

PUS IN ABDOMINAL OPERATIONS.

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THE mortality following operations for suppurative diseases of the tubes and ovaries is variously estimated as from 8 to 20 per cent. In the face of these figures it is certainly incumbent upon us not to rest satisfied with present conditions, but ever to be looking for more perfect methods and to adopt more stringent precautions in our operative procedures. The most perfect degree of asepsis obtainable before, during, and after these operations must always be insisted upon. Whenever pus is met with at the time of the operation, if a fatal result occurs we are too apt to content ourselves with the explanation that infective material was already present, and that its spread was only a natural result. As a matter of fact, however, it must not be forgotten that the pus met with under such circumstances, as a rule, is free from virulent bacteria, and whenever an infection follows a "pus operation," and no organisms can be demonstrated in the secretions encountered, it is not only possible, but even highly probable, that in the majority of these instances the fatal results have been due to the introduction of some septic material during the operation.

Again, as a result of my observations during the past seven years, I have become convinced that operators not infrequently err in carrying out radical abdominal procedures when the patient's resistance is in such a lowered condition that she is very apt to succumb to the shock of the

operation *per se*. Such a condition must always be given careful consideration when deciding for or against an operative interference during an acute attack of a localized or a more or less generalized pelvic peritonitis. Believing that this factor has a very important significance in influencing our results, I have made it a rule, during the acute stage of a pelvic abscess, to defer an operation while the patient's condition is improving. In the meanwhile the patient is kept perfectly quiet on her back in bed, and heat, in the form of flaxseed poultices or turpentine stupes, is applied to the abdomen. In addition a vaginal douche of a gallon of a warm 1 per cent. solution of carbolic acid or a saturated boric-acid solution is given twice daily. For nourishing the patient we depend upon nutritive injections entirely for several hours. Anodynes and heart stimulants are given if necessary. As a result of these measures we have found that in the great majority of cases the acute symptoms will subside within a few days, and we can then operate upon the patient, who is now in a much better condition, either by the abdominal or the vaginal route or by the combined procedures. If, however, no improvement takes place under the above treatment within a reasonable time (eight to ten hours), and if we can make out a pelvic mass, we puncture through the vagina, and, after irrigating the sac or the pelvic cavity, pack with sterilized gauze. We have noticed that a number of well-known general surgeons in this country are treating cases of acute appendicitis in a similar manner.

The micro-organisms that are most frequently met with in cases of suppurative disease of the tubes and ovaries are *Staphylococcus pyogenes aureus*, *Streptococcus pyogenes*, *Gonococcus*, and *Bacillus coli*. Other forms are occasionally met with, such as the *Tubercle bacillus* and *Proteus Zenkeri*.¹ When we are able to demonstrate the presence of *Staphylococcus pyogenes aureus* at the time of the operation we

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expect an uninterrupted convalescence in the majority of these instances. The organism most to be feared is *Streptococcus pyogenes*, and its presence always makes the prognosis very grave. We recall in particular an instance in which at the time of the operation macroscopic evidences of a small amount of pus were demonstrable, but no organisms could be shown from the pus at the examination made at this time. The culture-tubes that were inoculated at the time of the operation, however, subsequently showed a profuse streptococcus growth. We drained in this case, but, despite our efforts, a streptococcus peritonitis developed, and the patient died. The same organism was found at the autopsy. We unfortunately infected another patient with this organism, although before the second operation we carefully sterilized our hands, instruments, etc., in the usual manner. We removed without much difficulty the adherent tubes and ovaries on both sides. Cover-slips made at the time of the operation were negative. In two days, however, this patient began to show evidences of a peritonitis, and a fatal result took place a day and a half after the death of the first patient. *Streptococcus pyogenes* was found, at the time of the autopsy, in the exudate present in the peritoneal cavity. In the first case there was a history of an induced abortion at the third month of pregnancy, with subsequent fever, six years before admission to the hospital. This suggested a streptococcus infection at that time. In the second case the patient had had two normal labors without any complications.

