Thesis
on
Appendicitis.
By
"Studia et rebus honesta."

April 25th, 1893.

W.G. McLewan
This disease was attracting much attention at the present day on both sides of the Atlantic than Appendicitis. It is only of late years that the frequency and importance of this disease have been recognized, and it is to the surgeons of the United States, and more particularly to Fitz of Boston, that the profession is mainly indebted for this recognition.

His luminous employment in describing this disease and its sequelae and complications has led to considerable confusion. The term periappendicitis was first suggested by Goldschi in 1830, as a description of perforating appendicitis and resultant localized peritonitis. The term perforation was suggested as a description of the same condition by Russe of London in 1837. Albers of Bonn introduced the term appendicitis in the following year, as applicable to what he described as inflammation of the cecum.
duced the term paratyphosis as description of an inflammation of the connective tissue behind the cæcum. As these terms have been, and are used in different senses by different writers, and as the underlying lesion in almost any such case is not found in the appendix, it would be conducive to clearer in description were they discarded, and the terms appendicitis, appendicular abscess and appendicular purulent adhered to—the precise situation of the appendicular tumour or abscess being indicated by reference to the usual anatomical landmarks. We may add that the term cephaloiditis has been recently suggested, but has not met with much favour.

Appendicitis, then, as may briefly be defined as an inflammation of the vermiform appendix of the cæcum, generally associated with the presence of a firm, boggy, the organ, bilius, or relaxed, and often.
terminate fatally by perforation and peritonitis.

The best classification of cases of appendicitis we have met with is that given by Kuen. It is as follows:

(1) Mild, without abscess, terminating in resolution.

(2) Perforatin, followed by general peritonitis,
   (a) a sub-varieté, of pleuritis forming,
       perforating very early.
   (b) a sub-varieté, mild for some time, and then suddenly perforating

(3) Perforatin, but protected by adhesions so that a local abscess results.

(4) A class in which abscess forms slowly—i.e., chronic, lasting for weeks, perhaps for months.

(5) Recurrent, one attack following another, finally fatal after from two to twenty attacks.

Professor Wicke of Copenhagen classifies the varieties of peritonitis consequent upon appendicitis as follows:

(1) Peritonitis abdominalis adhesions;

(2) Peritonitis appendicularis localis;

(3) Peritonitis appendicularis circumscripta;

The exciting causes of appendicitis is very frequently the presence of a foreign body within the appendix. A foreign body, if it is hard, is not invariably found on inspection, but the post-mortem examination.

But one of several reasons may account for this. It may have worked back into the cæcum. It may have passed into the abscess cavity, or it may have hidden, among adhesions. What is certain is that almost invariably a perforation of the appendix is found when carefully looked for, and this perforation generally points to a foreign body as it came to the free majority cases the foreign body is autolythicous, and consists of a mass of incipient sepsis. In some cases a real foreign body, such as a seed, or stone of fruit, or a pin, or a piece of thread is found. Out of a total of 146 cases, Multistock found foreign bodies in 63 per cent, and in 54 out of the 63 his foreign body was of fecal origin.
How does the presence of a foreign body lead to perforation? When the foreign body in question is a sharp-pointed object, with its point unprotected, the origin of the perforation presents no difficulty; but the case is different when, as is more usual, the body is a rounded vegetable. We believe Salamons' explanation, first published in 1802, is the correct one. He supposes that a foreign body finding its way into the appendix by some ill-defined contraction of the intestine, acts in two ways. In the first place, it obliterates the oriﬁce of the appendix. In the second place, it causes compression of the walls of the appendix—a compression which must of necessity be injurious to the contents contained within these walls. As a result of this obliteration of the oriﬁce, the secretion of the mucous membrane of the appendix accumulates within the cavity leading to its obstruction. This obstruction which

2. In Salamons, Appendicitis et Perityphlii, p. 416
are always present on the surface of the mucous membrane incised and multiply within the distended parietes as in a closed vessel. They moreover take on a pathogenic action, and are able to attack the tissues of the wall, the vitality of which is lowered in consequence of the compaction of the vessels, with the result of inducing ulceration and, later, perforation. Thus we can understand how a rounded virginalus can bring about a perforation — a perforation, too, which may be at some distance from itself, and near the end of the appendix.

In a few cases perforating appendicitis is the result of a specific inflammation — carcinomatous, tubercular, or actinomycotic. Of the latter a unique case was reported in 1891 by W. H. Ransome.

