Thesis for M.D. Exam.

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APPENDICITIS

ITS

AETIOLOGY, SYMPTOMATOLOGY AND TREATMENT

So called "Inflammation of the Bowels" has long been known to the Profession and to the Public, and, whilst from time to time, as we shall see later, sporadic cases have been recorded which pointed conclusively to the Appendix Vermiformis as the seat of the disease,

tory of isease

it was reserved for the declining years of the 19th century to establish the malign influence of the Appendix as the direct cause of so-called "Inflammation of the Bowels".

Nor is this greatly to be wondered at. The discovery of General Anaesthetics has greatly enlarged the field and usefulness of General Surgery, but well within the recollections of men still living and in the full practice of their profession, the Peritoneum was regarded with a superstitious awe, that would have done no discredit to an African Witch Doctor.

With the General acceptance by the Profession

Lister

of Lord Lister's great discovery, men became bolder, and

operations on the General Peritoneal cavity by the General Surgeon became more frequent, but even this disaster dogged the footsteps of the innovators; and I know of one great General Surgeon still practising his Profession, and holding the highest position in the estimation of his colleagues, and of the public, who lost his first seven cases of Ovariotomy from "Sepsis".

Another distinguished colleague of his, equally eminent as a teacher and as an operator, was so chagrined at the untoward results of his operations for Extirpation of the Uterus, that for many years prior to his death he resolutely declined to operate, and passed his cases over to more fortunate colleagues.

Lawson Tait

To no one after Lord Lister, is the Profession and the Public more indebted than to the late Lawson Tait. Early in his career he became a convert to Listerism, and carried his contempt for the Peritoneum to a point which no present day Surgeon would feel justified in imitating.

Although for many years there have been buried in our literary records fairly accurate accounts of the dangerous

inflammations of the Vermiform Appendix; it is only within the last five and twenty years that systematic surgical endeavours have been made to meet them and, as usual, our advance has to be credited to the Operating Theatre, and not to the Pathological Laboratory.

Until five and twenty years ago the General Practioner summarised all inflammatory affections within the Abdominal cavity as "Peritonitis". It is quite true that Teachers at the different "Schools" vaguely spoke of Typhlitis, Peri-typhlitis and Paratyphlitis, but their ideas and descriptions were so hazy that they carried neither knowledge nor conviction to their hearers.

Pathology was satisfied with the origin in or near the Caecum, the influence of the Appendix in the production of such inflammations, was not suspected. It is true that several authorites had called prominent attention to the part played by the Appendix in these inflammations, thus - Copeland in 1834 and John Barne in 1837 gave accurate descriptions of perforative Appendicitis and its consequences. Many others such as Grisolle and Rokitansky followed on the same lines but their writings had little attention paid

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them and bore less fruit.

In 1880 "With" of Copenhagen was most ~~out~~ outspoken in his belief that the Appendix and not the Caecum was the cause of these inflammations, but his work like that of his predecessors did not have the attention it deserved.

"With" in 1880

In 1886 the real foundation of our knowledge and management of Appendicitis was laid by "Fitz" of Boston - a knowledge which Treves and a countless army of Surgeons have since amplified and perfected.

Treves

To the "Man in the Street", if not indeed to the bulk of the Profession, Appendicitis was comparitively unfamiliar until the tragic seizure of the late King Edward on the very eve of his Coronation made the name familiar to the civilized world.

From 1901 onwards, appendicitis has become a household word, and its ravages are recorded in the Daily Press and occupy a very considerable space in current Medical Literature.

1901

The first question that must occur to the most casual observer is:- "Is Appendicitis really a new disease or is it simply an old disease which we now for the first time

recognise in its proper perspective; and if an old disease, is it as most competent observers are inclined to believe rapidly on the increase"?

To any one who is at all conversant with the literature of the subject, there can be no question at all that the disease has probably existed for all time, but there can, I think be equally, little doubt that the condition is an increasingly prevalent one.

One must at once acknowledge the undoubted fact that, previous to King Edward's attack, the great bulk of the Profession did not recognise the condition, and that hundreds went down to their graves labelled "Peritonitis" when the initial lesion was undoubtedly "Appendicitis".

