Appendicitis.

Its Etiology, Pathology, Clinical History, Diagnosis and Treatment,

with some remarks on the Anatomy and Physiology of the vermiform appendix.
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Its etiology, pathology, clinical history, diagnosis and treatment, with some remarks on the anatomy and physiology of the vermiform appendix.

Yes, I think, of all the ills to which flesh is heir in the last years been more prolific sources of discussion within the bounds of the medical profession, or subjects of more absorbing interest to the general public, than acute inflammatory affections of the vermiform appendix.

In view of the apparent increase of appendicitis amongst the people of today, numerically as it does, even the Kings of Royalty in its long list of victims, I venture to think it a topic well worthy of the most careful consideration, and, accordingly, to this end I desire, however imperfectly, to devote this thesis, even at the risk of being accused of having chosen a subject that some people consider hackneyed, and thoroughly ridden to death.

One cannot help feeling that its increase is only apparent, and is due to the very much improved knowledge and means of diagnosis of today, whereby the conditions that used
to be grouped together under the old-fashioned term "Inflammation of the Bowels", are now differentiated, and their exact situation in the alimentary canal located with the utmost precision. This, of course, has resulted in the production of a fresh list of technical phrases, of which Appendicitis is but one. On the other hand, it may be due to the changes of environment produced by the process of the evolution of our species. Thus, our mode of life is totally different from that of our ancestors, our habits are not the same as theirs, and even many articles of our food are brought from Climes unknown to them, and that perhaps, not so many years ago. This affection is one of the commonest, and most important of the acute intestinal disorders of today. The condition was formerly thought to be due to disease of the Caecum - Typhilitis, or of its peritoneal investment - Peri-typhilitis, but, with rare exceptions, the Caecum is quite unaffected by the changes that occur.

The recognition and description of the affection were first made known to the world by the work of American Physicians and Surgeons.
In 1883 Peiper described what is known now as Recurrent or Relapsing Appendicitis.

In 1896 Zig made a contribution to medical literature that put the whole subject on a sound and rational basis.

Parker was the first to realize and to urge the advisability of early operation.

Operative measures were modified and much improved by many men, amongst whom were Sanders, Bull, Dr. Rowley, Lucas, Morton, Cline, White, Ken, and Deans. Senco was one of the foremost of the advocates of early operation.

Monographs have been written by many others, as the names of Hawkins, Talkov, Kehrthack, Bowler, Ingrish, and Sonnenberg give evidence.

In the study of this disease many points of the utmost importance, and of the greatest interest force themselves on one's attention.

One is the important question of the ideal treatment of the condition. What is the responsibility of the surgeon if such a case is to be undertaken by the physician, or the surgeon, each acting independently of the other, or ought it to be assumed by both arms of the profession acting in concert? Another point that calls urgently for consideration.
is the question of the right and proper use of
Opium. There are here the Surgeons arrayed in
a solid phalanx to protect against its use, whilst
on the other side are the Physicians. Who main-
tain that its use is, up to a certain point, justified.
There is also the much vexed question of the
advisability of otherwise of the use of Saline
purgatives, against which the Physicians are
up in arms, and which is defended only by Surgeons.
These, and other points of interest will come
under review at a later stage in the discussion
of this subject.

The Vermiform Appendix.

At the beginning of this study, I think, it will
not be amiss to revert for a little to the
Consideration of the Anatomy and Physiology of
the little organ that may cause such a
great and terrible Conflagration.
Anatomy of the Appendix.

The shape of the appendix is that of a narrow
worm-shaped tube. In man it is but a relic
of by-gone days. It is the remnant of the
lengthened Cæcum found in some mammalia. It is peculiar to man, the hominid, and some
The size of the organ is very variable. Grey puts the average length at from 3 to 6 inches, and the average diameter about that of a post quill. Richter says the length at birth is 31.6 mm; at 10 years 90 mm; at 20 years 97.8 mm; at 30 years 98.4 mm; at 40 years 97.5 mm; at 60 years 85 mm; over 60 years an average of 82.5 mm. In one man of middle age he found the length was 210 mm, and in one child of 5 years 120 mm.

Other puts the average length at 3 inches, but says it may be only 1 inch in some cases. The average diameter he estimates at about 1/4 inch.

The position and direction of the organ are very variable. It is most often directed upwards and forwards, pointing towards the spleen. In this position it passes behind the calcium, coiling on itself, and ending in a blunt point. It may be entirely behind the calcium. It may project downwards and forwards, and may face down towards the floor.
It has been found in almost every region of the abdomen, and has been seen adherent to almost every abdominal organ at one time or another. A mesentery is often formed for the appendix by a fold of peritoneum, by which it is kept in position. This is attached to the proximal end of the organ, the distal part being quite free, and covered by the peritoneum. This often causes the tube to be somewhat curled upon itself.

The vessels and nerves are borne to and from the organ in the mesentery. The blood supply is from the ileo-colic artery by its ileo-cecal branch, and in the female there is said to be in addition a twigs from the right ovarian artery. At the root of the mesentery there is often a solitary lymph gland. The canal of the organ is small, and opens into the caecum a little below and behind the orifice of the ileum. It sometimes has an incomplete valve formed by a fold of mucous membrane. The mucous membrane is studded thickly with lymphoid follicles.

Associated with the appendix are several peritoneal pouches or fossae that are often of some importance in connection with acute inflammatory affections of that organ.
These pouches or fossae are:

1. The Ileo-colic or Superior Ileo-cecal Fossa.
2. The Ileo-cecal or Superior Ileo-cecal Fossa.
3. The Sub-cecal or Retro-cecal Fossa.

The Ileo-colic Fossa.

It is also called the Superior Ileo-cecal Fossa.
It is in the angle between the Ileum and the beginning of the ascending colon. Its roof is a fold of Peritoneum arching over the Ileo-colic artery – the inferior Ileo-cecal fold of Treitz. The floor of the pouch is formed by the Mesentery.

The Ileo-cecal Fossa.

It is also called the Inferior Ileo-cecal Fossa.
It is directly behind the junction of the Ileum and the Cæcum. The folds may ascend behind the ascending colon as far as the right kidney and duodenum. Its mouth is below. It is bounded in front by the Ileo-cecal fold – the Bloodless fold of Treitz. This fold is from the border of the Ileum, over the Ileo-cecal junction to the Mesentery. On the left the pouch is bounded by the Mesentery and on the right by the ascending Mesocolon.

The Sub-cecal Fossa.

It is also called the Retro-cecal Fossa, as it lies
directly behind the caecum. It is close to the Ileo-cecal fossa, separated from it by the Ileo-cecum, and the ascending Ileo-colon. It may pass up behind the ascending colon. It is not so constant as the Ileo-colic and Ileo-cecal fossae. In one or other of these pouches the appendix may be concealed, and become adherent to one of its walls. This is the so-called Hernia of the Appendix. When the appendix is laid to be absent, it may be concealed in one of these pouches with the mouth of the pouch closed over it. A very probable sequel of such a hernia is Strangulation of the Appendix. The presence of these pouches may explain the course that pus has been known to take in Cases of perforation of the appendix, when the Pus travels upwards behind the ascending colon as far as the Diaphragm.

Physiology of the Appendix.
Like the rest of the intestine it has four coats.
1. Peritoneal Coat.
3. Sub-intimino or Arterial Coat.
A short review of the formation of the various coats of the appendix will not, I think, be out of place.