Among predisposing causes of Appendicitis it is usual to mention constipation; but statistics hardly have

3 quarts by Salomon, p. 85.
This out. Salamon insists that constipation is not be regarded as a cause of appendicitis, and my patient by points out that "constipation is, one may say, the habitual state of the female, and nevertheless appendicitis is four times more frequent among men than among women; on the other hand, constipation is the rule among the aged, and all statistics show that appendicitis is the exception after the age of fifty." They found constipation mentioned in the records of 38 cases out of 209. But it must be remembered that many patients pay very little attention to this symptom, and a good ignorant of the fact that constipation may exist in spite of a daily evacuation of the bowels. As a purgatory caused of appendicitis, Salamon says when on a chronic superficial ulcerated colitis, characterized by indefinite evacuation of mucus and impalpable fistula of the bowel, and manifesting itself...
by dull abdominal pain, by abnormal function of the abdomen, and by irregular stools, sometimes flabby, sometimes dry; this colitis is regarded as the most frequent cause of the fecal evacuation and with in appendicitis. From its tendency to cause chronic irrita-
tion of the large intestine, one cattle is both regarded as a predisposing cause. "It is now that is explained," Johnson complimentingly points out, "the frequency of appendicitis among the English and Americans."

The male sex and early life cannot certainly be regarded as predisposing causes of appendicitis. Appendicitis is essentially a disease of adolescence and early adult life, and about 80 per cent of all cases occur in males. It is rare after 40 years of age, but it may occur at any period of life and it is not infrequent in childhood. About 10 per cent of all cases occur under the age of 10 years. The earliest case on record is one reported by
Hence, of New York as occurring in infancy of two weeks.

The most elaborate statistics as to the relations of appendicitis to age and sex are those collected by Tuff.

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Number of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10 months</td>
<td>22 cases</td>
<td>10%</td>
</tr>
<tr>
<td>10-20 years</td>
<td>86 cases</td>
<td>38%</td>
</tr>
<tr>
<td>20-30</td>
<td>65 cases</td>
<td>28%</td>
</tr>
<tr>
<td>30-40</td>
<td>34 cases</td>
<td>15%</td>
</tr>
<tr>
<td>40-50</td>
<td>8 cases</td>
<td>3%</td>
</tr>
<tr>
<td>50-60</td>
<td>11 cases</td>
<td>5%</td>
</tr>
<tr>
<td>60-70</td>
<td>1 case</td>
<td>1</td>
</tr>
<tr>
<td>Above 70</td>
<td>1 case</td>
<td>1</td>
</tr>
</tbody>
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Out of 247 cases, 197 occurred in men (80%), and 50 in women (20%).

Why is appendicitis most often seen between the ages of ten and thirty years? According to Salmon, "on pourrait supposer que les jeunes gens sont plus contumaces d'expo, d'impuissance alimentaires, de fautes, violeurs, de refroidissement:" - all conditions which in rank as occasional cause of the disease. Ball of Dublin suggest this...
a patulous sort of orifice leading from the passage to the abdomen, probably congenital, accounts for the frequency of this disease in early life. The symptoms and bearings of course vary with the type of disease present in any individual case. In its simplest form, all with attendant terminating in resolution — the leading symptom is pain. This pain is in "more or less suddenly, but may be preceded by some days of vague discomfort. It is generally more or less diffused throughout the abdomen, but it is found more especially localized on the right side, and more particularly at what is now generally known as McBurney's point. In 1889 Dr. McBurney first pointed out this, according his experiences, "the fixed locality of severe tenderness to pressure" — as obtained by the pressure of one finger — was "just exactly between one inch and a half and two inches from the anterior superior spine of the ilium, on a straight line..."
drawn from this process to its conclusions." Other surprises of recent experience in this
class of cases have corroborated Mr.
Bunney's observation. Thomson, of New
York, remarks that "in pointing out
this symptom, Dr. W. Bunney has
rendered a service which it is difficult
to estimate too highly; it has made
the diagnosis of appendicitis, in its
early stage, at least, easy for any one.
Mr. Bunney's point indicates the site of the
base of the appendix when it arises
from the cecum, but it does not
demonstrate that this chief test of the
disease is there.

