ond radical complete work. I think I am correct in saying that the tendency is growing in favor of radical complete work, and the more competent the surgeon the more often is he able to do successful radical work. That there is, however, a certain number of abscess cases, in which the most competent surgeon would be content to do a mere drainage operation as a life-saving measure.

THE TECHNIC OF OPERATING THROUGH AN ABDOMINAL INCISION IN ABSCESS CASES.

I believe in the vast majority of abscess cases that a three- or four-inch incision along the outer border of the right rectus muscle is the best avenue of approach.

Through such an incision the abscess can be very well surrounded with pads of moist gauze and, whether adherent to the parietal peritoneum or not, can be evacuated with but little danger of infecting the general peritoneum. With such a technic one can the better do complete work, that is, search out the appendix and remove it, drainage being established through a stab wound in the flank, and the abdominal incision permanently closed. I do not favor the practice of cutting down immediately over the abscess site, unless mere drainage is aimed at or the abscess fills the greater part of the right side of the abdominal cavity. Through such an incision one must trust almost altogether to his dexterity in operative manipulation, and is never quite sure that he has not broken through the wall of protective adhesions in attempting to do complete work. While it is many times possible through such an incision to pad off the abdominal cavity satisfactorily, it can be done better through the above mentioned incision. In postcecal abscesses I prefer the incision along the outer border of the right rectus muscle, unless mere drainage is practiced, when the flank incision and postperitoneal drainage may be made; or in exceptionally favorable cases reaching well down in to the pelvis, drainage through the rectum may be practiced.

DIFFUSE PERITONITIS.

The aim of treatment in beginning diffuse peritonitis should be toward the arrest of the spread of the inflammation. It is here that surgeons differ very much as to the best method of procedure. Deaver, Morris and many other prominent surgeons recommend in this class of cases immediate operation, and this is probably the most universal practice. However, Ochsner pointed out a method by which the inflammation could be arrested by the walling-in process, in probably 90 per cent. of such cases, which would place them under the same category as abscess cases. In my judgment, the Ochsner plan of treatment is based on the proper interpretation of Nature's method of protecting the peritoneum, and as a general method of treatment I believe it to be the best.

It is also my opinion that many of the reported successes from operation in diffuse peritonitis originating from the appendix in reality have been cases in which only the right iliac and middle abdominal regions were involved, the inflammation being circumscribed. Diffuse peritonitis due to an infection from the appendix is usually of the purulo-gangrenous variety, and is very likely to become limited to the lower two-thirds of the abdomen.

It is evident at operation in diffuse peritonitis and at postmortems on these cases that Nature has most usually made some effort at limiting the progress of the inflammation by the formation of adhesions of the intestines and omentum. Nature should be assisted by favoring

the arrest of peristalsis and by posture, operative procedures being deferred to a later period. Such cases will not all recover, but a larger percentage, I believe, will be saved than by operative procedures during the progressive stage of the inflammation. The operative technic in these cases should be identically the same as in large abscess cases, viz., incision and establishment of drainage.

CONCLUSIONS.

1. In incipient appendicitis, until the patient is placed in the hands of the surgeon, all food and drink should be withheld and the patient nourished by the rectum.

2. Every patient should be advised of the advantages of an early operation.

3. Radical work, that is, the removal of the appendix or closure of an opening in the cecum, should be done in abscess cases, when it can be done without additional risk to the life of the patient.

4. The practice of merely draining in every abscess case should be condemned as non-surgical.

5. Operation during a progressive diffuse peritonitis will be attended with a higher mortality than the method of procedure I recommend.

6. If the physician would direct his efforts, in the treatment of appendicitis, toward the protection of the peritoneum, until he could transfer his case to the surgeon, the mortality in this disease would be greatly lessened.

7. The adoption of the more rational method of dealing with diffuse peritonitis will convert a large percentage of these cases into circumscribed peritonitis, when they can be rightly classed as large abscess cases, having the same mortality rate.

