THE PROSPECTS AND VICISSITUDES OF APPENDICITIS AFTER OPERATION.

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BY

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THE matters, Mr. President, which you have done me the honour to ask me to discuss arrange themselves under two heads:

1. The degree of imperfect relief, or of imperfect recovery after operation.

2. The complications which may attend operation, and which may be regarded as accidental or independent of the direct surgical results of the case.

I have based the comments upon these two topics, for the most part, on the records in my private case-books. The lamentable deficiencies in these records are, I hope, compensated for by the admirable series of statistics very kindly prepared for me by Mr. Hugh Lett from the registers of the London Hospital. These statistics cover a consecutive period and embrace 1,000 cases of operation for appendicitis. In addition to the colossal labour of transcribing the notes of these cases, Mr. Lett has addressed no less than 797 letters to discharged patients in order that the after-history should be, in each instance, complete.

I believe that these particulars, collected with so much patience and care, will form the most important contribution which has yet been made to the statistics of this common malady.

In the account which follows I have kept the records of my own cases distinct from those collected by Mr. Lett, which latter are set out in a coherent whole.

I. IMPERFECT RELIEF OR IMPERFECT RECOVERY AFTER OPERATION.

In order that the issues may not be scattered over too wide an area it will be well to consider this question from the point of view of the operation performed during the quiescent period and that carried out for the relief of suppuration during the acute or active stage.

A. Imperfect Results After the Operation of Removing the Appendix During the Quiescent Period.

It is as long ago as 1887 that I ventured to suggest—in a paper read before this Society—that cases of recurrent appendicitis should be treated by removal of the appendix during the period of quiescence. My proposal was not very enthusiastically received at the time, but of later years I have no ground for complaint on this head. The procedure is one of the most common of abdominal operations, and certainly one of the most satisfactory. It is attended with but trifling risk and with but little distress to the patient, while in the vast majority of instances it is followed by a complete and unconditional cure.

I find, however, in my case-books the records of 45 patients who consulted me, and in whom the operation had—from their point of view—more or less completely failed. Had I been the operator in all these examples it would be possible to express the dissatisfied patient in the form of a percentage, but I am responsible for but the minority of them. The collection, therefore, from a statistical point of view, is almost valueless. It is natural that a patient who feels that an operation has failed should pour his woes into the ears of other than the operator. Thus it is that we all have to search for many of our failures without the walls of our own consulting rooms.

The relative frequency of these cases of failure may be gathered from the London Hospital statistics. From these it would appear that among 231 patients in whom the appendix was removed during the quiescent period, no less than 11 complained that since the operation they had had "attacks like those they had before it."

I have excluded from my 45 cases all examples of trouble in the healing of the wound and of ventral hernia. Ventral hernia is comparatively rare, but I have noticed that it does not exempt cases performed by methods which are considered to render a yielding of the scar impossible. I have met with only two instances of persisting sinus after this operation. In both cases the sinus had been open from eight to nine

months when I first saw the patients, and in both fragments of silk ligature had escaped. Of one of these operations I have no knowledge, but in the other case it was reported that the procedure had been very difficult, and that a gauze drain was necessary.

TABLE A.
Patients who complained of Imperfect Relief after the Removal of the Appendix in the Quiescent Period.

	No. of Cases.
Appendix imperfectly removed...	2
Ovarian trouble coexisting ...	9
Persisting or relapsing colitis ...	8
Persisting local pain ...	7
Neurasthenia or hypochondriasis ...	5
Continued attacks due to gall stones ...	3
" " colic ...	2
" " movable kidney ...	2
" " stone in kidney ...	1
" " an unexplained cause ...	1
Tender mass in the right iliac fossa ...	5

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The 45 cases of which I have notes represent patients who came complaining that "they were no better for the operation," or that "they were nearly as bad as, or perhaps even worse than, they were before." They also include examples in which "attacks" have continued unabated after the removal of the appendix.

As will be seen from the following summary, the degree of failure claimed to be manifest varies greatly.

A man of 60 from South America consulted me for persisting sinuses in the right iliac region with continued pain and discomfort in that part. The trouble had followed upon a large perityphlitic abscess which had been opened five years previously. The sinuses had been dealt with and counter openings made, but without benefit. Finally, the abdomen had been opened and the appendix removed. A well-healed scar in the usual situation indicated the site of this operation. Still no improvement followed. Thinking that a loose concretion may have been overlooked I reopened the abdomen. Buried among many adhesions I came upon an undisturbed but diseased appendix, which I removed. In seven months all the sinuses were healed. I have no explanation to offer for this case, beyond recalling the fact that the statements of patients, even when given emphatically and in perfect faith, are not always to be relied upon.