**Serous Coat.**

This is formed by the peritoneal covering of the organ it surrounds it at all points, except the slight interval between the point where it passes off to form the two layers of the mesentery. It is an ordinary serous membrane like the rest of the peritoneum.

**Muscular Coat.**

This consists of two layers of non-striped involuntary muscular fibres, the inner consists of these fibres arranged concentrically round the gut. The outer consists of the same fibres arranged in a longitudinal fashion. Here is the starting point of the muscular fibres that spread out over the caecum and go onwards to the colon. In the caecum and colon these fibres form the bands known by some authorities as the ligaments of the colon.

**Sub-serous Coat.**

It is also called the visceral coat, and consists of a tissue of very loose texture more closely connected with the peritoneum than with the muscular coat. In it ramify the plexuses of blood vessels, nerves, and lymphatics with which the organ is supplied.
Buccous Coat.

This is smooth and has no villi. It contains the origins of some tubular glands—"crypts of Lieberkühn". The most outstanding feature it shows in the appendix is the vast number of solitary glands and lymphoid nodules it contains. These are very closely packed together. In the vast amount of lymphoid tissue it contains, the appendix is very analogous to the tonsils. The epithelium is of a columnar type.

Function of the Appendix.

The function of the organ is conspicuous by its absence. It is a mere rudimentary appendage.

Hollister, in his cases, found partial obliteration in 99 cases out of 1,000, or nearly 25 per cent. In 55 per cent the obliteration was in the distal end. In 3.5 per cent the obliteration was complete. The rest of his cases showed intermediate stages.

The tendency to obliteration is said to increase with age. Baffourne says that in 200 cases, only 7 per cent were found by him to tend towards obliteration. Of these, 3 per cent were totally obliterated, 3 per cent showed obliteration for a distance of 1 cm, and 1 per cent for a distance of 2 or 3 cm.
Appendicitis.

Having completed the study of the Anatomy and Physiology of that small but important organ, the vermiform appendix, let us now turn our attention to the acute inflammatory condition known as appendicitis. The first point that occurs to one is what is the definition of the term. The late Sir Thomas Grainger Stewart was wont to define it as follows:-

**Definition.**

Appendicitis is an acute or chronic affection of the vermiform appendix and of the neighbouring structures, consisting in obstruction, inflammation, dilatation, and sometimes perforation of that body with inflammatory changes of the peritoneum or sub-peritoneal tissues or both.

**Pathology of Appendicitis.**

The question now arises what is it that causes this condition? Many and various are the causes that have been assigned to it. Let us now pass some of them in review before we age.

Appendicitis is a disease of youth. Fitz says that 70 per cent of cases occur before 20 years.
have passed over the head of the luckless victim. Einhorn says that 60 per cent of cases occur between the ages of 16 and 30 years. It has been seen in the 3rd week, but is rare before the 3rd year. Most cases occur before the age of 30, so that it is a disease of youth rather than old age. Youth seems therefore a predisposing cause. It may be because of the tendency of the organ to obliterase in the later years of life.

Sex:
The male case seems more predisposed to it than the female. The ratio is about 4 males to 1 female. Fitz says 80 per cent of cases occur in males. Hawking in 224 cases had 161 males and 63 females.

The cause of the comparative rarity of this affection in females is said to be due to the fact, that in them the appendix has an extra source of blood, usually by a branch from the right ovarian artery.

Occupation:

Some occupations seem to predispose their botanies to appendicitis. Especially those that involve the lifting of heavy weights.

Traumatism:

It is said in some cases to have followed a blow,
Indiscretion in Diet

This may be an exciting cause especially when the patient has already been the subject of a previous attack. In America some cases have been seen in boys who had forged themselves with pea nits.

The Lack of Function of the Appendix

This is a pre-disposing cause. The organ is a degenerate remnant, and as such has a very poor blood supply. It is supplied by the ileo-cecal branch of the ileo-colic artery only in man, whereas woman has the advantage of having it supplied by a twig from the right ovarian artery as well. Indeed this is one reason advanced for its greater frequency in the male sex than in the female.

The Lymphatic Structure of the Appendix

Its mucous membrane is studded with lymphoid follicles and patches. This tissue is the most sensitive and delicate where the attacks of Pyogenic organisms are concerned. In this it is no less like the tonsils, which are very liable inside the seat of inflammation. This may be a most important pre-disposing cause.
Length and Direction of Appendix

The organ varies very much in length and direction. In length it averages 3 or 4 inches, but it may be as short as 1/2 inch or as long as 11 or 12 inches. Direction is the more important of the two as a predisposing cause. The affection is most often found where the organ points downwards and inwards to the pelvis. It is said that in this position entrance is more easily afforded to faecal concretions or foreign bodies from the Caecum.

Length of Attachment of Incisur.

The incisur is attached to the proximal end only of the organ. The distal end is free. The part of the organ beyond the free border of the incisur is more poorly supplied with blood than the rest. Hence its tissue has less vital reaction than the rest. This may be considered a predisposing cause.

Blocking of Lumen of Appendix.

When this happens, the mucus it contains may be retained, and by its presence, stimulate the organ to spasmodic peristaltic action in order to secure its evacuation. It may be unable to expel this mucus and a cystic enlargement may form filled with the retained mucus.
This tumour may reach the size of a fairly large cancer. The tissues may undergo necrotic changes, and appendicitis may be set up. 

**Faecal Contamination**

This is sometimes an exciting cause. There may be a compressible mould of faecal matter that can be squeezed out, or tissue may be hardened impregnated masses of the appearance of a date or cherry-stone. These imitate and duplicate the tissue, thus giving pyogenic bacteria an easy mode of entrance.

**Foreign Bodies**

These have been found in operation. Fruit seeds and stones are fairly common. Pins have been found in several cases. These act as irritants, devitalizing the tissues and permitting the entrance of bacteria.

**Subacute**

Inflammation of the appendix has been seen in cases of abdominal tuberculosis.

**Typhoid**

Typhoid-like inflammation of the appendix has been seen, but it is rather rare.

**Actinomycosis**

Inflammation of the organ with the presence of the...
Ray fungus has been described but it is rare.

Dysentery.

Dysentery liberation has occasionally been seen, but it is very rare.

Rheumatism.

This is extremely doubtful, but has been described in one or two cases.

Pyogenic Organisms.

I think these must be credited as the exciting agents in most if not all cases of inflammation of the appendix. The ones most commonly found are the Baciicbus coli communis and Streptococcus Pyogenes. The next most frequently seen are the Streptococcus Pyogenes, Amoebae, Proteus, and Bacillus Pyocyaneus. The Bacillus Tuberculosis, Bacillus Typhosus, Amoebae of Dysentery, and the Ray fungus are said to have been seen in some cases.

In the whole, I think the most probable theory as to the cause of appendicitis, consists in the idea, that, owing to the devitalizing effect of foreign bodies and fecal concretions on the tissue, or to the extreme sensitiveness of the tissue itself, pyogenic organisms get access to the tissue, the tissue losing little or no power...
of resistance, and, by their action set up the con-
flagration known to us as Appendicitis. This
process is favoured by the fact that the organ
is a remnant without function, and with a poor
blood-supply consequent on its loss of function.

Varieties of Appendicitis.

