

For many other cases not mentioned in his German paper, Van Emden refers to his inaugural dissertation in Dutch, Leyden, 1896.

SUMMARY.

From a great mass of conflicting evidence, most of it obtained by methods of questionable accuracy, we may cull three important generalizations which are almost unanimously agreed on—whether the method of the observer was good, bad or indifferent. We, therefore, feel it safe to predict that they will become established facts. It is interesting, furthermore, to note that these were all pointed out by Hayem, who was the first to make approximately accurate numeration experiments on the blood plates.

The first of these generalizations relates especially to acute infectious fevers; the second, to different forms of anemia; the third, to purpura hemorrhagica. We will consider each in order.

Acute Infectious Fevers.—During the course of an acute infectious fever (especially typhoid) the number of blood plates is usually either subnormal or normal. If the fever breaks by crisis, the crisis is accompanied by a rapid and striking rise in the number of blood plates. This is the classical “*crise hématique*” or “*crise hématoblastique*” of Hayem. If this “*crise hématique*” fails to appear, it is the sign of some masked complication which is usually unfavorable. Most observers have found that this is true of all acute infectious diseases, but all are practically agreed on typhoid.⁹³ The study of the plates in pneumonia has been especially interesting. As a rule, observers have found a marked blood crisis, but they are not in accord as to whether the plates are increased or diminished during the continuance of the fever. On some other fevers there has been a wider divergence of opinion. The study of the leucocytes in fevers has attracted considerable attention. We believe that further investigations on the blood plates in fevers would lead to valuable results, besides being of use in diagnosis and prognosis for the cases under observation.

Anemias.—In the different anemias, there is a remarkable concurrence of opinion that the plates may or may not be diminished in secondary anemias—indeed, in most cases, they are reported to be increased; while in pernicious anemia they are always greatly diminished. An increase above the normal in the number of the blood plates excludes the diagnosis of pernicious anemia. If a case under treatment shows an increase in the number of the blood plates, the prognosis is encouraging; if, in spite of all that can be done, the plates continue to fall in number, the prognosis is almost certainly fatal. In this connection we can not do better than quote from the latest work of the veteran observer Hayem,⁹⁴ who speaks with especial emphasis on the study of blood plates in anemias. He says: “It is certainly wrong to neglect these elements. When their number becomes small it is always a more or less serious sign; when they become rare the retractability of the clot diminishes. . . . This double lesion rarity of the hematoblasts [blood plates] and loss of retractability of the clot) is a sign of progressive pernicious anemia, and is the most characteristic sign which we

have of this protopathic form.” If this double sign does not exist, the proper treatment will effect a cure and one of the first signs of improvement is a rise in the number of blood plates. If the case continues to improve, further interesting changes are noted in the relation of the plates to the red corpuscles; small red corpuscles appear in increasing numbers and there is every indication that young red corpuscles are developed from the plates.⁹⁵ Hayem’s observations, so far as the numerical relations of the blood plates are concerned, have been confirmed by a number of observers, including van Emden and Pratt, whose methods of numeration are free from the objections which apply to the older method of Hayem.

Purpura Hemorrhagica.—In purpura hemorrhagica the number of blood plates is enormously diminished. Van Emden and Pratt each state that the lowest counts they have ever found have been in this disease. Hayem called attention to the slowness in clotting of the blood. Helber confirms this observation of Hayem. To distinguish the blood in purpura hemorrhagica from that of pernicious anemia, Hayem⁹⁶ says that, in the absence of appreciable changes in form in the red corpuscles, “the scarcity of hematoblasts [blood plates] and the absence of serum after the coagulation of the blood, are two signs which are constant and pathognomonic” of the disease. The few plates which are found are often of large size. The blood contains masses of small plates, but these are broken down. Fibrin threads in the clot are few, but coarse. Recovery is ushered in by a “*crise hématoblastique*.”