A second case of this kind was in the person of a youth of 20. His appendix had been removed by an eminent surgeon, during the quiescent period, after the third attack. The appendix is said to have been strictured, to have contained no pus, and to have been surrounded by few adhesions. The operation was in August. In the following October the patient had another attack of appendicitis with fever, and was in bed ten days. In December he had another attack of some gravity. He had hardly recovered from this when he was again laid up for the third time after the operation. The attacks which followed the operation differed in no essential from those which had preceded it, except in this, that in the second of the early attacks a small abscess was evacuated, which gave no further trouble, nor did suppuration supervene in any of the subsequent outbreaks. As soon as the last attack had subsided—now two years ago—I opened the abdomen in the iliac fossa. The stump of the amputated appendix was swollen, hard and tense. It measured $\frac{3}{4}$ in. Its distal end was well closed in by sutures which were still in evidence. The little tube was distended by muco-pus, and it was strictured at the very point where it opened into the caecum. It was removed, and the patient has had no trouble since. This case suggests the wisdom of always removing the appendix close to the caecum. A stricture at the actual caecal orifice is not common. It would appear to be always so placed in mucocoele of the appendix—in those strange examples where the organ is translucent and is distended with a perfectly clear white jelly. In connexion with this matter I may mention that in one operation after I had removed the appendix—as I thought—close to the caecum I found that the proximal end of the tube had been invaginated into the caput coli. The little intussusception was therefore at once reduced and the appendix re-excised.

Two cases, allied to the above, were found by Mr. Lett among the London Hospital records. In one the appendix was removed after the third attack. It was described as "half an inch long and very adherent." The patient subsequently had two more attacks. After the second outbreak the remainder of the appendix was discovered and removed. In the other instances an abscess was opened and "the appendix removed."

The patient had another attack with suppuration, when a considerable portion of appendix was found and excised.

I find among the series now under notice no less than 9 cases in which continued trouble after the operation was due to *mischief in the right ovary*. In some of these examples an inflamed, prolapsed, or adherent ovary had been noted at the time of the operation, but had not been removed. In others a second abdominal section was performed for continued distress, and a diseased ovary discovered and removed. In nearly all these cases the condition before operation would be described as chronic appendicitis supervening on acute or subacute attacks.

The following is a typical example: A married lady, aged 30, had an attack of appendicitis in 1893, for which she was confined to bed for ten days, and a second attack in 1896, which laid her up for three weeks. After this attack she was never well. There was continued pain in the right iliac fossa, tenderness there, occasional fever, irregular bowels, dyspepsia, wasting, and a condition of chronic invalidism. In 1897 her appendix was removed. It was free, was much thickened, and was full of muco-pus. The state of the ovary was not noted. She was practically none the better for the operation; her old symptoms persisted, and she remained a chronic invalid. A year later a second abdominal section was made and an adherent, chronically-inflamed ovary discovered and removed, to the patient's complete relief.

It is needless to point out how close is the anatomical association between the vermiform appendix and the right ovary, especially in the matter of their lymphatic vessels. It is very common indeed to find both organs simultaneously inflamed, and the evidence most usually suggests that the ovary was infected from the appendix. In many instances after the appendix has been removed the ovary recovers, or at least gives the patient no further trouble. The surgeon's prejudice will be, naturally, in favour of leaving the ovary unremoved, but I am sure most operators will agree that there is often great difficulty in deciding when this can be done with the confidence that no further inconvenience will follow.

I hope I am not uttering a heresy when I say that it is often almost impossible to distinguish clinically between chronic appendicitis and chronic ovariitis. I have found the appendix sound and the ovary diseased in instances in which competent authorities have stated beforehand that the ovary had no part in the matter, and I have, on the other hand, found a perfectly healthy ovary accredited with mischief-making for which a diseased appendix was in reality answerable.

In operations upon women I think it is very desirable that the right ovary should be systematically examined when the appendix is being removed. If it be found to be entirely healthy, the knowledge is useful should the patient complain—after the operation—of any persistence of her pains.

The small opening made in the abdomen in that operation in which the muscular fibres are split and drawn aside has much to commend it, but it has the objection that it is not always easy to examine the ovary through such a gap, nor to remove the organ should it be found to be diseased, adherent, and deeply placed.

Eight patients out of this collection of those who expressed themselves as unbenefited by the operation were the subjects of *colitis*. The following is a typical instance: A married lady, aged 27, developed severe colitis during residence in India. This was followed in due course—and after her return to England—by an attack of appendicitis, for which the appendix was removed. The colitis much improved for a while. Some little time after the operation this catarrh of the colon returned. The patient became nervous and despondent, and more or less of an invalid. She had persisting discomfort in the right iliac fossa, tenderness in that region, occasional slight rise of temperature, irregular bowels, flatulence, and an inability to do anything. She maintained that she was in no way better for the operation. After many months the trouble in the colon subsided, and the patient made a good recovery.