AN OPERATION FOR PYOSALPINX WITHOUT LIGATURE, CLAMP, ARTERY FORCEPS OR BLEEDING, BY OVERTHROW PROVISIONAL SUTURE METHOD.*

REPORT OF FIFTY-NINE CASES WITH ONE DEATH.

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Pyosalpinx, or pus in the tube, is the result of an inflammatory action in and about the tube, due to an infection.

ETIOLOGY.

The most frequent causes of pyosalpinx are: Abortion or miscarriage, gonorrheal infection, tubercular infection, infection with the *Bacillus coli communis*, *streptococcus* or *staphylococcus* or infection through trauma or extension to tube of an appendicitis.

PATHOLOGY.

If the tube is infected from its proximal end, the mucous membrane is congested and distended with blood, thereby encroaching on the lumen of the tube. The infection is then advanced by this condition of affairs to the ampulla and then to the distal end of tube. Each and every extension causes or will cause what is spoken of by the patient as "cramp" or shooting or boring pains in the ovary. This condition is frequently spoken of by the physician as an "ovaritis," and if the patient becomes remonstrative her case is diagnosed as neurasthenic, hypochondriac or hysteric.

* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association at the Fifty-sixth Annual Session, July, 1905.

The fimbriated end of the tube is approximated by omentum, and this may become sealed against the tube and thus keep the inflammatory action within certain limits. When the tube is patulous, the infection spreads to the peritoneum and is accompanied by a local or general peritonitis. This condition tends to draw the uterus inward and downward until the distal end of the tube and ovary, in the majority of cases, is found deeply fixed in the pelvis, posterior to the uterus and filling up the Douglas pouch.

I have performed the following operation for several years: After opening the abdomen, the patient is placed in the Trendelenburg position; the bowels, if possible, are pushed back; if adherent, they can be dissected free with a dry sponge and then pushed back. The general cavity is walled off with one or two large strips of gauze. Bleeding from bowel or omentum, if any, should be sought for and vessels and tissues sutured, if necessary. The broad ligament is sought for and the finger is invaginated between the ligament and the mass and the tube partially freed at the distal end.

The index finger is then forced between the broad ligament and the tumor. A cutting needle, half curved, with No. 3 pyoktannin, is passed between the mass and the broad ligament on to the finger, and the broad ligament is tied off. Scissors are used to sever the tissue between the broad ligament and tube. The finger is still further advanced, and an overthrow provisional suture, which usually includes the ovarian artery, is taken in the broad ligament.

The separation of the mass is continued by the farther advancement of the finger; application of another provisional suture, and the severing of the mass from the broad ligament with the scissors, a little at a time. Immediately on severing the tissue the provisional overthrow suture is tightened, thus preventing hemorrhage. In the majority of cases it is well to put in the provisional Billroth suture before severing the artery. The finger is still farther advanced toward the uterus, and the broad ligament is severed as before described, following the provisional suture until the horn of the uterus is reached. The provisional suture is placed in the uterus, an elliptical incision is made, and the tube is removed from the uterus and the suture tightened. Another suture, if necessary, is imbedded in the uterus and tied. The uterus is then grasped with the hand and elevated, if possible. If not, an attempt is made to separate the adhesions directly behind the uterus, and in this way gradually to shell out the mass from before backward. It may be necessary to tie off some omentum or bands of adhesions.

I do not hesitate to operate in acute cases of pyosalpinx if the tube can be felt free in the pelvis. An anesthetic is used at the first examination. In 59 cases I succeeded in saving 51 or 52 specimens, and at a meeting of the pathologic section of the Ramsey County Medical Society I had the pleasure to show 39 specimens, all of which were intact and not opened or ruptured in any way and still containing large quantities of pus; the pus noted in the recording of my cases by my assistants and internes as a ruptured tube or ovary was found to be an extratubal or peritubal abscess in almost every instance, except tubes or ovaries that were so macerated as to tear in making a dry dissection.

My reasons for reporting the following operations in detail are the different conditions, features and complications found.

CASE 1.—Mrs. J. O. D., aged 30, American.