As a proof of this assertion let me instance the statistics of a well-known Provincial Hospital doing very good work in the West Riding of Yorkshire viz:- In 1900 there were operated upon 4 acute cases of appendicitis, one case of re-current appedicitis, and one case of Appendicular Fistula i.e. 6 cases in all, of which three were males and three Females, their average age being 30; the youngest of the series being 11 years of age, and the oldest 47 years.

statistics

Ten years later that is in 1910, with practically the same Staff and the same area to draw upon (which at the last Census showed a decrease in population) 60 cases were operated upon for acute appendicitis; 30 of whom were males and exactly the same number females. The average age was 22; the youngest being 4 and the oldest 57 years of age.

These figures can mean one thing and one thing alone, and that is the Public and General Practioner are both more alive to the condition and that cases are no longer dosed with opiates and poulticed into their graves but are sent into an Hospital for Surgical Treatment.

While this then accounts largely for the sudden great increase in the apparant incidence of the disease, it by no means settles the whole question and most Surgeons are virtually agreed that in certain areas the disease is unquestionably on the increase and that under the present social conditions the natural tendency is an increasing liability to what threatens to become a veritable scourge

ANATOMY OF APPENDIX

The Vermiform Appendix is a diverticulum from the Caecum. Normally it is of yellowish pink colour, soft and pliable and when perfectly healthy no contents can be felt in it. Its average length is about 3½ inches, but I have seen it as long as 9 inches in the fresh state. The organ is always practically surrounded with Peritoneum, with a definite and well-marked Mesentery. Some authors state that the Meso-Appendix frequently extends only two thirds or even a half the length of the appendix, and that the artery penetrating the hilum some distance from the tip may leave the terminal portion insufficiently supplied with blood and therefore more subject to disease.

Kelly

Kelly, however from personal observations, states that this is not the case.

The vascular supply is derived from the Ileo-Colic or thr right Colic branches of the superior Mesenteric Artery and runs in the free edge of the Meso-Appendix.

scular Supply

In the female sometimes a branch passes from the right Ovarian Artery and this may account for the greater prevalence of the disease in the male sex.

The nerves are derived from the superior Mesenteric Plexus of the Sympathetic which also supplies the small Intestine and this accounts for the fact that patients often refer the initial pain to the umbilicus before a definite sign of a local Peritonitis has manifested itself.

mphatic ystem

The Lymphatics run in the Mesentery and merge into the Mesenteric glands. Infection of these by the normally present Bacillus Coli forms a Lymphangitis of the Meso-Appendix which on organisation, produces the twists and tortuosities of the Appendix so often seen in Pathological conditions.

ckwood.

Lockwood has shewn that in the Appendiculo Ovarian ligament, the lymphatics of the Appendix communicate with those of the Ovary and Broad Ligament. This relationship will sometimes account for the Association of Menstrual irregularities and disorders in the more chronic forms of Appendicitis.

The wall of the Appendix consists of a Mucous, Submucous, Muscular and Serous Coat, all of which are directly continuous with those of the Caecum. The opening of the Appendix into the Caecum is guarded by a fold of Mucous membrane, forming a valvular arrangment known after its discoverer as the "Valve

Valve of Gerlach

of Gerlach". This allows the normal secretions of the appendix to pass into the Caecum but not in the opposite direction unless the valve becomes"incompetent" from dilatation of the Caecum in the course of fermamentative changes.

Again if the fold of Mucous membrane forming the valve becomes "redundant", it might easily enough, obstruct the discharge of Appendicular secretions and so bottle up the Organisms in its lumen.

It has been shewn by Physiologists that the Appendix reaches its maximum developement between the ages of 10 and 25 years after which it begins to involute. This fact will possibly help to explain the greater frequency of the disease in children and young adults and a corresponding decrease in the number of cases in old age.

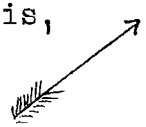
It has frequently been said that the Appendix is entirely useless in the general economy but this statement has been rightly challenged. Some American Surgeons even went the length of saying that the organ should be removed surgically from every infant to prevent disasters in later years but this drastic measure has not gained favour in this country.

The organ is well supplied with Lieberkuln's Glands

and an extensive distribution of lymphoid tissue so forming the "Intestinal Tonsil". The numerous fermentative changes which arise in the Caecum, and the normal presence of large numbers of micro-organisms in its cavity require some protective barrier to counter-act these ravages and this is found in the appendix. Unfortunately, however, the endurance and vitality of the Appendix is not sufficient to ward off all invasions, and it falls a victim to the army of organisms in its vicinity with all its dire consequences.