The association of colitis and appendicitis is common. In certain cases—especially in those which develop in the tropics—I am under the impression that it is the trouble in the colon that leads, by extension, to the inflammation of the appendix. In other cases the relation is reversed, and the colitis seems to be due to chronic appendicitis. The appendix in such instances is little more than a culture tube for bacteria, the contents of which are emptied from time to time into the caecum. Those individuals who have not had really acute attacks of appen-

dicitis are often justified in maintaining that, for a time at least, they appear to be unrelieved by the operation.

Seven patients in the present series complained of the partial failure of the operation on the grounds of *persistent pain in the right iliac fossa*. For this pain there was no apparent cause. Of the seven patients three were men and four women, and the ages were between 20 and 33. The following cases will serve as illustrations: A lady, aged 33, had her appendix removed during the quiescent period by a distinguished provincial surgeon. I saw her one year and eight months after the operation. She maintained that she was no better. She complained of abiding and severe pain in the right iliac fossa, and was more or less of an invalid. She was nervous, irritable, and full of troubles. The wound was perfect, and nothing abnormal could be found in the abdomen. She had very defective teeth, ate much meat, and suffered greatly from dyspepsia and constipation. It is customary to ascribe all obscure abdominal pains after operation to adhesions, but in this case I was assured that there were no adhesions, that the procedure was most simple, and that the ovaries were normal.

The second case is that of a military officer, aged 32. He was the reverse of neurotic, was active, and most eager to be well. His appendix had been removed two and a half years previously. The wound was sound, the abdomen revealed nothing abnormal, and the patient had the aspect of perfect health. Ever since the operation, however, he had been troubled with pain in the iliac fossa, which varied in intensity, was of neuralgic type, and occasionally rendered him unfit to do his duty. I could suggest no explanation of the trouble, and sought refuge in those vague neuralgias which occasionally follow any operation. After many months the pain entirely left him.

In five cases out of the series the only explanation of the patient's persisting trouble was the inadequate one that they were *neurotic*. This, I am aware, is no explanation, for the term "neurotic" is little more than a cloak to cover ignorance. Three of the patients were men and two were women. Their ages ranged from 32 to 49. They all were chronic invalids and all maintained that they were none the better for the operation. The chief complaint was of persisting pain in the appendix area and a sense of abiding illness. There was not lacking the environment of sympathetic relatives and much pampering. One patient was haunted by the dread of cancer and was sure that his pain was due to it. Another—a gentleman of 43—was exceedingly gouty, and to gout some of his trouble may have been due. One patient had had his abdomen opened twice already and was searching for a surgeon who would open it a third time.

As a typical example may be mentioned the case of a lady of 32, whose appendix had been removed for chronic appendicitis with subacute attacks. Four years later she maintained that she was "as bad as ever." She was severe in her judgement of the surgeon who had operated upon her. She had constant dyspepsia, with flatulence and irregularity of the bowels, constant pain in the appendix region, where she could feel swellings and tumours which were apparent to no other fingers than her own. She was quite an invalid, and had moved from one health resort to another without benefit. Medical treatment, as a rule, made her worse. The simple measures I suggested did her much harm. Finally she fell in with a "Nature cure," which led to her speedy and complete recovery and to the deepening of her contempt for orthodox medicine.

In 9 instances in the present series *attacks* were reported to have continued without improvement after the operation. The patient in each instance maintained that the attacks which followed the removal of the appendix were identical with those which preceded it. In 3 examples the attacks were proved, in course of time, to be due to gall stones, in 2 to colic, in 2 to movable kidney, and in 1 to renal calculus. In the remaining instance no explanation of the attacks was forthcoming. In this case, during the first five months after the operation, the patient, a spinster of 37, had four attacks of pain, with a temperature of 100° to 103° F. These attacks laid her up for from three to seven days. They ceased and never reappeared again. From the patient's account it would appear that the operation would have suppurated.

In the cases of hepatic colic there is no doubt but that gall stones and a diseased appendix coexisted. On two occasions I have removed the appendix and evacuated the gall bladder at one operation, but through two incisions. It is not always easy to diagnose hepatic colic from certain acute disturbances in the appendix. That an operation in certain of these

instances may fail to relieve the patient is not improbable. One must remember, also, in connexion with these cases what extensive disease may be found in an appendix which has never given the patient the least trouble.

It is easy to imagine a case in which the attacks are due to gall stones, but in which marked tenderness in the iliac fossa leads to the diagnosis of mischief in the appendix. The appendix is removed, its walls are thickened, and its mucous membrane is ulcerated. It has caused no symptoms except the one of local tenderness, and the patient continues to have attacks as badly as before.

The case associated with renal calculus was as follows: A young man of 22 had for two years been liable to attacks of pain in the right iliac fossa, with vomiting and fever. On the last attack, which was one of definite appendicitis, a tender swelling developed in the region of the appendix. The appendix was removed. It was adherent, was bent acutely upon itself, and was full of muco-pus. After the operation, the patient continued to have precisely similar attacks to the number of eight or nine in the year. In these outbreaks there was no fever and no iliac swelling. It was not until these attacks had persisted for four years that the kidney was suspected to be the seat of the trouble. The gland was cut down upon, a calculus discovered and removed. The attacks, which had now lasted for seven years, at once ceased. The two operations were therefore unavoidable.