APPENDICITIS; IDEAS CONCERNING ITS MANAGEMENT, BASED ON ONE THOUSAND OPERATIONS.*

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It is not my purpose to enter into an exhaustive dissertation on the subject of appendicitis. The field has been most thoroughly covered during the past few years, and so far as its etiology, pathology, symptomatology and diagnosis are concerned, the opinion of the profession may for practical purposes be said to be in accord.

This can not as yet be said, however, concerning the treatment of the disease, as honest differences of opinion still exist, many of them varying only in degree, but sufficiently marked to convey to numerous members of the profession the idea that the treatment of appendicitis is a subject still more or less *sub judice*.

Actuated by the belief that the various phases of the question—how shall we manage our appendicitis patients?—may be best answered by a study of the methods employed by various men, I venture to add my testimony to the large mass of evidence already in print.

During the years 1893 to 1905 inclusive I have operated on 1,024 cases of appendicitis. Of this number 640 were clean cases and 384 were pus cases. By clean cases I mean those in which the infection was still confined within the appendix; by pus cases those in which the infection had escaped from the appendix and established a septic process, localized or diffuse. Of the total

93. Van Emden agrees with the rest in finding a “*crise hématoblastique*” in typhoid, but he says it is much less marked than in pneumonia, scarlet fever, measles, and erysipelas. In malarial fever (Sumpffieber) the “*crise hématoblastique*” resembles that of typhoid.

94. Hayem: *Leçons sur les maladies du Sang*, Paris, 1900, p. 328 et seq.

95. Hayem’s discussion of this whole question is most interesting; the text is illustrated by a curve showing the changes in the different corpuscles and in the hemoglobin. It will well repay one to consult the original.

96. Hayem: *Leçons sur les maladies du Sang*, Paris, 1900, pp. 530 et seq., and 540.

* Read at the annual meeting of the Western Surgical and Gynecological Association, Kansas City, Mo.

number 993 patients recovered and thirty-one died—a mortality rate of 3 per cent. Among the clean cases, acute or chronic, 640 in number, 639 recovered and one died—a mortality rate of one-sixth of 1 per cent. Among the pus cases, 384 in number, 354 recovered and thirty died—a mortality rate of 8 per cent.

It seems no more than fair to state, in passing, that more than half of these operations have been made during the past six years, and the mortality rate secured is because that fact has permitted the application to these patients of greatly improved methods of treatment, among which may be mentioned posture and drainage.

Believing that appendicitis is a surgical disease, I have always been an advocate of immediate operation, and have followed the rule of operating on every case as soon as seen unless the patient was practically moribund, with the exception of some few cases, presumably of mild type, in which the patient presented well-marked contraindications to any surgical procedure and it was thought inadvisable to operate under any circumstances. This, in brief, is the plan still employed, and increasing experience tends to strengthen my belief in it. Every death from appendicitis must be charged to the account of procrastination or negligence, and the responsibility for its occurrence falls on the family of the patient, his medical attendant, or the surgeon. The patient or his family may to some extent evade this responsibility by pleading ignorance. At this late day, and in the light of the vast array of evidence accessible to all, what shall be the excuse of the physician who was called early? It is absolutely impossible for any man, however great his experience, to prognosticate accurately the course of any given case of appendicitis from its inception, but it is within his power to promise speedy and certain recovery to every case of appendicitis operated on sufficiently early.

It is not my intention to take up at length this line of argument, although sufficient excuse for it is found daily in the obituary columns, and the necessity for the appendicitis missionary has by no means ceased to exist.

CLASSIFICATION OF CASES.

For practical purposes we may divide our appendicitis cases into two classes—clean cases and pus cases—the former including all cases either acute or chronic in which the infection is still confined to the appendix, and the latter including cases in which a septic process, either circumscribed or diffuse, has been established with the appendix as its point of origin.