Intesti- l Tonsil

"Appendicitis" as the name implies, means an inflammation of this important organ which in the obscure past was labelled Typhlitis,



(PERITYPHLITIS AND PARATYPHLITIS)

Position of Appendix in relation to the Caecum.

Some authors have attempted to estimate the frequency of the various positions of the Appendix, but this idea would lead to useless classifications which might introduce erroneous ideas.

It is agreed that it lies internal to the long axis of the

Caecum in the great majority of the cases - probably about 75%. In half of these cases it hangs downwards into the Pelvis; in 20% of them in lies underneath the Caput Coli; and in the remainder lies in the Iliac Fossa, or external to the Caecum.

The position of the Appendix is important, in that it determines to a great extent the "fatality"of the attack.

A INTERNAL POSITION. - This is the most dangerous, because there is a greater liability for the small intestines and Pelvis to become infected. Fortunately as a rule, the general peritoneal Cavity becomes sealed off, but in the very acute cases, no time for this is afforded, and the contents of the Caecum and Appendix are shot out to cause a general Peritonitis with fatal results.

B RETRO-CAECAL. - This is a very safe position, the formation of adhesions, permitting the abscess to become localized. An abscess in this situation may give rise to extremely few physical signs - in fact they may be entirely wanting.

To the Surgeon this is a danger in that doing an"Interval appendicectomy", as he thinks, he may overlook, the pus present, and so foul his peritoneal Cavity. Again the pus may burrow

behind the Caecum towards the undersurface of the Liver and may even penetrate the diaphragm. In one of my cases the tip of the Appendix was adherenet to the under surface of the Liver and a large abscess opened in that situation.

C. ILIAC FOSSA: - From a prognostic point of view the situation of the appendix in this region is intermediate between the Internal and Retro-Caecal varieties. An abscess may form in this situation shut off by adhesions from the General Peritoneal Cavity. The Abscesses are often large in size and may burst through the umbilicus. In thin spare subjects the appendix can sometimes be palpated as a hard finger like process in this situation especially in chronic cases with few adhesions.

D. SUPERFICIAL AND EXTERNAL TO CAECUM.

This is the rarest and safest position in which to find the appendix.

E Occasionally the appendix is found in other situations, but they are more or less curiosities. In children it has been found in the left side of the body owing to the greater mobility of the Caecum at that period. It may also be found in general

transposition of Viscera. I have seen it twice in the sacs of large Inguinal Herniae. In one of the cases a diagnosis of strangulated Hernia was made, but on opening up the sac an abscess with a perforated appendix was found. I have also seen it in the scrotum and incorporated in the wall of a Parovarian Cyst.

It has been stated and even records published in a very few cases that the appendix is entirely absent in some cases, but this irregularity must be extremely rare. The appendix may be so buried in some of the Peritoneal Fossae by adhesions that repeated attempts to find it have proved futile. A careful dissection in the Post Mortem Room would probably elucidate the condition.

CLASSIFICATION

Several elaborate classifications have been worked out on this subject but as the different varieties gradually merge one into the other, this is unnecessary, and to a certain extent inadvisable. For the purpose of Hospital Statistics, however, some division must be made, but the more simple it is, the better. All the different forms may be included under three distinct headings, viz:-

(1) Acute Appendicitis.

(2) Sub-acute Appendicitis.

(3) Recurrent Appendicitis.

AETIOLOGY

Although appendicitis is chiefly a disease of youth and occurs with greatest frequency between the ages of 10 and 30, it may be met with at any period of life. A case has been recorded in a child 7 weeks old, and one in a man 78 years of age. The great susceptibility of lymphoid tissue to infection during early life is the probable explantion of the prevalence of appendicitis in children and young adults. Under the age of 10 the acute suppurative appendicitis is more common than the non-suppurative.

