left iliac fossa, as in one of the cases described below.

As has been said before, nearly all cases are diagnosed at operation. In addition to appendicitis one must consider intussusception, intestinal tumors and ileocecal tuberculosis. In cases of acute abdominal conditions with unusual syptoms, one should also bear omental torsion in mind.

Operative Findings and Prognosis.—At the operation one usually finds, after opening the peritoneum, quite a large quantity of serosanguineous fluid in the abdomen. The twisted omental mass is usually loosely adherent to the adjacent organs or to the peritoneal wall. As stated before, the size varies greatly. On account of circulatory disturbances and infarction, it is purple and firm. The stalk is sometimes twisted as many as five or more times. Treatment consists in total removal of the twisted omentum. The prognosis is good, the death rate in cases treated in time being less than 5 per cent. The few cases of death reported have been in elderly patients with a complicating pneumonia.

Three cases of intra-abdominal omental torsion are herewith reported, two of which have been placed at my disposal by my present chief and operated upon by him at the Gällivare Hospital.

Case Reports

Case 1.—Hosp. No. 255/1925: Male, age 36, was admitted to the hospital complaining of pain on the right side of the abdomen, not severe enough to keep the patient from work, which had begun two days previously. No vomiting or nausea. No chills.

On the day of admission the pain had become more severe, but no other complaints. Micturition normal.

Physical Examination.—General condition good. Heavily built, fat. Heart: dull, systolic murmur, no dilatation. Lungs: Occasional râles, diffusely spread. Abdomen: Tenderness and marked muscular resistance in the region of the appendix. Indirect tenderness to the left, diminishing upwards toward the costal arch. No palpable resistant mass. Temperature 38.3° C. Albuminuria.

Operation (Dr. Möller): Celiotomy plus Resection of Omentum. Tentative diagnosis of appendicitis, with reservation for the nontypical course of the disease. Under general anesthesia a diffuse, resistant mass was felt under the right rectus muscle extending high up but not quite to the costal arch. On opening the peritoneal cavity liquid blood was found present. No inflammatory exudate, or any other inflammatory phenomena were found on the intestines. Cecum and appendix were not examined. A second incision was made in the median line, above the navel, with the thought of finding a pancreatitis. A firm swollen lobe of the omentum was felt above. No free fluid was found in the upper part of the abdomen, or any fat necroses or injection of the viscera. Downwards, to the right, a large firm mass was felt and easily delivered. It consisted of a part of the great omentum, the size of a fist, firm, hemorrhagically infarcted, and twisted several times about its thin stalk. A couple of tourniquets were applied to the stalk which was then ligated. Suture. Convalescence without complications.

Case 2.—Hosp. No. 1407/25: A male, age 12, had been treated at a sanatorium for pulmonary tuberculosis for ten months, and had been discharged three months previously. He had become suddenly ill the day before admission to the hospital with pain in the lower abdomen. Normal stools. Increasing pain with vomiting and chills.

Physical Examination.—General condition moderately affected. Temperature 38.2° C. Abdomen not distended. Tenderness over the entire abdomen but without signs of peritonitis. Tenderness most pronounced in the left iliac fossa with marked resistance even on light palpation. No resistant mass could be felt. Urine normal.

Operation (Dr. Möller): Celiotomy plus Resection of Omentum. Incision in the median line below and a little above the navel disclosed bloody fluid in the abdomen. On the visible loops of the intestines typical tuberculous nodules were found. No distention of the intestines. The resistant mass, which was palpable in the left iliac fossa after general anesthesia had been established, was identified as a lump of the omentum, the size of a goose egg and loosely adherent to the left side of the entrance to the pelvis. It was easily mobilized and was connected with the omentum by a thick stalk the size of a pencil and twisted so many times that it had nearly become severed. The omental tumor was hemorrhagically infarcted and on its surface small, yellow tuberculous nodules were observed. Catgut ligatures were placed around the stalk and the mass removed. The abdominal effusion was sponged out. Suture. On cutting through the omental tumor an irregular, folded, caseous region was found in the middle of the hemorrhagically infarcted tissue. Convalescence without complications.

Case 3.—Hosp. No. 1253/37, Borås Hospital: A female, age 40, had complained for the past year, several times a month, of slight transient pain in the right iliac fossa. No vomiting or nausea had occurred in connection with the attacks. The day before admission she had become ill with similar pains in the right iliac fossa. Went to work but had to discontinue because of the increasing pain. She was nauseated and vomited several times. No chills. Stools normal. Micturition normal. Slept only a short time on the night before admission on account of the pain. On the day of admission the pain had lessened but the abdomen had become more tender, both to pressure and movements.

Physical Examination.—General condition good; fat. Weight 92 Kg. Temperature 38.3° C.; pulse 100. Heart and lungs normal. Abdomen: Soft, thick subcutaneous layer of fat. Tenderness to the right, medially. Indirect tenderness elicited. No certain resistant mass. The tenderness seems to be superficial. No inguinal herniae. Gyneco-

logic examination normal. Rectum negative. Urine normal. On the diagnosis of appendicitis the patient was operated upon by the author.

Operation.—Celiotomy Plus Appendicectomy, and Partial Resection of the Omentum. Slightly increased amount of fluid in the abdomen. The appendix was found but looked innocent. Removed as usual. Intestines slightly injected, but not distended. No Meckel's diverticulum. Uterus and right adnexa normal. Gallbladder could not be reached through the incision. On palpation upwards, toward the navel, an omental tumor was felt just to the right of the median line approximately at the site of maximum tenderness. The tumor was delivered into the wound. It consisted of a twisted part of the omentum about 8 cm. long and 3 cm. thick, tapering toward the poles. It was light purple and rather firm in consistency. On both poles were stalks connecting the tumor with the rest of the omentum. Both these stalks were twisted three to four times. The pathologic portion of the omentum was removed. Suture. Microscopic examination of the resected portion showed a recent hemorrhagic infarct without any positive older characteristics (Forselius). Convalescence without complications.

The three cases of omental torsion reported herewith seem to have occurred entirely intra-abdominally, without concurrent herniae. In the first and third cases, no positive or plausible etiologic factors could be found, but the second case had a tuberculous process in the peritoneum and omentum, which, with some certainty, had predisposed the omentum to the torsion, especially as the twisted part contained a firmer caseous portion. The diagnosis before operation was appendicitis in all the cases.

SUMMARY

The author has surveyed the literature on omental torsions and the theories of their genesis. The clinical aspect is practically impossible to separate from that of appendicitis. Three cases of entirely intra-abdominal torsion are detailed. In only one of these was a plausible etiologic factor found.

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