From the standpoint of results I have found no difference between an acute clean appendicitis and those of the so-called chronic type, as in 640 operations on cases of both varieties made at all stages of the disease where the infection was confined to the appendix, there was but one fatality, and that was charged to the fact that I had the night before operated on a patient suffering with a violent streptococcic infection of the face and neck, and although scrupulous pains were taken to prevent infection, the patient on whom I made a simple interval appendectomy died in forty-eight hours of acute diffuse septic peritonitis, and streptococci in large numbers were found in the peritoneal fluid.

As to the pus cases, the results which are now being secured in cases of diffuse septic peritonitis have rendered it much less formidable and have done much to bring more nearly together the mortality of circumscribed and spreading peritoneal infections which are the result of appendicitis. I have had more deaths from localized appendicular abscesses operated on during the past few

years than from the series of cases of diffuse peritonitis. This of course may be partially explained by the much greater number of cases belonging to the first type which are encountered at operation and yet it is a striking illustration of recent surgical progress, for it is only six or seven years since practically all our patients with diffuse septic peritonitis died.

I am unable to estimate as yet the respective death rates for cases of circumscribed and widespread peritoneal infections, but am positive that the difference is very much less pronounced than formerly. Excluding those cases which are moribund and those in which definite contraindications to any operation exist, the treatment of acute appendicitis is preoperative and operative.

PREOPERATIVE TREATMENT.

As soon as the diagnosis of appendicitis is made, the head of the bed should be elevated at least twenty inches and the patient turned sharply on the right side. In the event of unavoidable delay in getting the patient into the hands of a man competent to make the operation, this posture will greatly assist in localizing and confining escaping infection to the region of the appendix. An ice bag should be applied to the right lower abdomen and all feeding immediately discontinued. An enema may be given if desired, but I am strongly opposed to the administration of a cathartic in any case of acute appendicitis prior to operation. I have seen many cases in which much harm has been done by the peristalsis thus set up, and as we can never be certain of the exact condition within the abdomen I do not consider it safe to "give a cathartic early" as is so frequently advised. What is early when we are considering appendicitis? I do not know unless it is the day before the disease began.

Then there is the question of morphin. Under no circumstances should a patient be given morphin at this stage. The price he may have to pay for his indulgence is too great and need not be longer dwelt on. If in any particular case operation is not to be considered, morphin might be administered, but never until the diagnosis has been established.

Whenever possible all patients should be removed at once to the hospital.

No operation should be made for appendicitis at the home of the patient when it is possible, without loss of too much time, to place him in a well-regulated hospital. As a rule it is safe to state that a patient who is not too ill for operation is not too ill to be moved. The elevated position of the head and trunk and the inclination of the body to the right should be maintained during the journey.

OPERATIVE TREATMENT.

The operation should be performed as soon as the diagnosis has been made and a competent man secured to do it. I do not recommend operations on these cases by inexperienced men. The mortality rate could not be more certainly increased in any other manner. The attempt to put a time limit on appendicitis and to decide to operate on this case because it is only "twenty-four hours old," and to postpone operation in that one because it "is the fourth day and a dangerous time to operate" has been overdone. I have seen several cases of appendicitis in which the first symptom noticed by the patient doubtless made its appearance at the time of perforation of the appendix, yet these cases were in much less promising condition for operation at the end of the first twelve hours than many other cases would be on the third, fourth or fifth day.

The only cases in which operation should be deferred

are those in which the patient is plainly dying from sepsis and those cases of diffuse septic peritonitis so far advanced that the shock of the anesthetic and even a brief operation will prove fatal. These patients, and fortunately they are few compared to the total number seen, should be treated after the plan advocated by Ochsner and described under preoperative treatment, following which, should improvement occur, they may be operated on several days later.

All cases of diffuse peritonitis, which is still spreading, should be operated on at once. The fact that the infection is not confined to the region of the appendix is not sufficient excuse for delay in these cases, as rapid removal of the offending organ with thorough cleansing of the soiled peritoneal area, followed by proper posture and free drainage, will permit a more rapid and a smoother convalescence than can be secured for those patients who have a mass of firm adhesions about the cecum, which limit necessarily the first attempt at operative relief to incision and drainage, followed by a more or less extended period of suppuration, attended by the ever present dangers of extension of the septic process and intestinal obstruction.