For convenience, I think, the Varieties of this condition
may be Classified as follows:—

1. Simple Catarrhal or Obliterative.
2. Ulcerative or Gangrenous with Local Peritonitis.
3. Perforative or Gangrenous with General Peritonitis
4. Relapsing or Recurrent.

This is not an ideal Classification by any means,
as the one form may at any time blend with another.
One case in its course may show the Symptoms of both
forms in turn. The Simple form may after Recovery become
Relapsing. It may Resolve in one case, and in another
it may go on to Perforation with Local Peritonitis, or lead
to Perforation with General Peritonitis. Perforation or
ulceration may occur at any moment, indeed a Case
at its Earliest beginning may show all the Signs of
Perforation with General Peritonitis, with a disease
to Prove. Classification of the various forms
of that disease must necessarily be unsatisfactory.
Pathology of Appendicitis.

Foreign bodies in the appendix are said to be a great cause of this disorder. It is said that any foreign body in the caecum, if small enough, may pass back into the appendix. Thus it is that apple pipes, grape seeds, cherry stones, and orange seeds are said to enter. But much more often small lumps of hardened faeces are found in the appendix. These dry up, and phosphates are deposited on them forming a nodule. This causes them to simulate the form of seeds. The old view of the matter was that these foreign bodies, by their presence set up an inflammation of the mucous membrane. This pressure caused elevation, and the ulcer might perforate and cause local or general peritonitis. Generally, however adhesions are formed before perforation occurs and the peritonitis is localized. The inflammation thus set up is recurrent and may cause several successive abscesses. If one of these bursts into the peritoneal cavity a fatal peritonitis may ensue. Suppuration may, instead of the peritoneum, invade the sub-peritoneal cellular tissue.
the abscess as formed may extend for long
distances beneath the Peritoneum.
Coal had a case where it burrowed across
the rim of the pelvis to the left side of the
abdomen. It then passed up beneath the Peritoneum
to the Diaphragm. Finally it penetrated the left
pleural cavity into which it was discharged.
I saw a case some years ago where the Pus
burrowed beneath the Peritoneum, behind the
ascending colon to the Diaphragm, and penetrated
the right pleural cavity. It must have invaded
a bronchus or some part of the lung as the
patient immediately began to cough up large
quantities of Pus. On examination of the lung
one would have thought from the physical
signs that it was in the last stages of Phthisis.
The patient coughed the abscess dry, the lung
assumed its normal condition, and the
result was recovery after a long and tedious
convalescence. The patient is alive today,
and in the best of health. He has never
had a recurrence of the attack. In some
cases where the appendix is obstructed it may
become largely distended with mucus and
increase very much in size. The contents may
remain mucous in character or become congealed. The theory indicated above, as to the part that foreign bodies and fecal concretions play in this affection, was the view commonly held before the arrival of the days when micro-organisms began to be such an important factor in the healing science. A more recent theory is the idea that an irritated area of mucous membrane is caused by foreign bodies and fecal concretions; that the bacteria present in the intestine, normally or otherwise, get access to this area of irritation; by their agency an inflammation is set up, causing swelling and thickening of the mucous membrane with constriction of the blood vessels; and that ulceration or suppuration supervenes. "Thrombosis of the artery with sloughing of its wall may occur. Finally, peri-tonitis, localized or general, may be a sequel.

Another theory is that the amount of lymphoid tissue in the organ renders it a very suitable medium for bacteria. If anything occurs to lower the vitality of this tissue, the organisms have a splendid opportunity for their work of destruction. The organisms usually found in these conditions are Bacillus coli communis, and Streptococeus pyogenes.
Hodgenpyle found the former in 57 cases out of 60. In 50 of the cases it was the only organism present. Streptococcus Pyogenes Aureus, Bacteroides, and Bacillus Pyogenes have often been found. Streptococcus Pyogenes is the most virulent. The Bacilli of Tuberculosis and Typhoid, the Ray fungus, and the Amobiasis of Dysentery have also been found but much more rarely. Some say too much importance has been attached to the presence of Bacillus Coli Communis. Very often cultures taken from aborted cases with little adhesion and a little semi-firmous sedimentation have only given negative results.

Welsh says: "There is reason to believe that the highly resistant colon bacillus May Carrie in an infected part after the primary organism which started the trouble has died out, or has been crowded out by the invader."

Hawkins says that the proneness of the appendix to infectious inflammation lies "in that subtle condition which determines the degree of resistance of a tissue to disease. One tissue differs from another in his power of resistance; the more degenerate the tissue, the less resistance can he exert. And in the appendix we are dealing with an organ which is degenerate and functionless.
from first to last, and its beauty, power of resistance to bacterial invasion is but another way of expressing this fact."

It has been said that the anatomical relations of the meso-appendix, and the adjacent folds of peritoneum are such, that distension of the cecum or of the lower part of the ileum may cause dragging with torsion and serious interference with the blood supply of the tube. The bulging of this mucous membrane thus caused may be an important factor in the infection of its tissues.

**Fecal Concretions**

Where there are the cause a rock or palsey may sometimes be easily pruged out. Stones, uratoliths, coproliths are common. Their mode of formation is somewhat uncertain, but is unlikely favoured by bacteria.

Mitchell and Bulletin in 700 cases where foreign bodies were observed found fecal concretions in 45 per cent of the cases. They somewhat resemble date and cherry stones and are often found in cases of acute appendicitis.

**Foreign Bodies.**

Mitchell in 1400 cases found foreign bodies present in 7 per cent of the cases.
In 28 cases the foreign bodies were pins. Other had two peculiar cases, in the form of which the foreign body consisted of a spike and fork, and in the other 5 apple pits. Stones and seeds of fruits and bits of bone have also been found.

**Obliterative Appendicitis.**

This is considered by some a letter name than catarrhal for the simple form, as the changes are not confined to the mucous membrane, but extend to the whole thickness of the tube. The whole tube becomes thickened. The serous surface may be smooth or injected, free or with adhesions due to local peritonitis. Mucous membrane may show only shedding of the epithelium with leucocyte infiltration in the sub-mucous coat. In chronic cases the mucosa membrane may be chipped off and replaced by granulation tissue. The muscular coats are thickened and the whole tube is stiff and firm. This form is very often accompanied by local peritonitis. Adhesions are formed circumstaining the peritonitis. This form may also confer immunity from future trouble. It says that by pressure of the surrounding parts the granulating surface may be brought together, and if the whole organ remains at rest.
Union may occur, and the appendix as a source of disease then ceases to exist."

In other cases the tube may lie so rigid that obliteration cannot take place. This is the condition of chronic appendicitis that may lead to recurrence of attacks of colic.

Mr. Bumey says the narrowness of the tube interferes with its drainage and sets up a condition favor-able to septic processes." Obliteration occurs in about 2 per cent of all cases. If obliteration occur at the caecal end the lumen may dilate to form a large cyst containing either serous or purulent fluid. Obliteration and perforation are apt to ensue. Thus the Obliterative form may be a process of involution without any symptoms, or more generally it leads to recurring attacks of pain — "Appendicular Colic" — with fever and swelling in the right iliac fossa, and the case may go on to obliteration and perforation. Obliterative Appendicitis.