A case, given by Messrs. Battle and Corner,¹ may here be quoted in illustration of this point: "A boy was said to have had twenty attacks of appendicitis, and when operated on the appendix was normal, but there was an oxalate of lime calculus, the size of a marble, in the pelvis of the right kidney."

In the two examples in which the "attacks" were of the nature of colic, there is little doubt but that the paroxysms of pain were due to adhesions.

In the present series are five cases in which a *tender mass appeared in the right iliac fossa* some time after the operation. It occasioned great alarm, and led to the complaint that the patient was none the better for the removal of the appendix. In one instance the mass was simply inflammatory and appeared as a very tender lump, the size of a hen's egg. It was supposed to be due to thickening about a ligature or ligatures. After a few weeks it vanished, but while it lasted the patient was quite an invalid. In three instances the tender lump was a faecal mass, and the patients were so troubled, at the same time, with colic, flatulence and dyspepsia that they maintained that they were no better for the operation. They were both confined to bed for some days. In the fifth example the mass was due to tuberculous glands and there followed upon their appearance tuberculous disease within the abdomen, of which the patient finally died.

B. Imperfect Results after the Evacuation of a Perityphlitic Abscess.

After these operations ventral hernias are quite common, as are also instances of tardy, imperfect, and irregular healing of the wound. Such cases need not now be considered, as they present features of no especial interest.

I find from the records of my case-books that the following imperfect results may follow upon the evacuation of a perityphlitic abscess. They are arranged in percentages, but the figures are of little value, since they do not represent the experience in practice of any one operating surgeon:

TABLE B.

Persistent sinuses	...	...	...	40 per cent.
Recurring abscesses	...	...	...	24 "
Recurring attacks of appendicitis	...	...	...	16 "
Faecal fistulae	...	...	...	12 "
Inflammatory deposits in the iliac fossa	...	...	...	8 "

100

With regard to the *sinuses*, the persistence in the minority of the examples was due to the ordinary conditions which render a sinus obstinate. In some the suppurating tract was long and irregular, or there were many openings, or the main collection of pus was so placed as to be incapable of efficient drainage. In other instances the canal passed through a narrowed strait in a deep fascia or was so placed that it was exposed to constant movement. Many of these sinuses healed spontaneously after many months or yielded to simple treatment. The persisting sinus, in the majority of the examples, is due to a diseased appendix, or, as commonly, to a retained concretion.

With the removal of the offending substance the sinus closes. I have seen one instance in which the sinus closed

spontaneously, without operation, after it had discharged for seven years; others have closed, under like conditions, after two or three years. To effectually treat the persisting sinus which will not yield to simple measures the area of the appendix must be exposed, that structure removed, and a careful search made for an escaped concretion.

The *recurring abscesses* show great variation in the manner of their appearing. The original collection of pus is evacuated and drained; the wound heals; after a varying period of time, the patient has pain and tenderness in the part with fever and constipation; a second abscess appears, and is promptly opened.

In a few examples the trouble entirely ends with the healing of the second abscess. In the majority of instances the abscesses are frequently repeated. I have known the abscess appear ten times before the patient was dealt with by a radical operation. The second abscess may appear within a week or so of the first, or, on the other hand, it may not become evident for months.

The following example will show the uncertain progress of these cases. A gentleman aged 46 had his first attack of appendicitis in June, 1895. An abscess formed and was incised. The wound closed in five months, and the patient made a good recovery. In June, 1896, a second abscess appeared. It was opened, and the wound closed in fourteen days. A third abscess appeared in July, 1897, and here again the incision closed in fourteen days. On no occasion was the appendix or a concretion met with. With the exception of a ventral hernia the patient now remained well and, so far as I know, had no further trouble in the iliac fossa.

There can be little doubt but that the relapsing abscess is due almost without exception to the retention of a diseased appendix or a concretion, and that the condition can only be satisfactorily treated by removing these causes of offence.

In a few instances there is no apparent abscess, but in its place a troublesome *inflammatory mass in the iliac fossa* or pelvis. One example of this will suffice: A man, aged 28, had his first attack of appendicitis when he was 20. During his second attack, eight years later, a large abscess formed and burst into the rectum. The patient made a good recovery and remained perfectly well for five months. He then began to complain of a dull pain in the right iliac fossa and rectum, with fever and constipation. He became very ill and wasted. The pelvis was found to be almost filled with a hard inflammatory mass. In four weeks this slowly subsided, and with it the fever vanished. Although a careful look-out was kept, no matter was known to escape per rectum. Three months after the disappearance of the swelling I removed the appendix. It was behind the caecum in the iliac fossa, was very adherent, was bent upon itself, and full of pus. Nothing abnormal was to be discovered in the pelvis or about the rectum.