Age,

Practically all statistics shew that the male sex is more frequently attacked than the female, in the proportion of about 3 to 1. Curiously enough in the Hospital from which the material for this paper was derived the numbers were exactly equal, but a possible explanation of this fact will be alluded to later. The fact that in females, a branch of the ovarian artery often passes to the appendix, and thus increasing

Sex.

its blood supply, may be explanatory of the ratio. Again men are more often indiscreet in their diet. Some men state that the strong contractions of the abdominal muscles and particularly the Psoas Magnus muscle, are the cause of appendicitis, but I think it is simply a predisposing factor as in the case of cold and exposure. However, the point is of interest from a Medico-Legal aspect in Compensation Cases.

The disease is very rare indeed in the lower uncivilized countries. The negro-races for example, are almost exempt, owing no doubt to their extremely simple and nutritious diet coupled with the outdoor life they lead which prevents any gross digestive dearangements.

In the United Kingdom, and more especially in its large towns and huge industrial centres, the disease is vastly increasing as my cases for 1900 and 1910 shew very markedly. I think the great increase in the social prosperity of our large manufacturing towns is certainly responsible for the increased number of cases. In Huddersfield for example, where I practice my profession, weaving is the staple industry, which men, women, and children above fourteen years of age nearly all follow. As a rule, they are paid accordingly to the amount

they can produce (piece-work) and this naturally tends to lower their bodily vigour from overwork. Owing to the short intervals they have for their meals, usually about half an hour for breakfast, and an hour for dinner, their food is bolted more or less unmasticated, and is absolutely certain to cause "Indigestion" sooner or later. In a large number of the houses amongst the poorer class, all the women in the household go out to work and no preparation of a mid-day meal is possible. However, they must have something to eat, and they are catered for by owners of "fish and chip shops". In this locality these are always situated near the large mills and are patronised by crowds of the workers at meal times. The quality of the goods supplied is not always above suspicion, and I have repeatedly seen cases of Ptomaine Poisoning, and appendicitis follow their ingestion. Two members of one family in our practice had a good hearty evening meal of fish and chips highly spiced, and before the week was out, they had both been operated upon for acute suppurative appendicitis.

The middle working class go to the other extreme. They have meat in some form or other for almost every meal in the day usually served with vinegar and pickles in large quantities.

They also hurry over their meals and when finished usually spend the remaining few minutes of their interval in violent exercises, such as football, wrestling, cricket, etc. All these adverse conditions produce digestive derangements, with accompanying Catarrh of the Bowels and Chronic Constipation. The latter is a growing evil in this district and very little attention is paid to the regular actions of the Bowels. The Caecum in the "Cess-Pool" of the human body and large quantities of undigested food collect in its interior and undergo fermantation changes. This causes a gradually distention and dilatation of the Caecum which in time causes the Valve of Gerlach to become "incompetent," and so allows the contents of the Caecum to enter its interior. The organisms, which in this situation, are normally present, are allowed to act on the tissues of lowered vitality and weaken further the appendix. Some of the liquid Foceces entering the Caecum from the Ileum may pass into the appendix; the fluid portion is absorbed, the solid portion remaining behind as a Concretion. This gradually increases in Size from the deposit of Salts &c, secreted from the wall of the appendix until its pressure causes ulceration and later perforation. This brings me up to the subject of:-

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Concretions and Foreign Bodies in the Appendix.

The earliest observers who detected concretions in the Appendix regarded them from their shape and appearance as various foreign bodies, such as datestones, cherry stones &c. During the last decade it has been conclusively shewn that concretions are composed of inspissated faecal matter and that true foreign bodies, though found, are extremely rare. Normally in a healthy appendix, none of the contents of the Caecum pass into the Appendix owing to the fact that peristalsis in the walls of the Appendix and Caecum occur identically at the same moment. It is only when dilatation of the Caecum has occured or when fibrosis of the Appendicular wall resulting from previous inflammations, that fluids can pass into the Cul-de-Sac. This fibrosis and consequent decrease in the peristaltic action of the Appendix allows

Foreign Bodies.

foreign bodies such as pins, seeds, gall-stones, worms &c when passing over the mouth of the Appendix, to enter its lumen. The presence of these bodies in the Appendix, then, may be taken as evidence of some pre-existing patholo-

gical condition and represent in the appendix the "Acme of Constipation". Structurally, concretions may have for a nucleus, a small foreign body but much more frequently it is a small piece of hard inspissated faeces, which gradually increases in size from deposition of mucus &c, from the tabular glands of the Appendix. This outer coating of moister and fresher material offers to the organisms which are present, or which may enter from the Caecum, an extremely suitable nidus for their growth and their proliferation. Thus concretions are a source of extreme danger and a sure indication for removal of the organ. Concretions are rarely found in children under 5 years of age, because the conditions necessary for their production are so often wanting.