Such a stern lesson taught us, once for all, that even in cases in which there are only adherent organs, even when no pus is apparently present, we should always be on our guard against carrying infective material from one case to another. From the fact that we found no organisms present by the cover-slip examination at the time of the operation, however, we felt that we were justified in going on with the second operation. But for several years now, after having had such an experience, we do not perform more than one

abdominal section in the same day, preferring to operate much more frequently rather than run any risk. I certainly believe that the adoption of this precaution has saved a certain number of cases from being infected. I should say that, even prior to this regrettable accident, whenever we encountered a pus case we always postponed the carrying out of any further abdominal work, except in emergencies, until forty-eight hours had elapsed.

The question of using drainage in pus cases is always of interest, and all operators are not in agreement as to its advantages and disadvantages. In my clinic we have not used a drainage-tube during the past seven years, and we now, as a matter of fact, seldom drain, even in pus cases, through the abdominal incision. Occasionally, when there has been a septic area left behind, we drain *per vaginam*; but even in these cases I do not feel that this procedure is by any means always necessary. It has always seemed to me that we do not sufficiently protect from infection during the operation the portions of the pelvic contents, which are apparently intact. Inasmuch as pelvic inflammatory disease frequently involves the intestines to a wide extent, it is sometimes impossible to prevent the infectious material from being spread more or less during the manipulations of the diseased structures. We can, however, to a great degree, limit the free distribution of this purulent material throughout the abdominal cavity. In order to effect this, as soon as the abdomen is opened, we are in the habit of placing large gauze sponges high up in the flanks on either side, the patient being kept in the horizontal position while the masses are being enucleated. If we break into a pus-sac during our manipulations we at once make cover-slips of the escaped pus, and while these are being examined we attempt, as far as possible, to remove the material that has escaped by mopping it up with gauze sponges. After this we wash out the abdominal cavity with large quantities of sterile salt solution, in order to get rid of as much as possible of the

pus and to dilute any that may remain. The enucleated mass is now surrounded with gauze moistened in a 1 : 1000 bichloride solution, which is not removed until the structures have been cut away. The pedicle is thoroughly cauterized with the Paquelin cautery, and the abdomen is again washed out with salt solution, sponged dry, after which 300 to 500 c.cm. of warm sterilized salt solution is introduced and left there. The incision is closed without drainage.

The following is the clinical and bacteriologic analysis of seventy-two consecutive, unselected abdominal sections for suppurative diseases of the tubes and ovaries, two deaths occurring:¹

AGE. The oldest patient was forty-one, the youngest seventeen, the average age being 26.37; 50 were married, 16 were single, and 6 were widowed.

OCCUPATION. Housework, 43; prostitutes, 11; dressmaking, 3; cooks, 2; canvassing agents, 2; seamstresses, 2; box-maker, 1; dining-room girl, 1; clerk, 1; domestic, 1; laundress, 1; cigar packer, 1; match-factory girl, 1; pianist, 1; telephone clerk, 1.

In 23 pregnancy had not occurred; in 13 miscarriages alone had taken place; in 8 full-term births alone had occurred; in 28 there was a history of births at term and miscarriages. The highest number of miscarriages in any one case was 5; the highest number of births at term in any one case was 7; the average number of miscarriages in the 41 cases having miscarriages was 1.94; the average number of births at full term in the 36 cases having births at term was 2. These figures go to show that in 49 of the 72 cases the accidents incidental to labor and abortion have to be carefully considered as factors in the production of pelvic disease.

INFECTION. We were able to establish a gonorrhoeal history in 14 cases (probable in 4 others); infection after labor at

¹ The first case of this series was operated upon October 11, 1898, and the last one February 28, 1901. We have had 15 additional cases, making the data 87, but a sufficient interval has not elapsed from which to draw conclusions.