Into the very wide subject of *faecal fistula* after the evacuation of a perityphlitic abscess it is impossible to enter on this occasion. I may be allowed to mention the following points which have impressed themselves upon my mind: (1) That while the faecal fistula exists another attack of appendicitis is exceedingly uncommon. (2) That the fistula, unless due to an actual cutting or tearing of the bowel, has a tendency to close spontaneously. This process may involve months, sometimes many months, but healing takes place in the end. (3) That those fistulae which appear some days after the evacuation of the abscess do better than those which are evident at the time of the operation. (4) That a still diseased appendix or a retained concretion is often the cause of the persistence of the fistula.

From the London Hospital statistics it would appear that a faecal fistula may be expected in a little less than 6 per cent. of those cases of abscess which are treated by operation, and that the great majority of such fistulae close spontaneously.

In connexion with the sequelae now under discussion the greatest interest attaches to the occurrence of *fresh attacks of appendicitis after the abscess has healed*. These outbreaks are definite attacks of appendicitis which must be clearly distinguished from those relapsing troubles which may attend an imperfectly-healed abscess cavity. These attacks need not be attended by suppuration, and, indeed, usually are not so associated.

I was at one time disposed to think that the patient who had had a perityphlitic abscess was, *ipso facto*, cured of his malady, and that although he might have further trouble with the abscess, he need fear no other attack of definite appendicitis. Longer experience has proved that this assumption is not correct. I am of opinion, however, that the number of patients who have definite attacks of appendicitis after a

perityphlitic abscess has been evacuated are very few, and that the examples of such relapse in cases in which a concretion is evacuated with the discharge are quite rare. The escape of a concretion is an evidence that the appendix is extensively ruptured. As a result of this rupture it does not necessarily shrink up, as some suppose, but it seldom gives further trouble. Unfortunately, there are cases in which there are two or more concretions, one of which only may be discharged. The patient then has "attacks" until the remaining substance is evacuated, and an apparent exception is made to what is very nearly a rule.

The interest in this matter centres around the question whether the appendix should be removed during the quiescent period in any case in which an abscess has been opened, but in which the appendix has not been dealt with. Mr. Battle, in his able and interesting work on the *Surgery of the Diseases of the Vermiform Appendix*, answers this question in the affirmative.

In each such case as has been named he would advise the removal of the appendix. His opinion would appear to be largely based upon the case of a young woman who had an appendix abscess evacuated. Six months later she died of diffused septic peritonitis. The appendix was found to be in a state of acute inflammation and sloughing. There was no concretion present.

Mr. Battle further contends that, even if there be no second attack, the retained appendix may be the seat of chronic trouble and so greatly damage the patient's health.

The first point to be determined in this discussion is the frequency with which further attacks of appendicitis occur in cases of local abscess in which the appendix has not been removed. Dr. Miles Porter considers that such relapses may be expected in 13 per cent. of the cases. Mr. Lett, in his London Hospital statistics, places the number of such relapses at 17.2 per cent. (see Table F). I think that this percentage may be unduly high, since the decision that "the attack since the operation is like that the patient had before the operation" depends, in most cases, solely upon the patient himself. Some of such "attacks" might well be due to trouble associated with an imperfectly-healed abscess.

The appearance of the subsequent attack in these abscess cases shows remarkable variations. For example, among my own cases I notice that in one instance the second attack appeared four weeks after the abscess was evacuated, while in another the patient did not have an attack until two and a half years had elapsed. One individual had only one further attack, while another had five outbreaks in the first eighteen months after the operation. In a third example there were several attacks during the first twelve months, and after that they ceased—or, at least, the patient when he saw me had been free from trouble for five years.

While I think that the appendix should be without doubt removed in any case in which the least trouble is experienced, it appears to me that the following arguments may be urged against the establishment of a rule that in every example of abscess (in which the appendix has been unremoved) it should be excised at the first convenient opportunity.

1. Upon the most liberal estimate it is evident that 83 patients out of every 100 will never have another attack.

2. The risk of a second attack is comparatively small. Thus, Mr. Battle, while he places the mortality of a first attack at 25 per cent., gives the mortality of a second attack as 7 per cent., and that of a further attack as 2 per cent.

3. In those cases in which an abscess has formed, although the operation is often unexpectedly easy, it is often not only very difficult but distinctly dangerous. In certain cases in which the adhesions have proved to be very extensive and dense, and in which the appendix is buried deep in the pelvis, I have failed to remove the offending body or even to find it. I cannot help thinking, therefore, that if Mr. Battle's rule became absolute the surgeon would find himself engaged in not a few operations which were attended with considerable risk to life. In the face of the facts above stated—and keeping in mind the fatal case Mr. Battle mentions—I do not consider that such risk is justified.

4. It may not be unfair to state the belief that the evidence that an abscess has burst into the bowel is not always conclusive. The passage of a quantity of decomposed and long-retained mucus might well give a nurse the impression that pus is being evacuated.