History.—There have been repeated attacks of pain in the

right lower quadrant of abdomen. She has had a discharge of pus from the bowel on two occasions following these attacks. While under my care, she passed large quantities of pus in the urine; this condition remained for thirty-six hours during the first attack and about one day longer in the second attack. In neither case was there any pain in urination or any amount of blood that I could detect with the naked eye in the urine; the discharge was not offensive.

Operation was not consented to until the beginning of another attack, which occurred about three months after previous attack.

Operation.—I made an incision in the median line, and found the omentum adherent to the anterior abdominal wall, completely hiding from view the contents of the abdomen. I began to separate the omentum at or about the junction with the bladder; immediately beneath I found the bladder adherent to several loops of gut; I stripped off the gut and came on several large broad bands, which at first appeared to be a portion of the bowel. Finally I cut through and tied off several long strips of dense adhesions, with several pieces of omentum. This brought me to what I supposed was the tube; after separating more adherent bowel and clearing up the field of operation I opened into an abscess cavity which extended up over the brim of the pelvis to the junction of the large and small bowel; the tube was then located in its usual pathologic position and removed as before described.

Deep in the pelvis was an abscess which was completely walled off by a membrane which was semitransparent. The pus could be seen plainly, moving with each effort the patient made while breathing, and snugly encased in its capsule. I punctured the capsule with my finger, mopped the cavity dry, and inserted a long, narrow, loose gauze drain; I did not sew up the abdominal wall, excepting two sutures in the peritoneum.

There was considerable shock, necessitating injections of saline solution; strychnin, gr. 1/16, was given hypodermically.

Patient made uneventful recovery.

CASE 2.—Mary McC. Sept. 21, 1899, aged 18, domestic, single.

History.—About six months ago the patient began having pain with monthly flow, which was excessive in quantity. She says she had yellowish discharge from the vagina last winter, accompanied with pain in her side; she was confined to her bed about three weeks during this attack; at the present time there is a yellowish discharge from the vagina, which began about two weeks ago, accompanied by considerable pain in the left side. Patient has been confined to her bed for one week.

Diagnosis.—Single pyosalpinx (left).

Operation.—Three-inch incision was made in the median line; hemorrhage was slight. The right tube was cystic. The tumor was the size of hen's egg and was aspirated; right ovary was normal; neither tube nor ovary were removed. The left tube was distended with pus and densely adherent to all surrounding structures.

The tumor was aspirated and about 100 c.c. of pus evacuated; the ovary was somewhat enlarged. Adhesions were broken up and the tube and ovary removed; the stump was cauterized with the actual cautery, and peritoneum sewed over the stump. Several small cysts along the tube were opened and drained. The wound was packed with sterile gauze and partially closed with silkworm gut.

The patient received two hypodermic injections of strychnin, gr. 1/20 each, while on the table, and an enema of one quart of salt solution immediately after operation.

There was considerable shock, but the patient rallied well. She was discharged, well, Nov. 8, 1899.

CASE 3.—Miss G., aged 24, American, single. July 10, 1899.

History.—Patient complained of backache, general malaise, bearing down and localized pain in pelvis. Menstruation was irregular and profuse. She had leucorrhoea, with a very offensive discharge. The uterus was retroflexed, pushed over to the left side and fixed laterally and posteriorly.

Operation.—Medium incision was made. The uterus and adnexa were in the bottom of the pelvis. The appendix was

found to cross over the brim of the pelvis and to imbed itself in the mass. An attempt was made to separate the appendix from the mass, which was successful only after removing the proximal end by cuff and purse-string method. The right tube and ovary were removed by method described; no shock; no hemorrhage. Patient left hospital, well, Aug. 12, 1899, with exception of some leucorrhea, which has since disappeared.

CASE 4.—Mrs. M. N., aged 24, American. Aug. 5, 1899.

History.—She complained of pain in both sides and was constipated. There was pain on urination. She was hysterical. The history was given me by her family physician. He said she complained of everything aching and paining.