This may be the result of the presence of concretions or foreign bodies, or of the action of micro-organisms either those normally pres-ent in the caecum, or others present under pathological conditions. There may be no
appendent abrasion of the peritoneum membrane. There may be an ulcer at the tip, whence it may be expelled out. There may be no adhesions or reddening of the peritoneum membrane, but usually there is thickening of the peritoneum with adherence to the adjacent parts. Subacute detachment is sometimes seen. Typhoid detachment has been met with. Other says that in post mortem examinations, 3 were cases of perforation by a Typhoid ulcer. Actinomyctic ulcers have been described.

Perforative Appendicitis.

This may follow obliterative and detachment and is accompanied often by necrosis and sloughing of the appendix. Necrosis may be limited with perforation, or diffuse without it. In both cases it leads to virulent general peritonitis, and in many cases to virulent local peritonitis. Generally the pain is localized as one point, and the organ is swollen. In colour it may be reddish-brown, black or prominent yellow. The entire appendix may slough and lie free in the abdominal cavity. When the necrosis is diffuse, the active processes leading up to detachment and necrosis are due to the action of micro-organisms. The effects of perforation are immediate and remorse.
Immediate Effects of Perforation

1. Acute General Peritonitis.
2. Local Peritonitis with abscess.
3. Extra-Peritoneal Suppuration.

**Acute General Peritonitis.**

This occurs if the appendix is free and there are no adhesions. Its virulence depends on the organism present. The Escherichia coli is the most virulent. This is usually more common in the perforation or gangrenous form than in the others. It is likely less often due to direct perforation or bursting, than to extension from a local abscess.

**Local Peritonitis with Abscess.**

The abscess is usually circumscribed, intra-peritoneal, and round the appendix. It is most common on the back muscle about the angle between the ileum and the caecum. The perforated appendix may be found anywhere, but it is generally in the right iliac region. Some local abscesses have only been found post-mortem, after death from other causes, having caused no symptoms during life. The contents are a milky yellow pus with a faecal odour. The appendix may lie free in the cavity or may be so concealed by peritoneal adhesions as to be invisible.
Intra-Peritoneal Suppuration.
The perforated appendix may adhere to the iliac fascia, or pelvic wall, or behind the caecum, so that perforation occurs into the sub-peritoneal tissues. The pus may pass under the iliac fascia and point about Burdet's ligament with recovery. It may cause a peri-nephritic abscess in the flank. It may perforate the pleura forming a pleural fistula. The abscess may open into the hip-joint, or retroperitoneal space, or may cause extradural abscesses or a gluteal abscess. Both extra-peritoneal and intra-peritoneal abscesses may open into the bowel or bladder with recovery. The appendix may be passed per anus.

Remote effects of perforation
1. Haemorrhage.
2. Suppurative Pyelophlebitis.
3. Perforation in Hernial Sack.

Haemorrhage.
Ruptures of the external iliac artery and of the Deep circumflex iliac artery are on record.

Suppurative Pyelophlebitis
Oder has 2 cases where the mesenteric vein was infected. In one it occurred in typhoid, in the other it was accompanied by septicaemia and
Suppuration of the Liver.
Perforation in a Hernial Sack.
Hernia of the Cæcum in the Inguinal Canal has been observed.

Clinical History of Appendicitis.
The Cardinal Symptoms.

1. Sudden, acute, abdominal pain, usually referred to the Right Iliac Fossa.
2. Fever - which is often moderate.
3. Gastro-Intestinal Disturbance - nausea, vomiting and constipation.
4. Tenderness or actual Pain on Pressure over the Right Iliac Fossa, especially over McBurney's point.

The above are the symptoms usually present in a typical case of Appendicitis. Before going on to the Clinical History proper, I think it will be a good plan to consider shortly each of these symptoms. The above when present are almost infallibly diagnostic of the condition, but not guilty as may be seen when the question of Differential Diagnosis is taken up.
Pain

The pain is sudden in its onset, and often very acute, especially when perforation occurs. Its situation is generally over the Right Spleenic Flexure, but it may be referred to the umbilicus, or indeed to almost any part of the abdomen. FitzRoy pain occurs in 84 per cent of cases, and is 50 per cent it is localized over the Right Spleenic Flexure. If not felt there at first, it is usually noticed in that site in 36 or 48 hours. It may radiate thence to the Perineum or Testicles. It is of a Colicky nature, and has often been diagnosed as Colic, or Renal Colic. Talman has named it "Appendicular Colic" in the Tripepia form of the disease. It is said to be due to partial occlusion of the Tube, and the irregular and violent peristaltic set up in it for the expulsion of the retained Brems.

Fever

Fever quickly follows the onset of pain. The rise in temperature is generally moderate. An Initial Rigor is not common. The temperature usually rises from 100.7 to 102.7° F in a typical case, but in children it may rise as high as 103.5° F. Cases with very acute Colic may at times have no increase in Temperature at all. Some cases with Local abscess, and some very violent Cases of General Peritonitis may have a normal Temperature, the only sign of danger being an increase of the Pulse-Rate.
Gastro-Intestinal Disturbance.

The tongue is generally moist and furred. It is at first dry, but plump. In mild cases nausea and vomiting may be entirely absent. They are almost invariably present where perforation has occurred. In favourable cases vomiting often ceases after the 2nd day. The bowels are as a rule constipated, but sometimes there is some diaphoresis till the contents of the lower bowel are evacuated. Diaphoresis is common in children. The Gastro-Intestinal disturbance of Typhoid may simulate that of Appendicitis. Cases have been operated on, and subsequently a diagnosis of Typhoid has been made.

Local Physical Signs.

Inspection.

Inspection at first may reveal nothing. There may be no distension, and both the Hess and the ileo-caecum may be alike. Later there may be distension with fulness of the Right Ileal Fossa.

Palpation.

Rigidity of the Right Rectus Muscle may be made out, and tenderness, if not actual pain, may be caused by deep pressure over Mr. Burney's point. This point is named after Mr. Burney, the American Surgeon who identified this region as the site of the appendix. It is an imaginary point at the intersection of a line drawn from the umbilicus to the antero-inferior iliac spine.
with another vertically placed corresponding to the outer edge of the Rectus Muscle. Slight cup pressure at this point often causes most exquisite pain. Palpation may also reveal a boggy, ill-defined mass in the region of the cæcum. It may be circumscribed and definite within the right iliac fossa. In some of the most fatal cases neither indication for the presence of a mass are found.

Percussion.

If a tumour is present dulness may be elicited by percussion. In mild cases where there is no tumour it gives negative result. In some of the worst cases where there is general peritonitis no dulness, but general tympanitis is to be found.

Additional Symptoms.

Irritability of Bladder.

There may be frequent micturition accompanied by discomfort. The urine may be bloody, and may contain albumin.

Peritonitis.

Is usually Carroll with Dullness of the Right Ecg. Leucocytes.

Leucocytes may rise to 15,000 or 20,000 per cm. It may be a means of diagnosis where Pus is forming.

In Dr. Carré’s wards at one time it was noted that where Leucocytes occurred pus was invariably
on operation, and that where there was no
Perforation the Cases usually Recovered without Operation.
Rectal Examination.
This method of examination is useful where
there is a large abscess cavity, and where the
appendix lies over the rim of the pelvis.