Small concretions may be in the Appendix and for a time cause no symptoms, but as they increase in size, and exert pressure on the mucous membrane of the appendix, it decreases the vitality of the tissues, allows the organisms to gain access and the process of ulceration begins. Thus often in the operating Theatre, one finds the concretions lying loose in abscess cavities.

Sir Frederick Treves has reported a case where a large concretion was lying free in the general Peritoneal cavity and had only caused a slight amount of irritation.

Perforation of Appendix.

Perforation of the Appendix usually occurs at the tip owing to the arrangement of the mesentery and blood supply, but when it occurs elsewhere, it is almost invariably due to the pressure of a concretion. An exception to this is the perforation of a typhoid ulcer in the appendix wall. In some cases a concretion, after producing its evil effects on the appendix wall may then be discharged into the Caecum again. The ulcer if it heals, contracts and causes a stricture of the appendix. This prevents the entrance of fresh faecal material, but it also damns back the secretions of the appendix. If these remain sterile a large Cystic "Mucocele" is formed for the time being, but, as a rule it suppurates and you have an "Acute Perforating Appendicitis". Stricture of the Appendix may also be caused by twists, and acute tortions from adhesions, from which the same results may follow. Besides, concretions

Stricture of Appendix.

and foreign bodies, Intestinal Worms are sometimes found in the appendix such as the "Ascaris" and "Oxyuris" There seems to be an undoubted etiological connection between these and some forms of appendicitis. Lorrain Smith and Tennant have shewn a great increase in the "Bacterial Content" of the intestine in the presence of worms. In some cases of children with characteristic symptoms of appendicitis the condition was relieved by taking "Santonin", but probably this was only a coincidence. In this connection, also the association of appendicitis with Influenza, Rheumatism and Tonsillitis has been observed, and the symptoms may here again clear up under the influence of Salicylates. Osler states that the brunt of an attack of Influenza often falls on the Gastro-intestinal mucus membrane. This may be used as an argument for the origin of appendcitis from Influenza as their is often a marked constitutional disturbance before the appearance of local symptoms.

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In very young children the Aetiology of the disease is much the same as in adults namely, gastro-intestinal troubles.

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This accounts for the relative small number of cases in infant Their diet is so very simple and easily digested that it does not leave any irritating remains in the Caecum. In bottle fed babies diarrhoea is the rule, and acute Gastro - Enteritis" is not uncommon; this may easily localize itself in the appendix. These cases are usually very acute, and unless operated on early, they run a rapid course, become gangrenous and cause general Peritonitis.

Bilious attacks.

The evidence now appears conclusive that the so-called "bilious attacks" of children accompanied by pain of a griping or colicky character, by vomiting, occasionally by diarrhoea, by headache and slight fever and ascribed to the indulgence in some indegestible food, are nothing more than mild cases of appendicitis. Many of these cases have tenderness over the right iliae fossa and some even have inflammatory masses in that position.

In a word I may state my conviction that dietetic errors leading to vicious processes in the intestinal Laboratory, chiefly Chronic Constipation and its consequenses are the cause of Appendicitis.

"SYMPTOMATOLOGY"

ACUTE APPENDICITIS

It is impossible to infer from the clinical features at the onset of the disease the nature of the lesion present in the appendix or the course it will pursue.

The usual history that a patient gives is that he experiences a sudden, severe, griping or coliky pain in the abdomen, which often doubles him up and is usually referred at first to the umbilicus. This is usually followed by nausea and vomiting. There is some sensitiveness of the whole abdomen and although there is no general rigidity, the muscular fibres over the inflamed area are contracted. Then the pain and tenderness become localized in the Right Iliac Fossa and usually most marked over McBurney's point. Soon after the onset of the attack the temperature begins to rise - it may be to 102" - and the pulse rate is accelerated according to the temperature If the inflammation does not spread beyond the appendix, the pain gradually passes off, and the other symptoms gradually subside in the course of 12 or 36 hours until nothing remains but a little tenderness over the appendix.