Examination.—Examination showed gonorrheal urethritis, offensive leucorrhea and aggravated retroflexion. The finger in the vagina encountered a solid, resisting mass to the left of the median line, which proved to be the fundus of the uterus. There was a large, resisting mass in the right iliac pelvic region.

Operation.—Oöphoro-salpingectomy and appendectomy. The abdomen was opened in the median line. The appendix could be plainly seen passing downward and losing itself in a large mass on the same side. I began to free it and found an appendix 6½ inches long, adherent to the lateral and posterior walls of the uterus. The tube was removed in usual manner, after rupture of ovary, containing pus. The cavity was dried in the usual manner. Patient made an uneventful recovery and was discharged Aug. 23, 1899.

CASE 5.—C. S. was admitted to hospital Sept. 3, 1899, aged 26, single, clerk.

History.—Patient menstruated last three months previously. Ulcers were noticed on labia and on vagina. Purulent discharge was present. In July there was a general eruption all over the body, with headache and pains in the bones.

Diagnosis.—Tertiary syphilis, cystic ovaries, double pyosalpinx, specific panophthalmitis, with glaucoma adhesions.

Operation.—Double oöphoro-salpingectomy. An incision was made in the median line above the pubes. The wound bled profusely and the hemorrhage was controlled with some difficulty. Right ovary was somewhat cirrhotic and prolapsed; left ovary was cirrhotic, and tube thickened and distended. The tubes and ligaments were ligated close to the uterus. Ovaries and tubes were excised and the stumps sewed over with fine catgut. Adhesions of the broad ligament to the ovary were broken up. The wound was closed with catgut and a Halstead subcuticular suture of silkworm gut. She was discharged, improved, Nov. 24, 1899.

I examined patient about a year after operation; she had gained twenty pounds in flesh and was feeling, as she expressed it, very well.

CASE 6.—M. M. was admitted to hospital Sept. 21, 1899. Age, 28; married; housewife.

History.—The patient has always enjoyed good health. She has had two normal labors and one miscarriage two years ago. She began to have a discharge from the vagina several weeks ago, followed shortly by pain low down in the abdomen on both sides. Menstruation was regular; the last time it was somewhat painful.

Examination.—Patient was well nourished, the tongue was clear; chest, heart, and lungs were normal. There was tenderness on deep palpitation over both ovaries; the abdomen was somewhat rigid; the uterus was fixed posteriorly and deflected to the left side. A tumor was distinctly felt in the right side.

Diagnosis.—Double salpingo-oöphoritis.

Operation.—A median incision was made about three inches long, beginning one inch below the umbilicus; the recti muscles were separated and the peritoneum opened. The right tube and ovary were found thickened and prolapsed into the cul-de-sac; the ovary was cirrhotic. The adhesions were extensive, especially to the sigmoid on the left side. By separating the tube from the sigmoid, a small abscess was opened and the tube and ovary were freed. The broad ligament was tied off and stitched over with peritoneum. The tube and ovary were removed and the right tube and ovary were freed and brought up into the wound. The tube was separated from

the broad ligament by overstitching with the Billroth suture and tube and ovary were removed. The cavity was dried and closed with interrupted sutures of catgut; the skin was closed by subcuticular sutures of silkworm gut. The patient made an uneventful recovery and was discharged well Nov. 10, 1899.

CASE 7.—J. D., aged 23, married, was admitted to hospital July 6, 1900, and operated on July 14, 1900.

History.—The patient always had been sickly and had a great deal of headache. She had kidney and liver trouble. Three years ago she had a very bad cold and was treated by a physician. She had diphtheria when 12 years old. On May 2 she gave birth to a child; labor was normal. She remained in bed two weeks, got up and went to her physician at his office. He made an examination and found lacerations of vagina and cervix; he said he could not operate until discharge ceased. He gave one treatment and the patient, after being up three weeks, was compelled to go to bed again. She complained of severe pain in right ovarian region. Her appetite has been very poor and bowels irregular; she had to take cathartics.