term had occurred in 7 cases (2 of these also gave a history of a previous gonorrhœa); infection after miscarriage in 17 cases (4 of these patients giving also an old gonorrhœal history); in the remaining cases (31) no definite history of a specific infection or any relation between the disease and labor or abortion could be made out. In many cases there was a gradual onset, with exacerbations of the symptoms at the menstrual period, but with no definite acute attack before admission into the hospital. In many the symptoms had persisted for long periods of time, in 1 case for twenty years. It was frequently noted that an attack of peritonitis had occurred before the patient was admitted into the hospital. In 33 cases this attack had lasted under three weeks, and for the most part they were of about two weeks' duration. The shortest attack was one of two days preceding admission. In cases of more than three weeks' duration various periods of time were represented—six weeks, two months, six months, a year, etc., with no special uniformity. Definite and similar previous attacks had occurred in 7 gonorrhœal cases, the largest number of previous attacks being 3, except in 1 case in which there was a history of a great many. From this it will be seen that the infections following gonorrhœa, on the one hand, and labor and abortion on the other, are about equal in number. Thus in 14 cases (19.44 per cent.) we were able to get a positive history of a previous gonorrhœal infection, and in 20 cases (27.77 per cent.) there had undoubtedly been an infection following labor or miscarriage. Allowing, however, for those cases in which there had been a previous gonorrhœa as well as a history of an infection following labor or abortion, and placing these doubtful cases in the column of the gonorrhœal infections, we have the following figures: Gonorrhœal cases, 23 (?), or 33.5 per cent. of the cases; infections after labor and miscarriage, 20, or 27.77 per cent. of the cases. Here, as has been said, we have added to the gonorrhœal list by taking 6 cases which would

seem to rather come under infections following labor or miscarriage. It is, of course, often extremely difficult to feel sure that a patient has had a specific vaginitis unless cover-slip examinations have been made of the secretions at the time of the supposed infection. In many instances it is not difficult to obtain a history of a vaginitis, but to prove that it has been specific in origin is not always easy. Many of the miscarriages had been criminally produced. The infections in these cases could generally be traced to the production of the abortion.

The temperature, pulse, and respiration before operation were as follows: Highest temperature, 105.2° F.; pulse, 142; respiration, 42. Lowest maximum temperature, 98.18° F.; pulse, 82; respiration, 22.18. Average maximum temperature, 102.9° F.; pulse, 106.8; respiration, 27.2. The chief clinical symptoms were as follows, many patients showing several:

Pain in lower part of the abdomen was present in	67 cases.
Backache was present in	43 "
Leucorrhœa was present in	34 "
Dysmenorrhœa was present in	30 "
Headache " "	21 "
Dysuria " "	18 "
Bearing-down pains were present in	8 "
Menorrhagia was present in	5 "
Constipation " "	6 "
Gastralgia " "	2 "
Chilly feelings were present in	2 "
Metrorrhagia was present in	3 "
Cough " "	1 case.
Painful defecation was present in	1 "
Nausea and vomiting were present in	2 cases.

The most prominent symptoms were pain in the lower abdomen, backache, a leucorrhœal discharge, dysmenorrhœa, headache, and painful micturition.

Pus was found as follows: In the ovary, unilaterally, 24 times; bilaterally, 5 times, including tuberculous cases. In the tube, unilaterally, 25 times; bilaterally, 39 times, with tuberculous cases. In the appendix in 1 case. In the walls of the uterus in 1 case. In almost every case in

which the pus was unilateral, the other tube and ovary were found to be adherent. Infection of the tube and ovary together (tubo-ovarian abscess) was noted unilaterally only, and in 17 cases. The tubes are more liable to a bilateral infection; the ovaries to a unilateral infection.

The following operations were performed, all being carried out at the Lakeside Hospital :

Appendicectomy	26
Dilatation and curetting	24
Evacuation and drainage of pus-sac, when removal was impossible	3
Myomectomy	3
Partial resection of ovary	2
Perineorrhaphy	2
Salpingectomy, ¹ unilateral	17
Salpingo-ostophorectomy, unilateral	20
Salpingo-ostophorectomy, bilateral	46
Supravaginal hysterectomy	1
Suspension of the uterus	9
Vaginal puncture	10
Total number of operative procedures carried out in 72 cases	163