If the infection spreads to the surrounding peritoneum, the pain persists and becomes more severe. The abdoninal wall in the region of the right rectus muscle, ceases to move with respirations, becomes rigid and excessively tender on palpation. The symptoms of general illness continue, vomiting persists, temperature remains up and the pulse accelerated. At this stage the progress of the disease may be arrested, when the symptoms will clear up and leave only a mass (tumour) in the right iliac fossa for some weeks. This mass is formed by the adhesions of the omentum and small intestines, and if suppuration does not occur will disappear entirely in the course of a few weeks.

If on the other hand, suppuration does take place within the area shut off by the adhesions, the symptoms of local peritonitis persist, the temperature becomes hectic in character and the pulse rate further increases in frequency. Sweating at this stage may become a prominent feature which is always symptomatic of an acute infection. The swelling increases in size and becomes softer and more

boess
ormation

tender. Oedema of the abdominal wall and fluctuation are later stages of the condition and indicate that the abscess is approaching the surface. If this abscess is allowed to grow, it may rupture on the skin surface and cause a Faecal Fistula, or, it may open into the rectum and discharge its contents with the stools, or it may open into the vagina or bladder, the pus escaping in the urine.

May rupture

In very acute cases (the first attack as a rule) when no time has been allowed for the formation of adhesions, the infection spread rapidly to the General Peritoneal Cavity, setting up a violent General Peritonitis, which, unless operated on immediately proves so very fatal. Some authors have styled this "Acute Fulminating Appendicitis"

In these localized abscess cases, the appendix is almost invariably found adherent to the wall of the abscess cavity either gangrenous, perforated or both. Sometimes, however, the sloughing appendix is found floating free in the pus with perhaps some faecal concretions.

These associated conditions point to a previous pathological

condition of the appendix, an acute process occuring in an already diseased appendix.

In the acute fulminating cases, however, few, if any, adhesions are found and the appendix is usually gangrnous. This is the most dangerous variety and occurs as a rule during first attacks.

SUBACUTE APPENDICITIS.

The apparently non supparative class of appendicitis is by far the largest and is increasing rapidly, now that the subacute and chronic cases are being recognised. As previously stated, it is impossible to form any sound judgement at the commencement of the illness; the most severe symptoms may arise in the apparently mildest cases, while others begin like a lion and subside like a lamb. Again pain is the first definite symptom to appear and becomes localized in the right iliac fossa. The subsequent symptoms resemble those of acute appendicitis, only perhaps less severe and resolution of the inflammatory mass is complete. These are cases which, on an acute attack, supervening, become cases of appendicular Abscess.

RECURRENT APPENDICITIS

This is not to be regarded as a separate variety, but simply as a recurrence of an ordinary non-suppurative appendicitis. I do not think a case with the formation of a small quantity of pus gets sufficiently well to be put under this category. Most of the cases have not perforated and if so, only a small quantity of mucus has escaped from the appendix. The exudate is not sufficiently virulent to cause abscess formation. Each relapse or recurrence renders the formation of pus more likely, because the pathogenicity of the organisms increases while the vitality of the tissue decreases.

ymptoms. The symptoms are sufficiently indicated in the name. You get complete recovery from one attack, a period of immunity varying in length from a few weeks to months or even years, then a similiar renewal of the attack. In some cases the severity of the attacks increases, whilst in others it decreases probably owing to a fibrosis of the organ. There is no law as to the frequency and severity of

these attacks, and no prognosis as to recurrence is possible.

When these attacks become less severe, but appear at increasing intervals, a condition of "Chronic Appendicitis" presents itself.

hronic
ppendicitis

A good deal of literature has appeared in the Journals on the subject, a sign that the Profession are recognising it more clearly as a distinct disease. With it you have inveterate constipation, dull, listless feeling, indigestion, furred tongue and often menstrual disorders in the female sex. From the gradual absorption into the system of Toxiqus, you may have an icteric and muddy complexion. The poisons are constantly being discharged into the Caecum and this continual irritation causes a Chronic Catarrh of the Colon with consequent "Mucus Colitis". I have seen a marked case of this in general practice. A girl, aged 23, complained of vague abdominal pains, for three or four years; inveterate constipation, head-ache, sickness and general weakness. She also passed large quantities of mucus per rectum. On deep palpation a tender spot could be made out in the Appendix region. After trying various remedies, she did not improve, and after eliminating other conditions which might

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have caused the Symptoms, we decided to operate.