Clinical History of the forms of Appendicitis
Catastthal or Obliterative Form.
The patient complains of the sudden onset of acute
abdominal pain, usually in the Right Iliac Fossa.
There is slight Fever - 101° for 102°. There may be some
nausea with or without vomiting. Constipation is usually
present. The patient lies on his back, perhaps with
his right leg slightly drawn up. Inspection may reveal
 fulness in the Right Iliac Fossa. Tenderness may be elicited
by deep pressure over Dr. Bartheu's point. Palpation may
reveal a boggy swelling in the Right Iliac fossa, with
abdominal pain. If it is a favourable case,
resolution may occur in 2 or 3 days without abscess
formation. This is the Commonest form of the disease.
Loeff says that in all his examinations of the dead
body he found adhesions in the region of the appendix
in 33 per cent of all cases, thus proving the prevalence
of the milder forms of this affection.
In three favourable cases pain begins to lessen about the 3rd or 4th day. The temperature falls. The tongue begins to clear. Where there is vomiting it ceases about the 2nd or 3rd day. Local tenderness lessens gradually and the bowel may move spontaneously about the 4 1/2 or 5 1/2 day. All the acute symptoms may be gone in about 8 or 10 days. In a few cases fever may linger and convalescence may occupy several weeks.

Several cases similar to the above came under my observation in Lyttelton and Durban hospitals in South Africa. If incaroration or a small mass persists, the patient is likely to be the subject of recurrence. In such cases we have to do with either a Chronic appendicitis without perforation or an involvement of the peritonem, generally by perforation with less-fibrous tenacitate, and apposition of the adjacent parts. I saw just such a case in Rangoon about the end of last year, and the operation revealed the latter state of affairs.

Illeterative form with local Abscess.

The onset is similar to that of the Catarrhal variety, but the symptoms are generally more acute. There may be an initial tip, when the temperature may rise as high as 104°F. Physical examination usually reveals some abdominal distension and tenderness.
Constipation is present and the bowels may be fecal. The abdominal muscles on the right side are rigid, and a swelling in the right iliac fossa may be made out by palpation. The symptoms may abate but usually suppuration occurs. This is generally the result of calcification or perforation, and may follow necrosis of the appendix. If in a mild case, symptoms do not abate about the 4th or 5th day, or tend to become exaggerated, this condition should be suspected. If suppuration occurs, the temperature and pulse-rate may remain high, or the former may fall whilst the latter maintains its former high level or increases still more. Peritonitis has been noted in many such cases. When suppuration has set in, the tumour may or may not increase in size. The site of break or aches is at first intra-peritoneal and round the appendix it may rupture into the bowel, indeed some say this occurs in all cases of the severe type that proceed. It may point through the anterior abdominal wall, or in the loin by passing through the retro-peritoneal tissue. It may form a sub-phrenic abscess. It may pass down behind the rectum. It may also rupture into the bladder or vagina. Indeed there is no dying where it will not burrow underneath the sub-peritoneal tissue. Pus cells picture may follow the rupture of these abscesses.
Death may occur from the Perforation of an Artery or Vein, from Peritonitis, or from Pyelonephritis. If such an abscess burst into the general cavity of the Peritoneum, there is a sudden fall of Temperature with Collapse, and increase of abdominal pain and distension, and the condition thus set up may be fatal. After the escape of these abscesses there may be an improvement. The temperature may fall to normal, pain may decrease, and vomiting may cease. This may be temporary or permanent. If it is the former, examination may reveal something—a distension may persist, or hiccough may be present, tenderness may remain, or the Pulse-rate may be too high. In a few days the symptoms may again become urgent, and another abscess, sub-acute, or chronic may form.

*Perforating form with Diffuse Leptic Peritonitis.*

This is generally due to the rupture of a localized intra-peritoneal abscess into the general peritoneal cavity. It may also be due to direct infection from a perforated appendix before adhesions have formed or by the breaking down of loose adhesions that nature has tried to form. The initial symptoms may be the same as those of the preceding forms, but sometimes the condition of Perforation with
diffuse Peritonitis may be the original lesion. This may be a history of pain starting from the appendix. The pain, though at first localized round the umbilicus, soon becomes diffuse, with subsequent diffuse abdominal tenderness, and distension. There is a cessation of abdominal movements. The initial nausea and vomiting persist, and the vomit becomes bilious, and finally fecal. Decubitus is dorsal, with both knees drawn up. The tongue is dry. The urine is scanty, limpid, and Pus. Rate are both high at first, but later they become lowered by Tocæmia. Constipation is present. Respiration is quick, shallow, and thoracic. Percussion is at first tympanic but dulness appears in the flanks as the fluid is diffused. In 24 hours the abdomen is markedly distended, collapse soon sets in, and death quickly occurs. If perforation is sudden, the course of the case is usually rapid. If the perforation is large, and the contents are largely extravasated, vomiting is a prominent symptom. If the perforation is small, the shock is less, and the course is not so rapid. This condition fortunately is rare in general medical work.

Ogle says that in 450 consecutive autopsies of those dead in his wards there was not a single death from diffuse Peritonitis due to disease of the appendix, while in the same time, 10 sick cases entered the surgical wards, were operated on, all died.
and gangrenous appendix was found with little or no localization of the disease. In 1 the condition was healed by rupture.

In connection with this, Bier says, "The severity of appendiceal disease lies in the fact that from the onset the peritoneum may be infected; the initial symptoms of pain with nausea and vomiting, and local tenderness present in all cases may indicate a widespread affection of this membrane."

Relapsing Form.

This consists in recurring attacks of varying gravity in one who has once been the subject. The intervals between the attacks may be long or short. They may be so short as to incapacitate for work. The patient may have had one attack, and made a good recovery with loss of all induration and tenderness. In about 10 to 12 months or perhaps less, fever, pain, and local symptoms reappear. Attacks may recur for years. Cases that have recovered with persistent induration and tenderness are the most prone to have a recurrence. After repeated attacks a perfect healing may be made. Recurrence is usually due to adhesions, or to constrictions of the appendix. It may be set up by movement, if to constrictions adhesions with Riedl.
may be pent up behind the constriction and cause a colicky pain—"appendicular colic"—without fever, said to be due to attempts on the part of the organism to expel the stones. In time the appendix may become obliterated, and a natural cure be effected, but more often illness recurs that may end in a diffuse Peritonitis.

Frequency of Recurrence

Higgin says recurrence takes place in 44 per cent. Hawkins says it happens in 23.6 per cent.

Bultsss gives a series of 442 operations in Chronic Relapsing Appendicitis by E. S. Langone with a mortality of 1.8 per cent, but thinks 5 or 6 per cent a more reliable estimate.

The lesion in Relapsing Appendicitis

The lesion is either simple obliterative with or without adhesions, or an adherent, perhaps perforated appendix with small localized abscess circumscribed by acme fibrous tissue.

Proposition in Appendicitis.

Possibilities

When a patient has appendicitis there are several possibilities as to the way in which the case may terminate. These are as follows:
1. Recovery.
2. Formation of a Local Abscess.
3. Occurrence of General Peritonitis.

Recovery is the rule. Hawkins records 190 cases with recovery out of a total of 264 cases treated at St. Thomas's Hospital. In 1 case the appendix was removed, and in 2 cases removal was attempted. Such recoveries are rather dubious, regarded by the surgeon, but they occur in many cases.

Prognosis.

The prognosis is always grave. Many recoveries do occur, but the outlook is always uncertain. It is this fact that has given such an impetus to surgical interference. The initial symptoms in all the varieties are often very similar. The course of the affection is always uncertain. Cases have occurred where recovery has taken place after perforation of the appendix. Monroe says "the infected appendix is a cap which sometimes expands, sometimes flaccid, and sometimes causes an expelion, and none of us can tell in advance just what is going to happen."