A number of surgeons, including
Byrd of London and Riggs of Phila-
delphia, have recently indicated their
opinion that this sign has really
any little positive diagnostic value,
and from our limited experience we
are inclined to open with them the
one case reported by Hodgson in the
1870, is not true on Mr. Bunney's poison.
extremely well marked. The patient died of peritonitis and on postmortem examination the appendix was found healthy. Along with the pain there is rigidity of the abdominal muscles most marked on the right side. Some pneumonia is always present, but this is uncommon in this class of cases. The abdomen is usually a little above 100°F. Rigor is sometimes experienced. Vomiting and abdominal distension from vomiting may or may not be present. Distension of anis sometimes occurs. The pain is apparently increased.

Next to the pain, the most important element in this case is the presence of a focus in the region of the appendix. This may be small, and its absence is possible. Nodules or its evidence by palpation and percussion, or by palpation examination, the presence of a focus in the appendix of the inflamed appendix will cause some surrounding adhesions peritonitis. In addition, there may be an extension of
in caecum, by means, as a consequence of enteritis. Local paralysis of the bowel. The adhesions peritonei is to be accounted for by extension of the inflammation, as the picture of a perforation, but in such cases the perforation could be responsible of small size, and the amount of milk extravasated correspondingly small. It is possible, however, that in some cases of this kind so-called appendicitis, when no hernia can be made out, the condition is really that of "appendicular colic"—set off by the entrance into the apex of a foreign body and hemorrhaging on its rupture.

That caecal perforation appendicitis does occur is a proposition which can admit of no doubt. The bulk is proved conclusively by the results of post mortem examinations. Ioffe found appendicular lesions present in 36 percent of 300 post mortem examinations.

The following is quoted:

10 Quoted in Handbuch of Pathologie Krankheiten.
Perforating appendicitis is one of the most terrible of diseases. The patient, probably a young man, who has generally enjoyed excellent health, is suddenly attacked with intense abdominal pain, followed by the symptoms of profound shock, and, very soon, by signs of diffused peritonitis. The perforation of the gallbladder seems. He presents the characteristic abdominal or peritoneal fascia, the paleness, hollow and thready, the pinched nose, the eyes sunk and circled with black. Everything he takes is vomiting. The urine is rarely and albuminous. The surface of the body is cold and clammy by a clammy sweat. The pulse, small and rapid, from the first, becomes weaker and weaker, and the patient succumbs in from two to four days.

Fortunately his fulminating case is comparatively rare. Muscular common is the type of appendicitis in which, as a result of perforation, a
local abscess form, protected by adhesions. In this case the initial symptoms are much the same as in the first type, but the pain is higher— the temperature rising sometimes to 102° or 103°. The pain is deep and the patient inclines later on his back, with the right leg drawn up. The occurrence of suppurat

ion will be indicated by rigor and an irregular, hectic temperature. The leading symptoms of this variety of affection, is the presence of a fluctuating hum, in the right iliac fossa. The hum may first be felt only on respiration, but it gradually soon becomes external on abdominal palpation. The release may point through the skin of the anterior abdominal wall, and this fortunately in the way in which, if the case is left to itself, the pus most frequently finds its exit. It may perforate into the dorsal abdominal cavity or into the pelvic cavity; or it may find its way into a hollow viscera— the bowel or the bladder, or it may burrow down, into the thigh cav


Dr. Bell gives the following statistics as to the terminations of 67 cases of this nature. In 28 cases, the abscess made its way through the anterior abdominal wall; in 15 cases, it went its way into the peritoneum; in 9, into the general peritoneal cavity; in 2, into the thorax; in 2, into the rectum, and in 2 into the bladder.

When a fluctuating tumor in the right iliac fossa can be made out, the diagnosis is easy, but sometimes the diagnosis presents facts and circumstances the difficulties. The diagnosis of chronic cecitis, of intestinal obstruction, of pelvic peritonitis, of pelvic hemorrhage, and of perineal abscess from spinal discase have been made in such cases.

We may remark that the use of the exploring needle for diagnostic purposes in such cases is to be deprecated, so much so that it is unwholesome in its results and dangerous, saving, however, those of the patient.
may wound the wall of the ileum's recess, or from a cause of infection to previously healthy tissue.

The variety of appendicitis constitutes a serious disease. The main danger is that the abscess may perforate into the general abdominal cavity and set up a rapidly fatal after peritonitis. If the tons is a point on the patient may die from exhaustion. Fatal hemorrhages may occur, though complication of this internal iliac or deep circumflex iliac arteries, of pyelo-phlebitis and blood poisoning may be set up.