Diagnosis.—Retroflexed uterus, pyosalpinx, (double) rectocele, cystocele.

Operation.—Double salpingectomy and appendectomy. An incision about three inches long was made in the abdominal wall down to peritoneum. The peritoneum was picked up and a small incision made. Fingers then inserted and the peritoneum torn open. The bladder, uterus, appendix and intestines were found firmly united by adhesions. The appendix was picked up and found to be adherent to posterior wall of the uterus; it was removed by being tied off with catgut, and the serous membrane was then stitched over it. The adhesions were broken up between the intestines and the Fallopian tube; by so doing, the tubes gave way and allowed from two to four ounces of pus to escape into the abdominal cavity, which was sponged out with dry sponges. The tubes were separated from the surrounding structures and tied off with catgut and removed. The peritoneum was sutured with a running suture of catgut; the muscles were approximated with catgut sutures; the skin with subcuticular silkworm catgut suture. There was considerable shock and hemorrhage. Patient was discharged, well, Aug. 22, 1900.

CASE 8.—A. S., aged 34, married, was admitted to hospital July 9, 1900, and operated on July 12, 1900.

History.—Patient has had three children and has always been in good health. While going upstairs four days ago she fell and struck against a pail; she was pregnant at the time. Pain of injury seems to have been down in the left iliac region.

Diagnosis.—Pyosalpinx (left).

Operation.—Single salpingo-oöphorectomy and appendectomy. A median incision was made about four inches long. Intestines, bladder, tubes and uterus were found to be all adherent. Adhesions were broken up by dry dissection, using sponge on finger. The right tube was freed and examined; it was somewhat enlarged. It was aspirated, but, as no fluid was found, it was replaced. The appendix was found deep in the pelvis and brought up, and the serous coat was stripped back, forming a cuff. The mesoappendix was cut away and overcast with running suture of No. 2 plain pyoktannin catgut; the appendix was clamped and cut off; the stump was cauterized with 95 per cent. carbolic acid, followed by alcohol, turned in and a purse-string suture put round cuff and drawn tight; No. 2 pyoktannin catgut was used. The left tube was much enlarged and firmly adherent, deep in the cul-de-sac. In freeing the tube an abscess was opened, allowing a fluid to escape; this was sponged away, the fibrinated extremity brought out, and ovary and tube cut away. Small cuts were taken and each one followed by overcasting the stump with a running button-hole stitch. Skin wound was closed with subcuticular stitch of silkworm gut. The patient was given an enema of warm oil and whisky. Recovery was uneventful. Patient was discharged July 19, 1900. No symptoms of miscarriage.

CASE 9.—S. C. was admitted to hospital July 15, 1900, married, aged 20.

History.—Patient was well until one and one-half years ago. She had a child at full term previous to admission to hospital. She remained in bed three weeks after confinement, since which

time she has been well up to one week ago, when she began to have pain in the left lower abdomen, with weakness and loss of appetite. A slight bloody discharge from the vagina was present. First menstruation since confinement occurred one week ago; it was profuse and painless and lasted four days.

Diagnosis.—Lacerated perineum and cervix; postparametritis; left tubal abscess; subinvolution; granular endometritis.

Operation.—Left salpingo-oophorectomy. There were very extensive adhesions found between the left ovary and tube and intestine; they were tied off and removed; the abscess was aspirated. The left ovary and tube were removed by ligaturing, beginning at the horn of the uterus; the tube was excised and the peritoneum sewed over stump and raw surface. Hemorrhage was severe and was counteracted by hypodermoclysis, strychnin and rectal enema. Shock was very severe. About two ounces of pus were removed August 10. Lobar pneumonia developed in the upper left lobe. Patient was convalescent August 22, and was discharged, well, Aug. 29, 1900.

CASE 10.—A. Y., aged 21, single, was admitted to hospital May 9, 1901, with a diagnosis of right pyosalpinx.