Cases of localized abscess should be operated on immediately. The practice of waiting for the adhesions to become more firmly established is condemned. While waiting for the adhesions to become stronger the pus may break through into the general peritoneal cavity, necrosis of the pus bathed loops of intestine is invited, and if these accidents do not occur and the adhesions do become very dense and firm, the prospect of making the operation a radical one, with removal of the appendix, is diminished and the likelihood of postoperative obstruction is increased. If the adhesions are sufficiently established to warrant the diagnosis of a localized abscess they are sufficiently established to permit that abscess to be as properly managed at the immediate operation as at one deferred for one day or a week.

Attention is again directed to the fact that early operation on a clean case removes at once the source of the disease and prevents the many distressing and often fatal complications and sequelæ, among which may be mentioned incomplete operations, protracted convalescence, hernia, sepsis, peritonitis, pyelophlebitis, abscess of the liver and postoperative obstruction. These and many more are penalties still too frequently imposed on the patient by some one's procrastination, and the pity of it all is that they could and should have been avoided in nearly every instance.

OPERATION.

In clean cases, either acute or chronic, the incision is made through the sheath of the right rectus muscle. The incision provides free access to the appendix, may be easily extended at will with a minimum of trauma, and is much preferable to the so-called McBurney or muscle-splitting incision.

The meso-appendix is ligated with catgut and a circular ligature of silk is thrown about the base of the appendix flush with the cecum. A pair of hemostatic forceps is placed distal to this ligature and the appendix cut away between ligature and forceps. The stump is wiped perfectly dry and its mucosa thoroughly swabbed with 95 per cent. carbolic. The stump is then covered by drawing over it the base of the meso-appendix or a fold of the cecum and retaining them in position with catgut sutures. The stump is never inverted into the cecum, as it does not seem to me to be advisable to invite infection of a raw surface by deliberately placing it in

the foulest repository within reach, despite the fact that the various methods of preliminary treatment of that stump are said to have removed its absorbing power. I have had no trouble with subsequent infection of the silk ligature and the persistence of a sinus after operation.

The wound in the abdominal wall is closed with a continuous suture of No. 2 ten-day chromicized catgut, including first the peritoneum and posterior sheath of the rectus, and then carried back through the anterior sheath of that muscle and tied. The skin is closed with horse hair.

INFECTED CASES.

From the standpoint of operative treatment we may consider three varieties of cases in which the infection has escaped from the appendix with or without perforation of that organ: 1, A more or less localized peritoneal infection in which the general peritoneal cavity is not protected by limiting adhesions; 2, An infection sharply localized and circumscribed, the general cavity of the peritoneum being protected by a wall of adhesions; 3, A diffuse widespread infection of the entire peritoneal cavity.

1. Abscesses Not Sharply Localized: The existence of the first variety may or may not be suspected prior to operation. It is frequently encountered in cases which we hope will prove clean. In such cases the incision should be extended well down toward the pubes, as the following steps of the operation, which should be rapidly performed, are much facilitated thereby.

The appendix is ligated and removed and the stump disinfected and buried as already described. The portion of the peritoneal cavity involved in the septic process is then rapidly, but very gently, mopped dry with gauze packs wrung out of hot sterile water, not forgetting the cul-de-sac, which in these cases will always be found to contain a large quantity of fluid varying in character from serum to sero-pus.

In females the cul-de-sac is then rapidly opened and a large split rubber drainage tube, one-half to one inch in diameter, introduced into the vagina. The abdominal wound is closed with interrupted silkworm gut sutures. The patient is placed in bed, the head of which has been elevated at least twenty-four inches from the floor. The drainage is removed in from six to ten days, depending on the course of the case. The age of the patient need not be considered in establishing this form of drainage. I have employed it in several cases of this kind occurring in girls under five years of age.