Continuance of high temperature in spite of rest and diet is a sign of evil course; it is fall of temperature with increase of the Pulse Rate; and le is a persistent sickness. The formation of a definite swelling in the
Right iliac fossa is rather chronic than otherwise, for it points to the localization of the abscess by adhesions and renders operative measures hopeless. Its abscess points to the weakness or lack of adhesions and is most often seen in acute cases. It also points to the fact that the organ may be behind the cecum and less easily got at by operative procedure. Operation is necessary where there is a localized abscess, or where general peritonitis is present.

It is also the subject of consideration in the period of quiescence that intervenes between the attacks in relapsing appendicitis. In some hands this ordeal is shorn of much of its horror, and is compensated for by the subsequent relief, and immunity from further attacks. Hawkins' statistics at St. Thomas's Hospital.

Cases. — 264.

a. With peritonitis limited to right iliac fossa and no perforation.
   190 cases — 0 deaths.

b. With perforation limited to right iliac fossa, and no peritonitis.
   38 cases — 10 deaths.

c. With General Peritonitis.
   36 cases — 27 deaths.

Giving a mortality of 14 per cent.

Of the 264 cases here quoted he goes on further to say that:
S.9 had had one or more previous attacks.
4.9 had Simple Periappendicitis and one received
Y had abscess formation and 3 died
Y had General Peritonitis and 3 died.

Porter's Statistics
2. Removal of the appendix during an attack led 19.7% per cent
   Mortality
3. Incision and drainage had 18.19 per cent mortality
   Thus the average mortality caused by the surgical
   treatment of abscess of the appendix is now
   a day very low in those hands.

Diagnosis of Appendicitis
As a rule diagnosis of this condition is not difficult
when the case comes under observation at an early date.
If there be pain and tenderness in the right iliac fossa
with fever, nausea and vomiting, with constipation, and
especially if this be accompanied by rigidity of the
abdominal muscles and a localized swelling in the
right iliac fossa, there is not much room for doutr:
It is the most common of all inflammatory conditions
of the abdomen in patients under the age of 30. In
such persons sudden pain in the right iliac region
with fever and local tenderness, and with or without
a local swelling point to this affection.
Biliary, Renal, and Menstrual Colic may sometimes cause trouble in Diagnosis. Acute Cholecystitis of the gall-bladder may cause pain and swelling low down in right side. Salpingitis and Pelvic Peritonitis may cause an error in Diagnosis. Diabetic Crisis has been mistaken for this affection. Intoxication and Intestinal Disturbance may show symptoms in their later stages like appendicitis with general peritonitis, and so may Acute Haemorrhagic Pancreatitis. The Gastro-Intestinal Disturbance of Commencing Typhoid has been mistaken for it. Hypochondriasis and Hysteria have to be reckoned with. Acute Salitits with Umbicalgia must be considered. Peri-nephritic and Peri-colic abscesses often cause errors in Diagnosis.

Apart from these, local pain in the right side, with or without rigidity or tumour, the presence of pain at Mc Burney's point, fever, funnel tongue, nausea or vomiting, with constipation or diarrhoea ought to lead one to anticipate the presence of Appendicitis. General peritonitis is suggested by the increase of abdominal pain, its diffusion over the abdomen, the presence of Tympanitis, and aggravation of the general symptoms, especially the persistence of a high temperature and a high pulse rate.

Loss of Vision decluses is not often seen in cases of Appendicitis as the peritoneum allow contains fascia.
The Differential Diagnosis of Appendicitis

Biliary Colic.

Here there is sudden onset of abdominal pain in the Right Hypochondrium, Epigastrium or low down in the appendicular region. There is nausea and vomiting. The temperature and Pulse Rate are increased. The patient may be in a state of collapse. There may be rigidity of the abdominal muscles and distension of the abdomen. Tenderness is at first general, but later it becomes localized. Jaundice may or may not be present. There may be constipation and stoppage of the escape of flatus. The patient's history may be a valuable guide. Such a condition has been met with during convalescence from Pneumonia and Typhoid. The patient may have a history of previous similar attacks. Where the gall bladder perforates with local or general peritonitis the condition may only be diagnosed from Appendicitis on Operation.

Acute Distension of Gall-bladder.

The patient may complain of headache with a feeling of chill. These may be nausea with vomiting. There may be a temperature of 101°F or 102°F. Jaundice is often present. The stools are clay coloured, and bile may be present in the urine. Pulse rate and Respiration may be slow and in their proper Ratio.
There may be a feeling of sleepiness. The presence of tachycardia, the clay-colored stools, the Rigours, the Bradycardia, and the feeling of velleity will all aid in the diagnosis from Appendicitis.

Renal Colic.

Here there is sudden onset of pain in the flank. It radiates along the tender to the testicle, and along the inner line of the thigh. It may also radiate through the abdomen and chest, and may be felt very intensely in the back. There is nausea with vomiting, and Colic fits with profuse Peristalsis. The Pulse-rate is high, and there may be an initial Rigor with a Temperature of 103°F. The attack may vary in duration from a few hours to a few days.

The frequency of Micturition, the Haematuria with perhaps the passage of some gravel, the Retraction of the testicle, the direction of radiation of the pain will all favour diagnosis of this condition from that of Appendicitis.

Menstrual Colic.

The Pain may amount only to a slight feeling of discomfort, or there may be a dull back-ache. It may be sharp, dull, drawn-heaving, dragging, or even labour-like in its nature. The site may be the loin, the small of the back, or the Pelvis.
and the pain may radiate into the thighs. This condition may be met with in young girls afflicted with Dysmenorrhea, where a few judicious inquiries as to the menstrual function may be all that is necessary to elucidate the case. Or Physical examination something may be found to favour this condition rather than Appendicitis.

Salpingitis.

This condition has extremely varying symptoms. There is pain on the affected side. This is at first intermittent, later it is constant. It is aggravated at the menstural period, and by coitus. Hemorrhagia and leukorrhea are frequently present in these cases. The patient is usually sterile. In Pyosalpinx fluid may escape from the tube into the peritoneum, and set up a localized peritonitis with sharp pain. Defaecation is often difficult. Large tubal abscesses may sometimes cause no symptoms. Generally however there are symptoms of pressure on the bowel and bladder. In Hydrocelepsis a few drops of fluid may escape through the cervix and thence per vaginam. Reflex pain is usually present. Rupture may occur into the peritoneum with general peritonitis, or into the bowel with perforation. The enlarged tube may be palpated bimanually. The history together with
the Physical examination ought to exclude Appendicitis.

Pelvic Peritonitis.

The Pulse at first is rapid, full, and bounding. Later it is small, hard, and thready. In bad Cases it is soft and irregular. There is fever often with initial chills. There is a burning, cutting, or boring pain. There may be nausea, vomiting, and constipation or diarrhoea. When Pus forms the Symptoms are those of an abscess. Pus may point for suppurative, per rectum, or through the bladder or abdominal wall. There is abdominal pain and rigidity with segmental distension. Both lips may be drawn up. The belly is painful or tender in the lower half. If examination a boggy swelling may be made out in the pelvis, or a hard mass situated round the Cervix. The condition often follows labour or abortion. The history and the Physical examination ought to render its diagnosis from that of Appendicitis fairly certain.