Operation.—The right tube and ovary were found to have fallen down in the cul-de-sac of Douglas and to be lying somewhat behind the left tube and ovary. The right tube was enlarged to about the size of a man's finger; the ovary was somewhat enlarged and lobulated. The broad ligament was tied off with pyoktannin catgut and the stump stitched across, as the tube and ovary were removed with scissors. The vermiform appendix was found on examination to contain a small particle about the size of a grape seed. The mesoappendix and appendix were tied off and the appendix removed, the stump being stitched over by the cuff method. The peritoneum was dissected off and rolled down. The appendix was cut off and cauterized with actual cautery; the cuff was then stitched over the stump and a few more stitches of catgut put into the mesoappendix and vermiform appendix stump. There was some hemorrhage from a small artery in the mesoappendix; this was tied off with catgut; the peritoneum closed with a catgut suture, muscles with the same, skin and superficial fascia, subcuticular silkworm gut. There was slight hemorrhage, but no shock. Patient was discharged, well, Aug. 26, 1901.

CASE 11.—A. H., aged 28, married, was admitted to hospital Aug. 4, 1903.

History.—Patient has had three children; two are living. She has had two miscarriages; the last one occurred about two years ago. Last child was born in 1897. About four months ago she had chills and severe headache; these chills were of short duration at first, but are longer now and more frequent; she does not have as much headache now as a few months ago; she says she has had a pain in the left iliac region for the past ten years and pain in region of spleen, which radiates toward the back, produced by pressure in the first place. She complains of pain starting in the left iliac region and radiating down the inner side of the leg to the toes, and also complains of pain in right lumbar region for the past two weeks. Menstruation has not been regular; sometimes it is early and sometimes late. In July there was not much, but in August the flow commenced a week and a half sooner than it should and lasted just two weeks. The amount was excessive in quantity, dark in color, containing clots.

Diagnosis.—Salpingitis, pyosalpinx.

Operation.—Salpingo-oophorectomy. An incision was made in the median line, about 2 inches below the umbilicus and extending $2\frac{1}{2}$ inches toward the pubes; the fibers of the rectus muscle were separated and the fascia, thus exposing the peritoneum, which was grasped with dissecting forceps and an opening made the size of the external incision. Numerous adhesions were broken up and the uterus and left tube were found adherent to the bladder; the left tube contained an abscess and about two ounces of pus aspirated. The abscess was of the tubo-ovarian variety, and, the ovary being much involved, it was deemed advisable to perform salpingo-oophorectomy. A suture of pyoktannin catgut, No. 2, was employed and a quilt suture was used to stitch the broad ligament and to control hemorrhage. Great care was necessary so as not to injure the bladder, as it was closely united to ovary, tube and uterus; on the latter it was united nearly

to the center of the fundus. The intestines were walled off by sponges to avoid general infection of peritoneal cavity; the cavity was thoroughly swabbed out and the peritoneum sutured with pyoktannin catgut, No. 2, quilt suture. The fascia and the muscles were approximated with like suture material and like stitch, the skin was closed with subcuticular stitch of silkworm gut and a dry gauze dressing was put over wound. Patient was discharged, well, Aug. 29, 1903.

CASE 12.—K. P., aged 22, single, was admitted to the hospital Aug. 20, 1900.

History.—The patient was well till three years ago; since then she has been in hospital twice with present trouble. Three years ago she awakened at night with severe pain in the right iliac fossæ; she had chill after chill, followed by profuse sweating; she vomited, but got better in the morning; she remained in bed three days and then came to the hospital, attended by her physician; she improved and went home; six months later she returned to the hospital with the same trouble; in two weeks she again went home, since which time she has never been well. There were dragging pains in the right side; painful urination and defecation. A vaginal discharge was present, white and watery at first, later becoming thick and yellow.

Diagnosis.—Left pyosalpinx; anteversion of uterus.

Operation.—Salpingo-oophorectomy. Right ovary was cystic. The tube was excised, tied at end and sewed up with catgut; one ligature was inserted. The left ovary and tube were found diseased and bound down to the uterus and intestines by very extensive adhesions. The left ovary and tube were removed. On examination the right ovary was found cystic and was resected. Appendix was normal. There was no hemorrhage nor shock. Patient was discharged, well, Sept. 10, 1900.