The case of appendicitis is a chronic abscess, small and comparatively pain in nature. His symptoms are less urgent and the pain is less. The first danger in case of this kind, next to perforation and peritonitis, is extension.

Releasing or Resuming Appendicitis is an important variety of the disease, but its importance and frequency
can only nearly be recognized. This first attack in a case of this kind generally resembles a case of mere or less mild appendicitis, as above described. The patient suffers from pain, uneasiness, colicky pains, and constipation, with a hunger somewhat as long as a half off a loaf found in the night ible forces. Under expert treatment—absolutely rest in bed, liquid diet in small quantities and frequent small, gradually disappears, and the patient's strength returns. After a month or two he looks after himself as usual and resumes work. After a few months or it may be weeks, possibly after some unusual exertion, he is again attacked with pain in the region of the appendix. On the day following the onset of the pain a small lump may be felt out beneath the skin right under muscle. This lump rapidly increases in size, and the constitution sinks. These above referred to pains create
Himself evident. Under the same treatment the patient may gradually improve, but probably her nervous system does not completely disband. A third relapse, very severe to follow by a few days at a brief interval, the patient in short soon becomes a chronic invalid, and holds his life on a most precarious tenure, in consequence any attack may prove fatal. A large number of relapses have been reported in individual cases, some reports as cases in which a man, aged 19 years, had 14 attacks between November 1847 and March 1849. Or, in another, the appendix was found "distended and bulging itself, and held down, by a complex mass of tough adhesions. The cæcum was found and the evidence of inflammation existed, such as very frequently the pathological condition present in such cases, and it very often depended on the presence of a foreign body within the appendix.
Sometimes the affection is found associated with fluid, as the cause of obstruction entitled affection of the affection. When the affection is much less of intensity when itself suffers may occur.

It is not easy to account for the liability to resemble or resemble in cases of affectional difference. Some suggest that the disease is likely to resemble when the exciting cause persists but is for some reason in effect of being more common and obscure. This explanation only removes the difficulty a step farther back. Salamon has then suggested — either the foreign body remains uncleared or the affection constitutes of its puerperal or inflammatory focus always ready to provoke new attacks: or, although the vessels have been displaced the lesion caused by the first inflammatory attacks persist in a subacute state, showing themselves from time to time.
under the action of one or other of the predisposing causes of the disease, or, finally, that the ring of the former body in the canal then is dilated and enlarged, and that this enlargement facilitates beneficial the advance of new concretions.

We now proceed to consider the treatment of appendicitis. This question in surgery is now fairly discussed at the present day. We shall proceed from right to wrong, starting by discussing first the treatment of recurrent appendicitis. The treatment of recurrent appendicitis may be summed up in four words—excision of the appendix. Scientific treatment must be based upon a correct pathology, interpreted by a just diagnosis. We are assisted by the right treatment by considering what takes place in these cases. Spontaneous cure of a chronic perforated appendicitis will simple adhesion frequently prevent...
may take place by resolution and an absorption of this fibrinous exudation. Spontaneous cure of perforating appendicitis may occur in the following way. The perforation leads to a localized adhesions peritonitis, while the appendicitis leads to obliterative of the lumen of the organ, which falsely contracts off and shrink of into fibrinous cord. In practice an attempt to spontaneous cure of this kind occurring in such perforating cases for two reasons. In the first place, the process may influence and long continued illness, with some of which the patient may sink and, in the second place, as cannot be seen that the peritonitis will remain localized, and will become general and fatal. We insist and improve upon, the method of spontaneous cure by excising the appendix. The operation is to be performed by pressure during a quiescent interval between the attack.
The operation is seldom undertaken lightly, because, while sometimes comparatively easy, it sometimes presents operation of extreme difficulty—one of the most trying in fact which can face little, loss of the surgeon. The abdomen varies considerably in size, length, and position, and for these differences, the surgeon cannot be prepared. He must be prepared for the effects of the inflammatory lesions. The appendix may be found only after much difficulty, buried among adhesions or adherent to the bowel. It may be found not only hanging into the pelvic cavity, but firmly adherent to the inner aspect of the anterior pelvic wall—so firmly adherent that its removal is impossible, and the worst that can be done is to pass a ligature round the appendix for some inches, and as near as one can, the terminal end of the appendix as possible, and remove this proximal portion of the organ. In
The majority of cases it is possible to reverse the acute appendix. This treatment of recurrent appendicitis can point to a long roll of brilliant successes — many many men, being her success by it from a life of chronic ill-health, and the prospect of an early peace and interest to a life of energy and activity.