Whenever the tube or ovary was simply adherent, but not disorganized, the adhesions were separated and the structures allowed to remain. Despite this conservative surgery, in not a single case up to the present time have there been complaints from these patients, nor has there been any necessity for further operative procedures. As a supplementary procedure, appendicectomy was carried out 26 times, or in 36.1 per cent. of the total number of cases. We believe that in cases of suppurative disease of the tubes and ovaries in about one-third the appendix will be found to be adherent. In those cases in which vaginal puncture was carried out we found it impossible to thoroughly remove the abscess wall by the abdominal route, and in such instances we employed drainage *per vaginam* for a few days. In 3 cases after opening the abdomen it was found impossible to remove the pus-sac owing to the patient's weakened condition, and we were therefore obliged to drain through the vagina.

¹ In these cases the opposite tube and ovary were removed in all but one case, in which this procedure was impossible, drainage being used after evacuation of the pus.

Results: 2 patients died; 70 recovered. Mortality for all cases, 2.77 per cent. Morbidity: So far as we have been able to ascertain, there are no patients in this series that make any complaints referable to disorders in the pelvis.

DRAINAGE. In 9 cases drainage was carried out through the cul-de-sac alone; in 2 cases through the abdominal wall alone; in 1 case through the cul-de-sac and abdominal wall combined. In 2 cases in which infection occurred subsequently to the original operation the abdomen was opened and drained. One of these patients died, the other recovered. Thus abdominal drainage was carried out in 2 instances only immediately following the operation, or in 2.77 per cent. of the cases. In 10 cases (13.6 per cent. of cases) drainage was carried out *per vaginam*.

Suppuration of the abdominal wound occurred in 12 cases, or 18.7 per cent. In 2 of these abdominal drainage was employed at the time of the operation. In 2 abdominal drainage was instituted several days after operation, 1 of these patients recovering. In the remaining 8 cases primary union occurred on the surface, but pus developed deeper down, usually about ten to fourteen days after the operation. Wherever there occurred a secretion from the wound in which it was possible to demonstrate micro-organisms we classified the case as one of infection. In the secretion from the incision in 6 of the 12 cases we were able to demonstrate *Staphylococcus pyogenes aureus*, and in the other cases *Staphylococcus pyogenes albus*. In this series of cases we consider that the infections above referred to were to some extent due to the fact that we had previously operated upon a case of post-puerperal infection in which *Staphylococcus pyogenes aureus* was found at the time of the operation. In 6 of the abdominal sections performed during the two weeks following (although we left an interval of four days) the incision became infected to a slight extent, and in the serosanguinolent secretion we were unable to demonstrate *Staphylococcus pyogenes aureus*. In the tubes and ovaries

infection, since her illness had followed a miscarriage, which had occurred ten weeks before the patient was admitted to the hospital. The temperature at the time of her entrance ranged between 100° and 102° F., but for the most part was under 102° F. At the time of the operation we were not able to demonstrate any organism by cover-slip examination in the pus that escaped. We accordingly followed our usual plan of washing out the abdomen and closing without drainage. In eight hours the patient's temperature rose to 104° F. and the pulse to 148. She was, however, feeling comfortable. The next day her temperature fell to 101.5° F. and her pulse to 128. For the succeeding twenty-four hours her symptoms were, on the whole, favorable, and with the exception of some difficulty in respiration she seemed to be progressing satisfactorily. Her temperature varied during the next three days between 101° and 103.8° F.; at the same time there was marked dyspnea, and the pulse gradually increased in rapidity. She finally died on the fourth day following the operation, without having shown any marked evidences of any peritoneal involvement, as there was no nausea, vomiting, or tympany, and the bowels had been thoroughly well opened.

Autopsy showed the case to be one of pelvic abscess, with general sepsis. Cultures made from the lung showed a pure streptococcus pyogenes infection, the same organism being also found in the liver, pleura, and peritoneum. In this case, then, we had to do with a streptococcus infection which had as its origin either the introduction of this organism at the time of the operation or the miscarriage which occurred some months previous to the time of the operation. From my previous experience I am of the opinion that in this case a fatal infection would have followed even if drainage had been used.