The Appendix was found greatly thickened, fibrous in character, and was bound down by strong adhesions to the Uterous and overies. No pus was present. The patient has completely recovered, the discharge of mucus has ceased, the bowels act normally every day and the pain has entirely disappeared.

Remote Consequences. May remote consequences of Appendicitis have been frequently described in recent Medical Literature. I do not refer to the opinions of certain distinguished specialists who discover all sorts of obscure stomach lesions, as having their origin in a diseased appendix, and who are now making it a part of their surgical routine to remove the appendix in every case in which they open the abdomen. Quite apart from "more or less fantastic" theories, there is no question at all that appendicular adhesions lead to prolonged abdominal discomfort and distress, to Constipation and to fatal Intestinal Obstruction.

TREATMENT

Rest

Physicians tell us that the great majority of cases of Appendicitis get well with rest and appropriate medical treatment - whatever that may mean. Quite true, no less than 70 or 75% will get well under rest and appropriate medical treatment but the other 25 to 30% will all die.

There is only "One" safe treatment in Appendicitis. "Get into the abdomen as soon as you can and out again as quickly as you can".

Pages have been written and much ink has been expended in the question of when to operate and when not to operate. I have no hesitation in saying that, if seen soon enough, all cases should be operated upon, as the apparently mildest cases may suddenly develop the gravest symptoms and end fatally . Whilst immediate operation should be the rule in all cases, it, unfortunately, frequently - too frequently - happens that a case is not seen until the third or fourth day of the illness and the question then arises"Should the case be operated on at once, or should one wait for the formation of pus and of limiting adhesions.

If the symptoms are still acute, I advise operation whatever day of the disease the case is seen, but if the General Symptoms are subsiding, notwithstanding the presence and persistence of a "Phlegmon" it is well for resolution to take place and remove the appendix when all the symptoms have disappeared, in other words treat the case as an "Interval One". If pus be present in large quantities when the case is first seen it is a safe rule to incise and drain the abscess cavity and remove the appendix or its remains at a later date.

Interval Appendicectomy.

The rule, - the unalterable rule - should be to operate, and the aim to remove the appendix in all cases, but whilst that should and must remain the aim of the Surgeon he must use discretion and vary his proceedure as circumstances demand.

The method of operating is not so important as the operation. So long as the appendix is removed quickly and a firm abdominal wall left, good results may follow all methods.

Personally I prefer a vertical incision along the course

of the Rectus Muscle, pull that muscle outwards and make the opening into the Peritoneum immediately behind the Rectus sheath. Clamp or "Sleeve-Cuff" the base of the appendix - tie off with fine silk - secure the mesenteric artery and finish with a purse string suture to bury the stump.

In practice it is most important to get an early action of the bowels by Enemata or small doses of calomel. The large intestine should be kept empty by daily Enemata of soap and water.

The complications are:-

(1) General Peritonitis.

(2) Multiple Liver Abscess.

(3) Sub-Phrenic Abscess.

(4) Faecal Fistula.

(5) Veutral Hernia.

(6) Adhesions which may ultimately lead to Intestinal Obstruction.

The treatment of the complications is of course in the first instance the treatment of the primary condition.

In <u>general Peritonitis</u> the outlook is in most cases hopeless, but multiple incisions in both flanks for drainage

continuous saline infusions and the free exhibition of stimulants, offer the best hopes in a condition of despair.

Frequent rigors with long and rapid variations of temperature are sure indications of Multiple Liver Abscesses which can only be treated on General lines as it is obvious that nothing in the way of direct treatment is feasible.

Sub-Phrenic Abscess, when diagnosed, should at once be dealt with on general surgical and anatomical lines, and old adhesions when they give rise to symptoms of Intestinal Obstruction should be dealt with at once by Abdominal Section.

A faecal Fistula usually heals spontaneously, but if an operation is required, the Peritoneal Cavity is opened and the opening in the Caecum closed by two rows of sutures. Ventral Hernia occurs sometimes in cases where drainage has had to be used for a long time. An abdominal belt may be worn in slight cases, but in the more severe ones a definite repair of the abdominal wall should be undertaken.