II.—THE COMPLICATIONS WHICH MAY ATTEND OPERATIONS FOR APPENDICITIS.

The length to which this paper has already extended will forbid any but a very superficial discussion of this subject.

With the exception of faecal fistula, intestinal obstruction and the persisting or extending abscess, the principal complications are those only of septic infection. They are such complications as may occur in connexion with any septic wound. The fact that the wound is within the range of the portal system permits of the limited blood infection known as pyelephlebitis.

With this exception the most conspicuous complications differ in no essential from those which may attend a suppurating stump left after an amputation of the thigh.

Certain of the pleurisies and of the empyemata are due to direct local extension of inflammation from the original seat of infection.

The parotitis is probably due to that septic condition of the mouth which is common in this and in other abdominal disorders.

The common thrombosis of the left femoral vein is not open to a ready explanation. If movement be in any way concerned in this localization it may be noted that while the right thigh is kept at rest the left lower limb is much, and often severely, used in the necessary movements of the patient in bed.

Mr. Lett's statistics (Table E) show the complications which have occurred in 1,000 consecutive cases of operation. In the detailed appendix to that table will be found particulars of the circumstances under which these complications have occurred, as well as of the period at which they have become manifest. It cannot be claimed that these details reveal any novelty in the familiar history of the infected wound.

STATISTICS COMPILED FROM THE LONDON HOSPITAL RECORDS, JULY 1ST, 1900, TO AUGUST 15TH, 1904,
BY MR. HUGH LETT, F.R.C.S., LATE SURGICAL REGISTRAR TO THE HOSPITAL.

TABLE C.—Table Showing the Local Condition in 1,000 Cases of Appendicitis at the Time of the Operation, Compiled from the London Hospital Records, July 1st, 1900, to August 15th, 1904.

Date.	Total Number of Cases Operated upon.	Operation During Quiescent Period.		Operation During Attack. Local Peritonitis. No Pus.		Operation in Cases with Abscess.		Operation in Cases with General Peritonitis with or without Abscess.	
		Recovered	Died	Recovered	Died	Recovered	Died	Recovered	Died
July 1st to December 31st, 1900	86 (males 59, females 27)	33	0	0	0	39	1	1	12
1901	189 (males 130, females 59)	75	2	6	0	60	1	10	35
1902	230 (males 162, females 68)	75	0	11	3	96	9	8	28
1903	299 (males 203, females 99)	100	1	12	1	124	20	7	34
January 1st to August 15th, 1904	196 (males 130, females 66)	77	1	5	1	77	4	13	18
Grand Total	1,000	360	4	34	5	396	35	39	127

During the above period 293 other patients with appendicitis were admitted into the Hospital, but were not subjected to operation, either because the attacks were so slight or because they declined to submit to surgical measure.

If a patient has several attacks of appendicitis the later attacks are less severe, and less likely to be accompanied by the formation of an abscess than the earlier ones. This is confirmed by the following table, which includes all the cases of abscess and of general peritonitis in this series. Cases of abscess with general peritonitis are included under the heading of abscess.

TABLE D.—(London Hospital Series.)

	Number of Cases.	Number of Previous Attacks of Appendicitis.				
		Not Stated.	None.	One.	Two.	Three or More.
Abscess	499	200	187	67	19	26
General peritonitis without abscess	101	66	31	3	1	0
Total	600	266	218	70	20	26

TABLE E.—(London Hospital Series.)

Table to show the Complications met with in the 1,000 Cases.

Complications.	Number of Cases.
Faecal fistula	49
Thrombosis of the femoral vein	12
Intestinal obstruction	10
Bronchopneumonia	17
Pleurisy with effusion	14
Pleurisy without effusion	2
Empyema	7
Acute bronchitis	4
Pulmonary embolism	1
Parotitis, non-suppurative	4
Pylephlebitis	4
Residual abscess	11
Secondary abscess	12

In six of the 1,000 cases the appendicitis was associated with pregnancy.

Faecal Fistula.

A faecal fistula developed in 49 cases, or in a little less than 6 per cent. of the cases which recovered. In 35 the fistula closed spontaneously. In 2 cases the fistula was closed by operation after it had persisted for seven months in one case, and two and three-quarter years in the other, and in two it still exists. Of the other 10 cases, 5 died soon after the operation, 4 in twelve days or less, and 1 in three weeks with pylephlebitis. In the majority of the cases in which spontaneous healing took place the sinus closed within two months. In one case the fistula closed spontaneously after eight months. Two fistulae are still open two years and eighteen months respectively after their appearance.

Three of the fistulae appeared in ten, fifteen and twenty-four days respectively after the operation; sixteen others appeared within a week of the operation, and twelve of this number appeared within three days.

Thrombosis of the Femoral Vein.