In the second case we were not able to establish a history of an infection following an abortion or labor. Here we had to deal with an abscess involving the left tube and

ovary and an adherent right tube. We removed the diseased structures and made a cover-slip examination of the pus, but no organisms were demonstrated. We also inoculated culture tubes. The abdomen was closed. The patient's temperature the day following the operation rose to 104.4° F., and for the next two days varied between 102.5° and 105.7° F. On the tubes that were inoculated from the pus streptococci were found. On the second day after the operation the abdomen was reopened under cocaine and washed out, and drainage being afterward instituted. The abdomen was irrigated a second time, and salt infusions were carried out at stated intervals. She died on the third day.

Cultures made from the lung at autopsy showed *Diplococcus pneumoniae* and *Bacillus coli communis*; in the liver *Bacillus mucosus capsulatus* was found, and in the peritoneum *Diplococcus pneumoniae*. In this case, then, streptococci, though not demonstrable by cover-slip examination at the time of the operation, appeared in the culture-tubes two days later. At the time of the autopsy only *Diplococcus pneumoniae* was found in the peritoneal cavity.

In conclusion, I wish to thank my former associate Dr. William H. Weir and my present associate Dr. Charles D. Williams, for kind assistance in making up this analytic report.

DISCUSSION.

DR. MATTHEW D. MANN.—I think Dr. Robb has taken a subject which is exceedingly important. We are accustomed to look upon the treatment of pus in the pelvis as pretty well settled, but I feel confident that many questions connected with it are not yet determined, and that there are many points which we have to learn. Let us take one point which Dr. Robb did not go into very much, although he touched upon it, and that is the infections which we find in the broad ligament—the cellulitis which we used to talk a great deal about, the infections

which are found only after labor. These infections are apt to be of the streptococcus type, and they are, to my mind, one of the most virulent and one of the most serious complications we can find in the pelvis. Within a comparatively short time I have had four of these cases, the tubes and ovaries being perfectly normal in each case. After cleaning out the abscess cavity, washing out the abdomen thoroughly, and draining—two of them being drained through the vagina and two from above—every one died with general streptococcic infection. The abdominal wound, the general peritoneal cavity, the drainage-tube tract through the vagina—everything was simply covered with false membrane and sloughing tissue. These cases are rare, I admit. They do not make up the majority of cases of pus in the pelvis. Nobody has any question but that in most cases the pus is in the tubes or ovaries; but there are cases in which it is in neither. When a patient, after labor, has an elevated temperature at night, and a little lower temperature in the morning, and this goes on indefinitely, and on examination we can find a small exudate behind or in one broad ligament, we must not jump to the conclusion that it is tubal trouble, and immediately operate on it. I believe these cases are better let alone for a considerable length of time. The pus is usually high up in the broad ligament, toward the pelvic wall, and difficult to reach through the vagina. All the cases that I have had were away up in the upper part of the peritoneal cavity, near the fimbriated extremity of the Fallopian tubes. If we let these cases alone, do not operate on them immediately, either through the vagina or from above, allow the abscess to enlarge, let it come to a point, so that we can reach it through the vagina, the adhesions that take place will wall off the upper part of the pelvic and abdominal cavity, and when we open through the vagina and drain we will save them. I had one such case recently where that plan was followed. The tendency toward immediate operation was resisted. The patient was nourished and kept in as good condition as possible until the abscess had grown to be of considerable size and could be reached through the vagina. A posterior incision was made, abscess found, a drainage-tube inserted, and the patient recovered without any trouble.

As Dr. Robb has said, streptococcus infection is the most

serious thing we can meet with in the pelvis. If the infection is spread around in the abdominal cavity and under the peritoneum, we may not be able to take care of it. It will continue to spread and become a serious matter. We want a definite method of diagnosis. If the cellulitis is in the lower part of the peritoneal cavity the case is easier to deal with, but if it is up toward the side of the pelvis we can feel very little through the vagina or through the abdominal walls by bimanual palpation, and it is difficult to tell what we have. In one of my cases the abscess did not contain more than five drops of pus; the woman was walking about, though she had an evening temperature of 103° F., and three or four days after operation she was dead. That case caused me a great deal of worry and anxiety and a great deal of thought, and I believe we must study these cases more carefully than we have in the past. Every man should make a bacteriologic examination of every case of pus he finds in the pelvis, not so much for his own immediate use, but for scientific purposes. If we do this and put it on record, in time it will enable us to deal with these cases more satisfactorily than we have.