Diet's Crisis.

There is sudden abdominal pain, with chill, nausea, vomiting and collapse. The Involuble Kidney may be palpable. This crisis may follow indigestions in diet. The urine is highly coloured, containing excess of Bic Acids or Oxalate. The Kidney may be tender or swollen. There may be haematuria at times. The shape of the Organ and its visibility may be distinctive.
If there is a history of insorable thirst, the diagnosis of the condition is simple.

**Intox. Luescept.**

Here the pain is sudden in onset, and often colicky in nature at first; later it is constant. There is vomiting first of the stomach contents, then of bilious matter, whilst later the vomit is fecal. There is constipation, or there may be slight diarrhea till the contents of the bowel below the obstruction are evacuated.

In children there is often tenesmus with bloody stools. Abdominal tenderness and distension soon occur. The face becomes pallid and ashen. The pulse becomes rapid and pulseless. There may be no fever, but later the temperature is lowered by toxemia. The tongue is dry. There is great thirst. The urine is high colored and scanty, and may be Erysipelas. Collapse soon sets in and death may occur in 2 or 3 days. The summer generally lance-shaped, and in the region of the Transverse Colon, the tenesmus with bloody stools especially in children, the fecal vomit, the low temperature are characteristic of Intox. Luescept., whilst in appendicitis there is generally some elevation of temperature, vomiting is seldom fecal except where General Peritonitis has occurred and there is often the history of previous attacks.
Internal Strangulation.

This is generally an affection of elderly people. There is abdominal pain sudden in onset. There is vomiting rapidly becoming fecal. There is constipation either absolute or after the contents of the bowel below the Duodenum have been evacuated. Distention and tenderness soon set in, and the Cæsarean incision is made in a similar way to that of Intestinal Perforation. Its diagnosis may be made from appendicitis or similar likeness to that of Intestinal Perforation.

Acute Haemorrhagic Pancreatitis.

There is sudden colicky pain in the upper part of the abdomen. There is nausea, vomiting and collapse. The abdomen is swollen and tense. At first the temperature is low. Then a fever may occur, after which the temperature is somewhat raised. Death generally occurs in 2 or 4 days. This condition must be borne in mind when one has to do with an elderly person with a history of occasional attacks of indigestion, who is suffering from a sudden epigastric pain with vomiting and collapse, especially when this is followed in about 24 hours by a circumscribed epigastric swelling, tympanitis or resistance, with a slight rise of temperature. Tender spots in the abdomen must also be noted.
Typhoid.

If the onset be accompanied by intense vomiting and violent abdominal pain, mistakes may be made. Look for fever, rash, and enlargement of the spleen. Try for Haldane's reaction. Bloodgood records 2 cases of perforation for acute appendicitis, where a Diy diagnosis of Typhoid was subsequently made. Perforation has occurred in the 3rd week.

Hypochondriasis.

This may be acute in some cases that perfect normal appendices are said to have been removed. One would have thought that the physical signs would have given a negative result.

Hysteria.

This condition, too, must be taken into account. One would imagine the physical signs would be negative.

Gnecous Colitis with Enteralgie.

This condition too has been credited with being the cause of the removal of perfectly normal appendices. It is a condition that may last for years. There are sudden paroxysms of abdominal pain and tenderness. There are accompanied in many cases with tenesmus, and the passage of flakes or string of mucus, and at times of complete block of portions of the bowel. A tender spot may often be found between the umbilicus and the left costal margin.
The attacks vary in duration and seem to be assisted by mental worry, or indiscretions in diet. Blood may be present in stool. Diagnosis may be made from an examination of the stools, and from the tender spot.

Peri-nephritic Abscess.

In this condition there may be lumbar pain, which is increased by pressure. The pain may be referred to the hip, joint, or testicle, and may radiate down the thigh. If the kidney-tissue is affected there may be pyuria. When pus is present there will be chills with irregular fever and sweating. There is deep-seated induration between the last rib and the crest of the ilium, with oedema of the skin. Pus manually a tumour may be felt. Generally however the condition is recognized only on the operating table.

Peri-Cæcal Abscess.

The caecum may be the seat of an abscess that is not due to the appendix, and that does not involve that organ. The symptoms and the local symptoms closely resemble those of the condition we are studying. The diagnosis as a rule is made not in the ward but in the operating theatre.

These diseases at one stage or another bear some resemblance to appendicitis and in diagnosis must be borne in mind.
Treatment of Appendicitis.

This used to be the exclusive domain of the Physician. Of recent years it has been invaded by the Surgeon with the result that the treatment now is, with the exception of that of the milder cases, largely surgical. In America the affection is now almost entirely treated by the Surgeon. In my opinion a happy medium may be struck by the joint action of the Physician and the Surgeon. The Surgeon, on the one hand, ought to remember that many cases, especially those of the milder type, recover without his aid, whilst the Physician, on the other, must realize that at any moment complications may arise with which he is powerless to deal.

There are four cardinal rules on which all, Physician and Surgeon alike, are quite agreed. These are: Rest, Light Diet, Means to Check vomiting, and the Application of Local Treatment.

The patient must be put at once to bed, so that all movements, especially abdominal movements may be stopped, or, at least, reduced to a minimum. Intestinal Peristalsis must be checked as far as possible by the administration of light fluid diet, given in small amounts, and at any frequent intervals. Vomiting must be checked
as the reflex peristalsis involved in that act is apt to deny the appendix the rest it so much needs, and to favour the extension of the affection. All are agreed as to the utility of local applications. Some favour ice-bags and cold applications, others hot fomentations or turpentine sprikels, and others again advocate the use of powders sprinkled with Laudanum or Belladonna. The points round which discussion rages are the use of Opium, the use of Saline purgatives, and the question of Operation.

The use of Opium.

This is a much debated point. The surgeons say that it obscures the clinical picture, and leads to a false sense of security. They maintain that it masks the symptoms, and hides the signs of the onset of suppuration, thus preventing early and successful operative measures. The late Sir Thomas G本inger Stewart shows a tendency to favour this view. Dr. Wyllie does not advocate its use before a diagnosis has been made. I think its use after diagnosis is almost imperative. To treat at times is the pain. The view of the Surgeons is certainly true of the use of large doses, but I think it is possible to use it in small doses, sufficient to allay pain, whilst insufficient to cause narcosis.
I do not see how its use in this way could hinder the signs of suppuration from becoming evident.

I cannot consider that this is the ideal use of the drug in this affection, and even Beale, who is such an ardent advocate of surgical treatment, only goes so far as to say, "I think the use of less opium and more ice would be better." The use of saline purgatives.