Of the 12 patients who suffered from this complication, 7 were men and 5 were women. The left vein was affected in 11 cases, the right in 1 case only.

In 11 of the cases the average date at which evidence of thrombosis appeared was twenty-four days after the beginning of the illness. In the remaining case the appendix was removed thirty-six hours after the onset of the attack, and thrombosis took place eleven days later.

With regard to the circumstances of the operation, the appendix had been removed during a quiescent period in three cases. Two of these healed by first intention, but in the third a faecal fistula developed. Of the remaining cases there was in one general peritonitis, while in all the others an abscess was present.

The above particulars precisely coincide with my own experience of this complication. I have noticed no common factor in the circumstances of the patients who have become the subjects of thrombosis, nor have I any explanation to offer

of the fact that the trouble nearly always occurs in the left vein and not in the right.

Acute Intestinal Obstruction.

Ten patients who were the subjects of appendicitis were operated upon for acute intestinal obstruction; 4 recovered, 6 died.

One patient had been ill for five days, and had had symptoms of obstruction for two days. At the operation the appendix was inflamed and adherent to the mesentery, forming a band which caused the obstruction; 4 in. of gangrenous gut was resected.

Another patient had been ill for ten days, and had had symptoms of obstruction for four days. At the operation, in addition to an abscess in the right iliac fossa and general peritonitis, 14 in. of paralyzed gut were found and resected.

In the other patients the obstruction was due to adhesions or to kinking of the gut, while in one there was a volvulus of the small intestine.

Pulmonary Complications.

There were 45 cases in which pulmonary complications supervened. In 17 there was broncho-pneumonia, in 14 pleurisy with effusion, in 2 pleurisy without effusion, in 7 there was an empyema, in 4 acute bronchitis, and in 1 pulmonary embolism.

All the examples of broncho-pneumonia occurred in cases of abscess or of general peritonitis, with the exception of two. In these 2 the appendix had been removed after the attack had subsided. As these were aseptic cases, and as signs of broncho-pneumonia were present on the day following the operation, they were probably examples of ether-pneumonia.

Pleurisy with effusion occurred in 14 cases. In 2 instances there was pleurisy without effusion. In 11 the right side was affected, in 5 the left. In 1 case only in this series was the appendix removed during a quiescent period.

Of the 7 cases of empyema 6 were on the right side and 1 on the left. The 1 on the left occurred with a left subdiaphragmatic abscess. Three of those on the right side were associated with a right subdiaphragmatic abscess, 2 with general peritonitis (in 1 of which the empyema communicated with the general peritoneal cavity through a hole in the diaphragm 1 in. in diameter), and the remaining case appeared four weeks after an abscess in the right iliac fossa had been opened.

There were 4 cases of acute bronchitis. In 1 instance the patient was admitted with acute bronchitis; in 1 case it appeared six days after an operation for an appendix abscess, and in 2 cases it came on after an interim operation.

Parotitis.

Four cases are noted, in none of which did the gland suppurate. The right side was affected in 3 patients, the left in 1. Two cases occurred one and two days respectively after an interim operation, the third case after a large abscess had been opened, while the fourth case followed a laparotomy for general peritonitis two weeks after an abscess had been evacuated.

Pylephlebitis.

There were four instances of pylephlebitis among the thousand cases. One patient, a man aged 30, had been ill for seventeen days before the operation; he had had no previous attack. The temperature was irregular and varied between 100° and 98°, with very occasional rises to 102° or 103°. The local signs were slight, but he had several rigors. At the operation the appendix was found to be ulcerated, inflamed, considerably thickened and occupied by an opaque fluid. It was adherent to the caecum and was not perforated. Surgical emphysema developed round the wound. At the *post-mortem* there was pylephlebitis, with many abscesses in the pancreas, and broncho-pneumonia in the right lung.

The second case was a woman 25 years old, who was admitted with an abscess in the right iliac fossa. She had had no previous appendix attacks. The abscess was evacuated, and ten days later it was necessary to open up the wound again to let out more pus. An opening was then found in the caecum, from which faeces escaped. Twelve days after the first operation she had an attack of acute intestinal obstruction, for the relief of which an artificial anus was made. Twelve weeks after the first operation the fistula leading to the caecum was explored, and an attempt was made to close it. The artificial anus ceased to discharge on several occasions, but was still open at the time of her death, twenty-one weeks after the primary operation. At the *post-mortem* examination there were signs of early lardaceous disease,

TABLE F.—Table to Show the Frequency of Further "Attacks" after Various Operations for Appendicitis. (London Hospital Series.)