DR. PHILANDER A. HARRIS.—I would like to ask Dr. Robb in regard to the enhanced danger of infecting the abdominal cavity in prolonged operations. I believe I have encountered far more sepsis in my prolonged operations, which is a serious consideration from the stand-point of morbidity and mortality.

Regarding these infections in the pelvis, I quite agree with all that Dr. Mann has said about the matter, and that in certain cases we should not rush in too rapidly and do a vaginal operation. I have made some mistakes myself—one this year—in operating on a case too hastily. I did not kill the patient, but I would have done much better in that case to have waited for the abscess to attain a larger size before operating. And still there is another stand-point from which we must view this work. We must remember that Dr. Pryor and others who have done so much work by vaginal section for pus in the pelvis admit that in a very considerable percentage of cases fluctuation is not discoverable. In a very considerable percentage of cases, where we find pus in the pelvis and can reach it in a few moments by vaginal section, the quality of fluctuation cannot be perceived, so

that in such cases, if we wait, we shall fail to reach and promptly relieve a large number of cases which might otherwise be quickly and efficiently operated upon and cured by vaginal section.

DR. EDWARD REYNOLDS.—I feel strongly about this matter of pus in the pelvis, because of the character of my hospital service and my consequent experience of the results in these cases. Out of nearly sixty cases we have a dozen to fifteen pus cases, or acute inflammatory cases, on hand most of the time, and I find myself, for the most part, in accord with what has been said by Dr. Mann. I have learned to let these cases strictly alone, watch them, and see that they are not going to the bad. Unless they get worse in their general constitutional condition, and if there is no bad run of temperature, I let them alone. Persistent depletion and constitutional care generally result in the disappearance of the mass in the pelvis or its reduction to a small, non-tender affair, in which latter case I wait two or three weeks or a month before interfering, in order to get rid of the infection. In my experience, if the infection remains acute for a number of weeks or months, with an elevated temperature, it is almost always a streptococcus infection, either pure and simple or complicated with other infections.

I have made it a rule to attack these cases by the vagina—not by the abdomen. The rigid application of that rule has brought about a marked improvement in my results. Out of something over forty such bad cases (and I regard them as among the most serious cases of pelvic surgery we have to deal with), attacked by the vagina, I have lost two—one directly due to a mistake made by the interne, who removed the packing too early in a case in which there was a smart hemorrhage, and this was followed by a severe hemorrhage, from the effects of which the patient never rallied. The other case was one of tremendous constitutional infection with streptococcus, in which, although the patient was in all probability doomed from the start, there was a considerable local mass, and I thought it fair to give her the benefit of the doubt. She felt better for a few days after getting the pus out, but subsequently died. All the other cases got well. I have never done any long series of laparotomies on these cases without a death. I recall one case of ovarian abscess which I attacked through the abdomen. There was very little

pus in this case, but it was highly infectious. The patient had practically no temperature for over a month. It was a hospital case. I did not know the previous history, but there was an acute attack, and it proved to be a streptococcus ovarian abscess. My experience has been so clean cut during the last year on this subject that I could not help getting up and narrating it.

DR. W. O. HENRY, of Omaha, Neb. (by invitation).—Some three or four years ago I learned that cases of acute infection in the pelvic and abdominal cavities should not be attacked through the abdomen, and I have not opened the abdomen for three or four years in this class of cases. This is a very important point to remember in those cases of abscess or infection following either abortion or labor. I believe in these cases the uterus should be cleaned out, all the raw surfaces thoroughly curetted, and the whole surface touched with pure carbolic acid. By the latter measure we stop further infection, and if we can control what little infection has occurred, it gives us great vantage ground.