Thus a case of appendicitis first came under observation at a period when an abscess has already itself the indication is plain. The abscess should be evacuated as soon as possible — the early being thoroughly washed over and afterward drained until suppuration ceases. Nothing is gained by delay in such cases, and any home delay increases the danger of the occurrence of perforation. Even then, the abscess is associated with peritoneal pain. The operation should not be delayed, and laparotomy in such cases is often advisable. Brilliant.
Success has been achieved in some cases of this kind, and probably many more such triumphs await the surgeon in the future. We may here remark that probably many cases of general peritonitis hitherto described as of idiopathic origin can really be due to perforating appendicitis. And, having this probability in mind, it is to be hoped that, in the future, the mortality from peritonitis may be considerably reduced by early operative interference, after the abrupt onset of symptoms of acute peritonitis.

In fulminating cases of perforating appendicitis, the patient's only chance lies in a prompt laparotomy, followed by excision of the appendix, and thorough washing out of the peritoneal cavity with sterilized water. The patient's chances of recovery are a faint one, but he should have it. Pain, shock of coming to grief, in full dose.
It is when a case of appendicitis comes under observation, from, or almost from, the onset, that the quickest difference of views as to treatment emerges. What we may term the classical treatment of the disease has in brief consisted in keeping the patient at absolute rest in bed, under the influence of sufficient opium to greatly limit peristalsis of the bowel, and fed on a starvation diet of milk and liquid soups — fish in small quantities at a time. This treatment is to be continued until evacuation has occurred, or until an abscess has declared itself or symptoms of perforation, peritonitis, have set in, when surgical intervention, of the nature above referred to, is indicated.

Of late years, however, especially in America, appendectomy and excision of the appendix at a very early stage of the disease has been advocated almost as a routine practice.
"It is apparent," says White of Philadelphia, "that the surgeons who have brought the methods of their veterinary cases up to an arbitrary standard by dividing their normal constitutions, who have performed "radical cures" on all their human cases, who have removed the ovaries of the majority of their normal female patients, who have done laceration amputation on their microcephalic idiots, and have tapped the umbilicus of those who were hydrocephalic, are occupying themselves largely with the appendix."

The first argument for early operation in cases of appendicitis — that is, operation within the first 24 or 48 hours — is that in theory obviates the risk of perforation and the setting up of peritonitis; and a large percentage of recoveries in cases thus treated is claimed, in comparison with cases treated by the expectant method.
As we cannot, it is said, foretell what cases will end in peritonitis, and what cases will go on to perforating peritonitis and excision of the appendix should be performed in almost every case as a prophylactic as well as curative measure.

If the vast majority of cases of appendicitis did seriously endanger life, there would be little force in this argument; but that this is the case remains to be proved. We must not forget that many fatal cases of appendicitis occur, as is proved by post-mortem examinations. With regard to the bit of memory under expectant treatment, too, it must be remembered that probably a very large number of mild cases of appendicitis occur, which are never recorded. Still, on the other hand, most operational cases are nowadays, likely some of latter type reported in medical journals or hospital reports, and from a basis of statis
local conclusions. Further, it is both remembered that many cases which
have occurred of the operation would
probably have occurred without opera-
tion, being cases of simple
appendicitis. Besides, some
have been probably less, lost through
unnecessary operations. Safaromy
is a serious means. With all
the advance of modern, ambitious
surgery it is rare likely to an
operation, without damage from
shock — not to speak of the risk
of setting up peritonitis.

Most light on the Still
subject of appendicitis is needed,
but till that light has been obtained
we shall continue to regard the
cautious, classical method of
treatment as the correct one. And
in suspect that most surgeons
will be of the same opinion.
In writing this thesis the following recent articles and monographs have been consulted.

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1892. Appendicities & Kinkyphilis. Par.
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   Lenon, Paris 1892.

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in Appendicitis. By D. C. B. Bell
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Sept. 1892)

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Roswell Park and in The Syllabus
Practical Therapeutics, edited by H.
Arnoy Harw. Vol. II.