In males a large split rubber drainage tube, five-eighths to one inch in diameter and carrying a strip of iodoform gauze which must fit quite loosely, is introduced at the lower angle of the wound to the bottom of the rectovesical pouch. Alongside this a smaller tube one-fourth inch in diameter is placed likewise leading to the bottom of the cavity. These tubes are anchored to the skin with silkworm sutures. Through the plain tube the fluid which tends to accumulate at the bottom of the cavity is aspirated every two hours until the quantity secured at two or three consecutive dressings is insignificant when aspiration is discontinued. The employment of this second tube in the manner just described greatly lessens the demand on the capillary drain of tube and gauze.

The patient is placed in bed in the elevated posture above described. If at the operation it is ascertained that the infection is practically confined to the peritoneum of the right lower abdomen and pelvis the pa-

tient is turned on his right side and kept in this position for at least twenty-four hours. In the class of cases at present under discussion, namely, those of more or less limited infection of the peritoneal area surrounding the appendix and sometimes accompanied by adhesions which are too limited to protect the general peritoneal cavity from infection, no drainage of any sort other than that described above is ever employed. There is no reason for placing a drain in the space formerly occupied by a perforated appendix which has already communicated its infection to an area greater than such a drain can relieve. The source of the infection having been removed, the region of the cecum requires no particular and special drainage. The peritoneum from this point to the bottom of the pelvis has become involved, and, if by placing the patient in the elevated posture we secure the gravitation of fluids to the lower peritoneal pouch, that is the point to drain. Multiple drains mean multiple adhesions and greatly increase the tendency to postoperative obstruction. The introduction of strips of iodoform or plain sterile gauze for quarantine purposes may be necessary in a few cases of this type in which for some reason it has been impossible to dispose satisfactorily of the stump, or when the tissue in the immediate vicinity of the appendix makes one suspicious of approaching necrosis or gangrene. Gauze is a most useful agent when employed for the purpose of isolating septic areas, but most useless when called on to act as a drain, and should never be depended on alone for the latter purpose. Since abolishing the use of gauze in these cases, with the above exceptions, and draining them in the manner just described I have noticed that convalescence is much more rapid and smooth and the danger of troublesome complications has been materially lessened.

2. Abscesses Sharply Localized: In these cases where the septic process is sharply circumscribed and shut off from the general peritoneal cavity by a wall of limiting adhesions the safe evacuation of the products of infection and the successful guidance of the patient to complete and permanent recovery present many and varied problems, among the most important of which are:

a. Shall we incise over the most prominent portion of the abscess and establish drainage without opening the general peritoneal cavity, or, as recommended by Murphy, shall we always open into the cavity to the inner side of the pus collection, coffer-dam the field of operation and then establish drainage?

b. Shall we remove the appendix or not?

c. How may we best prevent contamination of the general peritoneum?

d. What form of drainage shall we employ?

e. How shall we prevent hernia?

f. Shall we in every instance make a second operation for the removal of the appendix where it was considered improper to attempt its removal at the first?

In reply to question *a* I must say that I think neither procedure should invariably be followed. The plan of attack must be adapted to the particular case in question.

Roughly speaking, we may divide these cases into two classes. First, those in which the abscess is situated external to the cecum. Second, those in which it is located on the inner side of the cecum. It has been my practice in all cases belonging to the first variety to incise directly over the most prominent portion of the tumor, using every precaution not to expose the peritoneal cavity. In nearly every case this may be accomplished and the pus safely evacuated without extravasation.