There is one other point I wish to refer to. If there is the least infiltration in the peritoneal cavity, or the least fulness in the pouch of Douglas, I open into that fulness; and in a case not long ago I could not detect pus at all, and not very much infiltration, yet when I opened the cul-de-sac I found over two ounces of pus. I let it out, put in a drainage-tube, and packed around the tube with gauze. My patient did well.

In some cases where I have not struck pus I have found considerable apparently septic fluid coming out from the cul-de-sac. It is important in treating these cases to be careful and thorough in cleaning out the uterus and all raw surfaces in the vagina or perineum, then to freely cauterize with pure carbolic acid. If there is infiltration, open into it and carefully drain; but in acute cases do not open the abdominal cavity.

By incision and draining with tubes and iodoform gauze, my results have been very satisfactory in the last three or four years—*i. e.*, since I have adopted this method through the vagina.

DR. REUBEN PETERSON.—I cannot refrain from adding my testimony to that of Drs. Reynolds, Mann, and others. I think we have all seen the bad effects of opening the abdominal cavity in cases of acute infection. My attention was first directed to

this in operating upon ovarian cysts which had become acutely infected. I lost three of these cases in rapid succession. I think we have to distinguish between two classes of cases—one where the pelvic cellular tissue is involved; the other where the tube and ovary are at fault. It is sometimes difficult to differentiate between the two. Let me say just a few words in regard to a recent case which made a deep impression on me. This woman entered the hospital at five o'clock, and was delivered at seven o'clock, and there was no examination made by the vagina. The delivery was followed by no vaginal douches, and as far as sepsis from without was concerned, it would seem as if it was one of those cases where it could be ruled out. On the third day she had a chill, and the temperature rose to 103.6° . I immediately curetted and could find nothing the matter with the uterus; still the symptoms of sepsis persisted and seemed to point to something on the right side. I opened through the cul-de-sac; and I would like to emphasize the point brought out by Dr. Mann—namely, I could reach nothing. I went up as high as I could, but I could not reach any pus-sacs. On the thirteenth day the temperature went to 105° ; pulse to 130. Then I decided to wait no longer, and, not knowing whether I had infection of the uterus, of the tubes, ovaries, or cellular tissue, I removed the uterus by the vagina. As I removed it about one-quarter teaspoonful of pus came from the right tube. Microscopic sections of the uterus showed it to be perfectly normal, and yet that small amount of pus was sufficient to cause the death of the patient from peritonitis in three days. This operation was only done a few days ago, and I have not had a chance to work out the bacteriology of it as yet. But to my mind it points to a virulent streptococcus infection.

Now, it is all very well to say that in these cases we must wait until the abscess points in the vagina before adopting any surgical procedure; but there will come a time when we feel we must do something, and then comes the question as to whether we shall open through the abdomen or from below. Unhesitatingly, I should say open from below if we have a distinctly palpable mass to be felt through the vagina. On the other hand, if it is high up, if we are in doubt, I believe the woman's life will be better preserved by going in from above, walling off the tube or the

abscess as much as we can, and then removing it. When we open from below it is a different proposition. There we do not open the general peritoneal cavity. We open and drain as we would any abscess. Where it is confined within small limits, it is better to go in from above. All of us have had experience with these cases, and they are the most serious ones that the abdominal surgeon has to deal with. They are entirely different from those cases of pus in the pelvis Dr. Robb has spoken of, and cannot be treated in the same manner.

DR. REYNOLDS.—As I have been quoted by Dr. Peterson as having said that we should wait until pus pointed before opening, I want to repudiate that position. In acute cases I prefer to work through the vagina, but I do not believe in waiting for an abscess to point.