Here too there is a Considerable divergence of opinion. The late Sir Thomas Younger Stewart was wont rigorously to denounce the use of purgatives, even going so far as to include enemata, simple or otherwise, beneath his ban. Irving and Dr. Logan agree with him in denouncing purgatives, but recommend mild soap and water enemata. I think this is a sound principle, as it clears out the lower bowel, and gets rid of any irritating matter that might tend to cause tenesmus of the bowel, and that might tend to cause straining. It also lessens the chance of headache from any constipation that may be present. The advocates of purgatives urge in their favour that they clear out the bowel — but Dr. Aves an enema of soap and water, and that with infinitely less risk. They also say that by diluting the blood vessels of the intestine they temporarily lessen the inflammation —
But of what use is this temporary check? and at what great risk is it not obtained? In appendicitis there is generally some affection of the peritoneum or sub-peritoneal tissues, hence anything that favors peritoneal irritation, indicated as it would favour the spread of peritonitis, at that moment fiercely circumscribed. It might cause the breaking down of adhesions, or hinder the formation of these very adhesions on which the patient’s chance of life may depend, and thus a general peritonitis might be set alight. If ischaemia or Perforation were present a very severe peritonitis might be set up. We come now to the last piece of disputable ground viz:-

**The Question of Surgical Intervention.**

Oder says, "the surgeon is often called in too late, never too early," and is so impressed by that fact that in hospital he sends all his cases to the Surgical Side at once. The late Sir Thomas Fraser Stewart used to say, "If the symptoms are not relieved by the 3rd day, call in the Surgeon." McCallum also advocates early operation if there be no abatement of the symptoms in a few days. In the acute inflammation of the bladder, whether a tumour is present or not, when the general symptoms
are severe, and when, by the 3rd day, the features of the case show a premonitory lesion. He also strongly advocates operation in the Relapsing form, during the period of quiescence between two attacks, when the recurrence of the attacks is so frequent, and the attacks are so severe as to make a man a chronic invalid. The mortality in both instances is very trifling in good hands. Thus advocates operation, when pain is increasing, when Pulse-Rate and temperature are rising, even in the absence of a tumour, as it is often small and concealed by the rigidity of the abdomen; where there is a tumour and the general symptoms are becoming more aggravated in all recurrent cases during the period of quiescence. In short the question of operation must one on every hand. In my opinion it ought to be kept in view even in the mildest cases, so, if the occasion arise, an early operation has much more chance of success in the case of a patient who is not weakened by toxemia and a lengthy period of illness. In my experience those cases in which early operation was performed were by far the most successful. I think one ought to give the patient the chance of medical treatment for 2 or 3 days. If at the
end of that time the symptoms are not abating
I consider the surgeon ought to be called in
consultation. All cases where general peritonitis
has set in demand immediate operation. All
cases with a local abscess, and all cases of
Relapse require immediate or early operation.

Typical Cases.

Mild Cases.

when symptoms are not severe, and Temperature about 101.7

lie strict in bed, ice or hot fomentations locally;

Damp and warm enema; light fluid diet in small
quantities and at frequent intervals. If there is
Vomiting find 1 per cent. 2 little morphia may
be necessary. I have seen several mild cases
like this at Devonport and Lewes in South
Africa recover completely with the above treatment.

I have also seen several mild cases treated with
a weak solution of Methyl Sulphate in Ag. Murth.

Pip. given every hour or two until the bowels open.

Graver Cases

the initial treatment is the same as above.

Operation is essential where general peritonitis
has occurred, or an abscess is tending to point.
In General Peritonitis

In the former case operation is the only hope, and that a slender one. The abdomen may be opened in the middle line, flush with a weak antiseptic solution, or a sterilised saline solution at about 108° F. Suture for the appendix. If possible remove it, and drain by Keith's tube, or gauge wicks. This was a hopeless case till recently.

When an Abscess is Present.

This may be seen by fluctuation or adema of the abdominal wall. Make an incision over the adematous tissue. Deepen this carefully. Explore the cavity gently so as not to break down adhesions.

If the appendix presents, remove it. If it does not leave it alone. Irrigate and drain the abscess cavity, and partially close the incision. The dressing will cease to be offensive about the 3rd day.

The wound will heal by granulation.

Where Local Symptoms and General Symptoms are Severe but without Abscess or General Peritonitis take the patient to the Chance of Medical Treatment. It may effect a cure. If acute peritonitis do not clear, toxaemia and exhaustion may, hence operative procedure may fail owing to Asthenia. The surgeon's maxim is - "If in spite of suitable wet and medical treatment the symptoms, with
local and general are not commenting to abate at the end of the hour. Operation should be undertaken. At that time the patient is not in a state of collapse from hypovolaemia, hence there is less risk of shock, and the appendix is less likely to be tied down by adhesions, and can be removed. Removal prevents recurrence, and a smaller incision is required, hence there is less risk of subsequent ventral hernia. Where there is persistent distension, hiccup, and high Pulse-Rate in spite of falling temperature, operation becomes a matter of urgency.

**The Operation**

Make an oblique incision crossing Mr. Burnejoy's point or a little below it, and parallel with the outer end of Poupart's ligament, through the whole thickness of the abdominal wall, open the peritoneum and expose the Cæcum. Protect the general cavity by sponges, and look for the appendix. If necessary, raise the cæcum in order to find it, or to separate adherent coils of the intestine. By tracing down the longitudinal muscular bands on the cæcum to the appendix, the latter may be found and opened. See the appendix from adhesions, lipate the peric-appendiceal, and remove the appendix if possible. If it is healthy, though a proper amputation may be performed.
This is often impossible owing to imminent infiltration of the walls of the appendix even when there is no actual perforation. Tie a little thread round the base 1/4 inch from the caecum. If the tissue is too much infiltrated and is adherent, stuff the wound with strips of gauze and allow it to granulate. In favourable cases, where there is no actual suppuration, irrigate the cavity, insert a Keith's tube, and dress close the wound.

The After-Treatment.
Feed for seven or ten days. Begin stomach feeding about the 3rd day. A little opium may be required. If all is well, and the bowels have not moved spontaneously, open them about the 5th day with an enema.

Operation in the Relapsing Form.
If recurrence is frequent, some radical treatment is required. Choose a period of quiescence between two attacks. The sooner it is done the better, as there will be fewer adhesions, and these present will be less firm. Deal with them as practicable, and remove the organ. Divide the serous coat circularly. Retract a cuff of the serosa and mucosal coats, ligature and divide the serous membrane. Cover it by stitching the cuff over the end, or ligaturing it round the stump.
Possible Sequelae

Fecal Fistula

It may result where the abscess has merely been opened without radical treatment. It may follow removal where the stump has sloughed or yielded. It may close of itself. It may be necessary to remove the appendix or to re-ligate the stump.

Central Hernia.

The cicatrix in the abdominal wall may yield, after incision and drainage of the abscess. Peritoneum and bowel interlaced together and adherent to the cecum may protrude. A truss may put it right. It is better to break down the adhesions. Remove the appendix if that has not been done. Tie the margins of the divided muscle and re-ligate them.

Subsequent Abdominal Pain

Pain in the right iliac fossa re-occurs in many cases. In some cases an indurated cord has been felt that might have been mistaken for the appendix if it had not been removed. In some cases another operation has been required to break down adhesions that have been the cause of pain subsequent to the original operation.
We have now reached the conclusion of the study of this important and interesting condition. A brief summary of the anatomy and physiology of the small but important organ involved has been given. The probable causes of this disorder have been discussed, and a description has been given of the morbid changes produced by this disease, in the appendix, and the neighbouring structures. The clinical features of the various forms of this complaint—so protean in its nature—have been passed in review before us. Finally we have treated of the Prognosis in such cases, the Diagnosis of the condition, and the methods of treatment at the best and call of science for use in the combat with inflammation of the appendix—that little degraded, functionless relic, that is yet so powerful, and able to kindle a conflagration so terrible that it often can scarce be quenched by all the wit of man.