Sudden cessation of the outward flow of pus during such an operation should be considered as indicating the possible rupture of the abscess at another point into the general peritoneal cavity. Should such an accident have occurred it is imperative that it be recognized and properly dealt with immediately. I have had four or five such cases. When the abscess is situated on the inner side of the cecum in practically every instance I open the peritoneal cavity to the left of the tumor first. The field of operation is then completely encircled with strips of plain sterile gauze. Each strip consists of four thicknesses of gauze three inches wide, with the free edges sewn fast. These strips extend from the bottom of the cavity well out on the anterior abdominal wall and when in place remind one of the old fashioned well with its brick or plank sides. Through this wall of gauze the pus may always be conducted safely to the surface. The best way to accomplish this is to make the opening into the abscess so small at first that the pus may be taken up by cut gauze sponges as rapidly as it escapes. When the pus cavity is practically empty the opening may be enlarged as necessary. The gauze strips are left in position to be removed with the drainage from the fifth to the tenth day, depending on circumstances. Coming to question *b*, concerning the removal of the appendix, I consider that no invariable rule should be established. As my experience has increased I have more and more frequently removed the appendix at the first operation. Many cases are encountered each year, however, in which it is considered inadvisable to attempt to remove the appendix at this time. This is a question which must be decided by individual operators in any given case entirely from their own experience.

The third question has been answered already in describing the evacuation of the abscess. As to the question of drainage, all drains employed in such abscess cavities should be of soft rubber, of good size and with walls sufficiently thick to prevent the collapse of the tube and obliteration of the drain. Glass tubes are not recommended because of their rigidity, which in some of my earlier cases was responsible for the appearance of fecal fistulae. Gauze of any sort is much more frequently a cork than a drain and is never employed for this purpose. The split tube is introduced to the bottom of the cavity and brought out through the center of the well of gauze. It is removed at any time after the fifth day that the conditions of the particular case permit.

Questions *e* and *f* may be considered together. As the opening left for drainage in these cases is invariably a large one, it has been my observation that if the patient is permitted to go home after his wound is closed by granulation in the majority of instances he will develop a hernia. Acting on this observation, I tell all my patients who have been thus freely drained that they must have a second operation, that the operation could not be safely completed at the first sitting, and that they can not leave the hospital until the second operation is performed. I have never had a patient refuse to follow my wishes in this matter. At this operation, which consists in reopening the wound and freshening its edges, the appendix is removed if its removal was not accomplished at the first one. I would rather remove the appendix and repair the hernia on my cases than have them go to someone else for relief at some later day.

The removal of the appendix at some of these second operations is extremely difficult, but I consider it a wise procedure, as fully 20 per cent. of such cases would relapse. The organ is not destroyed by the suppurative process nearly so frequently as has been claimed.

3. Diffuse Septic Peritonitis: By this term is to be understood an inflammation involving, so far as we can tell, the entire peritoneum. I merely mention the steps of the procedure which is recommended.

a. Incision from umbilicus to pubis in median line.

b. Removal of appendix.

c. Thorough irrigation of entire peritoneal cavity with hot saline solution or hot sterile water.

d. Introduction of a large split rubber tube for drainage. In females from the cul-de-sac into vagina; in males from rectovesical pouch out through lower angle of abdominal wound and carrying a wick of iodoform gauze. In the latter a second smaller tube, without the gauze wick, is placed alongside the first, through which fluid collecting at bottom of pelvis may be aspirated.

e. In females the abdominal wound is completely closed with interrupted sutures of silkworm gut. In males the wound is closed with the same material down to the tubes.

f. Patient is placed in bed, the head of which has been elevated from twenty-four to thirty inches from the floor.

Operations made on patients in this condition should be rapidly performed, as they will not bear much manipulation or prolonged surgical interference.

This is the only condition in which an irrigating stream should be directed into the abdominal cavity. Its use in localized abscesses or limited peritoneal infections is most vigorously condemned.

SUMMARY.

The best results in appendicitis follow early operations.

In clean cases, acute or chronic, the operative mortality is practically nil.

The hour or day classification of appendicitis should be discarded and a pathologic classification substituted.

In spreading peritonitis immediate operation is urgently indicated.

In patients already moribund, or in those for whom the added shock of operation would determine a fatal result, operation should be delayed.