DR. A. PALMER DUDLEY.—In my service at the Post-Graduate Hospital I am brought in contact among the Italian women of the east side of New York City with a great many such cases as have been described by Dr. Robb and discussed this morning. I treat them expectantly, and save the lives of most of them. Dr. Mann spoke of pus in the ovary as being exceedingly septic. It is seldom, in my experience, that I have seen a case of suppuration of the ovary, unless it were a large cyst that had undergone suppurative degeneration, and when I have the pus has been exceedingly purulent. I lost one patient the last winter at the Post-Graduate Hospital in this manner. It was a case of adherent ovary, and in getting the ovary out I ruptured the small sac, and not over half a teaspoonful of the contents, not apparently pus, escaped into the pelvis. In examining the specimen, after the patient had been taken to the ward, I found it was a dermoid cyst, and I had squeezed a little of the contents of the sac into the pelvic cavity. That patient died from virulent general sepsis. She had an abscess covering the entire abdominal cellular tissue, extending out to the iliac fossa on both sides extraperitoneally. I opened, discovered the condition, and drained from below, but she died from septic pneumonia. Every organ was filled with streptococci. That was a lesson to me. For the last two or three years when I have a case such as those that have been discussed come under my care, I put the patient in bed and apply ice. I find pus will work in the direction of least

resistance in all cases. I apply ice on the abdomen, and keep it there constantly for days; then I direct the patient to have three hot douches a day, at a temperature of about 116° , using about six quarts of water. This drives the pus toward the vaginal vault. During this time I resort to hypodermic injections of quinine to keep down general sepsis as much as possible, using at the outside three and a half grains of quinine three times a day. At the end of a week or ten days the patient is ready to have a pelvic exploration. If the pus is in the tube or ovary, it can be reached; if it is in the broad ligament, after vaginal section, it is easy to pass a pair of forceps or scissors into the pelvis and puncture the broad ligament from the rear, and let it drain. I have done that repeatedly in the past year in the cases I have mentioned, of pelvic suppuration following abortion, and aside from the one case mentioned I have not had a fatal result.

DR. ROBB, in closing the discussion, said: I quite agree with Dr. Mann that many of the streptococcus infections are in large part localized in the broad ligaments, and I have often been impressed with the fact that they are accompanied by such slight implication of the tubes and ovaries. I have often met with instances in which a focus in a small, densely adherent tube or ovary, containing only a few drops of pus, nevertheless harbored a most virulent streptococcus. Great care, therefore, should always be taken in the removal of such structures in order to avoid any spread of the pus.

Again, in a limited number of cases in which no pus is demonstrable macroscopically, virulent organisms may be present, and I have more than once seen a fatal peritonitis ensue under such circumstances.

How is it possible to diagnose a streptococcus infection before opening the abdomen? A satisfactory answer to this question would, of course, be of immense practical importance. I think that in many cases it is advisable to aspirate the tissues implicated in the inflammatory changes, and in this way render it possible for us to test the virulence of the organism present before resorting to more radical procedures. It would then be open to us to institute thorough drainage through the vagina, or, if immediate relief were demanded, we could puncture, and then, later on (if streptococci were not found), we could remove the

diseased structures. Of course, it must be remembered that not every streptococcus infection is necessarily fatal. Like other organisms, the streptococcus varies widely in virulence, and naturally the individual resistance must always be taken into consideration. I have seen quite a number of such cases recover, although I must say that in my experience a pure culture of the streptococcus generally means that convalescence will not go on smoothly, even when a fatal result does not ensue.

Whenever prolonged operative procedures are carried out there must necessarily be more trauma, with a proportionate liability to infection, especially when the carrying out of the strictest aseptic technique is rendered impossible.

I certainly agree with the opinion expressed by a large majority of my colleagues, that pelvic pus cases in the acute stage should be left alone, provided that unfavorable symptoms do not develop in the first eight or ten hours. In the latter case puncture and evacuation through the vagina are indicated. This plan of treatment can also be instituted before the formation of pus.

With reference to the use of carbolic acid in acute infections of the uterus following abortions or labor, I cannot say that I favor it as a rule. It has always seemed to me that an amount of carbolic acid that would be of any value from an antiseptic point of view must necessarily damage the healthy tissue as well, and so diminish the normal resistance. Personally, I much prefer to wash out the uterus with large quantities of normal salt solution, and at the same time carry out active supporting treatment.