Year.	Sex.	Abscess or General Peritonitis.							Interim Operations.		
		Number of Cases.	Appendix Removed.		Not Removed.		Not Stated.		Number of Cases.	+	o
			+	o	+	o	+	o			
1900	M.	11	o	4	o	6	o	1	12	1	11
1900	F.	6	o	3	o	3	o	o	5	o	5
1901	M.	23	o	4	1	14	o	4	30	o	30
1901	F.	14	1	3	4	6	o	o	5	o	5
1902	M.	49	o	13	6	29	o	1	30	1	29
1902	F.	16	o	5	o	10	o	1	20	3	17
1903	M.	49	1	23	5	18	o	2	45	3	42
1903	F.	30	1	16	2	11	o	o	32	2	30
1904	M.	41	2	21	1	13	o	4	43	o	43
1904	F.	25	1	9	2	12	o	1	20	1	19
Total		264	6	101	21	122	o	14	242	11	231

The sign + at the head of a column indicates the number of patients who had further "attacks"; the sign o indicates the number of patients who had no further "attacks."

pylephlebitis with many abscesses in the liver, and pelvic peritonitis with pus between the coils of the small intestine.

The third case was that of a boy, aged 12, who had been ill four days. The appendix, which was gangrenous, was removed. He died three weeks later. At the *post-mortem* examination there was a little local peritonitis round the caecum, otherwise the peritoneum was healthy. The superior mesenteric and portal veins were thrombosed and filled with pus; the splenic vein contained blood and pus.

The fourth case was that of a man, aged 26. He was admitted with jaundice and an enlarged liver. He had had frequent rigors. At the *post-mortem* examination a loculated perityphlitic abscess was found, together with pylephlebitis and abscesses in the liver.

It is to be noted that none of these patients had had a previous attack of appendicitis.

Abscess.

After an appendix abscess has been opened and drained, other abscesses immediately or remotely connected with the appendix may form in various parts of the abdomen. These arrange themselves into three groups:

1. The residual abscess, in which a reaccumulation of pus takes place underneath or close to the operation scar, in the position of the original abscess. Such reaccumulation of pus is not accompanied by signs of another attack of appendicitis.
2. The secondary abscess, which is the result of the direct extension of the inflammatory process from the primary abscess to other parts of the abdomen.
3. The abscess which accompanies subsequent attacks of appendicitis.

Among the 499 cases of appendix abscess there were 11 cases of residual abscess which were opened at intervals after the operation varying from ten days to seven weeks.

There were 12 cases of secondary abscess. Six of these were subdiaphragmatic (4 being on the right side and 2 on the left). Two were opened three weeks after the primary abscess had been drained, 3 two weeks after, and 1 nine days after.

Five of the secondary abscesses were situated in the pelvis while the remaining one pointed at the external abdominal ring. These were opened from twelve to twenty-one days after the primary operation, with the exception of one pelvic abscess which was opened seven days after.

Finally, in 14 of the cases in which there were further attacks of appendicitis, the attacks were again accompanied by abscess formation. Three of them returned a third time with another attack of appendicitis and another abscess.

Pregnancy.

Among the 1,000 cases of operation were six women who

were pregnant. Of three patients who were operated upon for general peritonitis, two were six months pregnant, and one was four months pregnant. Abortion took place three to five days after the operation in each case, and all the patients died; one on the fifth day, one on the thirteenth, and the third on the eighteenth day (after an attack of secondary haemorrhage from a vessel in the pelvis).

Of 3 cases who were admitted with an appendix abscess 2 were six months pregnant, and 1 was four months pregnant. One patient aborted ten days after the operation, and another four and a half weeks after the operation; they both recovered. In the third case pregnancy was undisturbed.

The above table shows the result of the investigation into the frequency of further attacks of reputed appendicitis after abscess formation or general peritonitis. It also gives the number of patients who stated that they had attacks of pain subsequently to the removal of the appendix during the quiescent period, "similar to those they had before the operation."

Letters were sent to 797 patients, and replies were received from 506.

Of 264 cases of abscess or general peritonitis, further "attacks" were complained of in 27 cases, or 10.2 per cent.

Of 242 cases of operation during the quiescent period, further "attacks" were complained of in 4.5 per cent.

It will be seen from the table that, of 107 cases of abscess or general peritonitis in which the appendix was said to have been removed, only 6 complained of further "attacks."

In 122 cases in which the appendix was not removed, 21 patients complained of further "attacks."

REFERENCE.

¹ *Surgery of the Diseases of the Vermiform Appendix*, London, 1904.

THE SPITTING NUISANCE.—Further proof of the more drastic enforcement of the law against spitting in New York, to which attention was called in the BRITISH MEDICAL JOURNAL a week or two ago, is afforded by the following incident which we quote from the New York correspondent of the *Daily Chronicle*. On February 9th several men in evening dress, who were attending the grand opera performance at the Metropolitan Opera House, were arrested in the lobby between the acts, charged with spitting. The men were all taken to the police station despite their vigorous protests. At the station house they were permitted to get into communication with their friends, and were bailed out. The following morning the prisoners appeared in court, and after being severely lectured by the judge were fined. The men were all members of well-to-do families, and the police believe that by compelling strict obedience of the law on the part of affluent persons the objectionable habit will soon be broken in New York.