The elevated posture of the head and trunk and the resulting accumulation of septic fluids in the lowest peritoneal pouch, from which they are rapidly drained by large sized tubes, have robbed appendicitis of many of its terrors.

SOME OF THE USES OF IODIN IN SURGICAL PRACTICE.

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At the present day I think I may truthfully state that the most decided tendency in the use of drugs is clearly a return to the simple life. The profession is at least partially freed from the bondage of an empirical authority, and one by one is dropping the complex and respectable myths and legends of medicine.

Inasmuch as it has been clearly shown by careful and painstaking laboratory workers that a 1-200 solution of iodine will kill the staphylococcus pyogenes in five minutes, that two minutes' exposure of the streptococcus (most virulent of pathogenic germs) to a 1-500 solution of iodine will destroy its life, that it requires thirty minutes' exposure to a 1-1,000 solution of bichlorid of mercury, the hitherto acknowledged chief of antiseptics,

to accomplish the same results and that while iodine is much less toxic it is a far more powerful antiseptic than either carbolic acid or bichlorid of mercury, I have made use of this agent in much of my surgical work.

In cold abscesses in individuals of lowered resistance I have found injections of iodoform emulsion or iodine solution to be of great value. These patients are often unable to bear any more radical treatment than aspiration or injection. The iodoform may be used suspended in olive oil or glycerin or in an ethereal solution. The oil or glycerin should be sterilized by boiling and the iodoform by four days' submersion in 1-1,000 solution of bichlorid of mercury. The ethereal solution produces pain, and as it is more rapidly absorbed may produce symptoms of poisoning. Ten per cent. is usually the most desirable strength, and the amount left behind should usually vary from one dram to one ounce.

Rather recently I treated a patient by this method who had several tuberculous abscesses in the muscles of the back and chest in addition to a number of signs of lung involvement. I emptied these tubercular collections through small incisions under a careful aseptic technic, injected a 10 per cent. iodoform emulsion, closed the openings by suture and sealed them with a few fibers of cotton and flexible collodion. These sealed packages of emulsion were left alone for two or three weeks and the iodoformization was then repeated. This treatment in conjunction with appropriate dietetic and hygienic measures produced great improvement; the cough, fever and night sweats disappeared; there was a marked gain in weight and in three months the patient was apparently well.

In the treatment of sepsis from puerperal infection, also in the treatment of sapremia due to the putrefaction of retained secundines, I thoroughly curette and irrigate the uterus, then pack the uterine cavity with 10 per cent. iodoform gauze. This is removed on the third day, and if the symptoms have not subsided the uterus is daily irrigated with a 1-1,000 solution of iodine in sterile water. By this treatment we promote the absorption of a powerful yet comparatively harmless antiseptic. Occasionally I have applied the tincture of iodine to the lips and the interior of the uterine cervix for purposes of partial sterilization prior to curettage, and not infrequently I make a local application of the same drug to the entire uterine cavity after curettage in cases of chronic endometritis.

Iodine in solution in mild strength, 1-1,000, is of great value as an irrigation in the treatment of suppurative arthritis, large abscess cavity, empyema, etc. I have often used a 1 per cent. solution of iodine in the treatment of suppurating wounds and sinuses, resulting in the quick disappearance of pus and the formation of healthy granulation tissue. After operations about the genitalia and other parts where it is difficult to keep a dressing clean, I generally dispense with any of the ordinary dressings and use instead a protective ointment composed of sterile iodoform and petrolatum. By this means primary union is usually secured.

In the treatment of boils, abscesses and carbuncles I incise, evacuate the contents, wipe out carefully, curette away pyogenic and necrotic tissue and then apply thoroughly to the walls the plain official tincture of iodine. If the cavity is small, the tincture, instead of being applied with a swab, is poured into the cavity and brought in contact with its walls by gentle manipulation. This treatment is usually followed by the prompt disappearance of pus and rapid healing by granulation.