CASE 13.—E. L., aged 33, widow, was admitted to hospital Aug. 26, 1902.

History.—About two months ago the patient says she lifted hard and felt as if something gave way within her abdomen. For two or three days after this happened she had burning pain across the lower abdomen. She says she had a fever and pain which gradually grew worse. About a week later she began to vomit; the vomiting caused her a great deal of pain. She says that pains are sharp and that they are getting worse and worse; she has not slept well at night for past two weeks. Abdomen was swollen and very tender. She has been regular in her menses, but flowed more than usual. She has had considerable pain during these periods, but more of late. She has not menstruated for two weeks and had a slight vaginal discharge day before entering hospital. She had a great deal of pain in the region of the bladder and was unable to urinate for two or three days. She was catheterized several times.

Diagnosis.—Gonorrheal salpingitis; tubo-ovarian abscess.

Operation.—Double salpingo-oophorectomy. The fundus of the uterus was found bound down to the intestines with adhesions which had to be dissected away. After the fundus was free the tubes and ovaries were removed. The operation was attended by considerable hemorrhage. There were adhesions to bowel and rectum. The bowel was opened into by separation of adhesion. The wall of the abscess by pressure had produced atrophy of the wall of the bowel; in fact, the mucous membrane was all that prevented opening of the abscess into the bowel. The gut was resected and a Murphy button applied. The patient was discharged, well, Sept. 30, 1902.

CASE 14.—D. E., aged 18, single, was admitted to hospital Aug. 23, 1902.

History.—The patient had had diphtheria and measles. She had had rheumatism and was confined to bed all winter. About a month ago she was taken ill with pain across the lower abdomen. Abdomen was tender and somewhat swollen. She said that pains seem to go down into legs and that during the attacks of pain she vomited several times. Pains were sharp and her head and back ached. Those symptoms, except the vomiting, kept up more or less until she entered the hospital. She said that her hands and feet are always cold and clammy. She does not sleep well.

Diagnosis.—Gallstones, gonorrhea, pyosalpinx, appendicitis.

Operation.—Laparotomy; salpingectomy; appendectomy.

The appendix was found curled on itself and adherent to the uterus. The left Fallopian tube was found to be inflamed and reddened. It was taken up with a purse-string suture of pyoktannin catgut, first being freed from intestinal adhesions. The tube and ovary were excised; the broad ligament being tied ahead of them, with a running suture of pyoktannin catgut. The appendix was freed from its mesentery and the serous membrane incised circularly with a knife about one-quarter of an inch above the attachment to the intestine; it was ligated close to this attachment and cut off where the circular incision was made. The stump was cauterized with carbolic acid and alcohol; a purse-string suture of pyoktannin catgut taken round it and the stump inverted and suture drawn. The patient was discharged, well, Sept. 30, 1902.

CASE 15.—A. W., aged 28, single, was admitted to hospital July, 1903.

History.—In the past three years she has been troubled with pains in her pelvis. She began to menstruate and has had discharge ever since. She does not flow much during the menstrual period. About a week previously she began to have chills and sharp pains in the lower part of abdomen. She was in bed two days; then got up and pain began in back, which at last localized to one spot with a burning sensation. This was on the right side. Bowel movements caused pain.

Diagnosis.—Pyosalpinx and ovaritis of right side.

Operation.—Laparotomy: Salpingo-oöphorectomy. An incision was made in the median line, about four inches long, between the umbilicus and the pubes. Intestines, right tube and uterus were matted together in Douglas cul-de-sac, and the appendix was adherent to the tube. Adhesions were gently broken up. The tube was twisted and kinked, being very thick and irregular nearest the uterus; a pyoktannin, No. 2, ligature was passed round it, near the uterus, and tied and the uterine attachment cut. The ovary was grasped with a pair of forceps, but its pedicle was torn and the ovary was removed and torn. The pedicle was sutured with No. 2 pyoktannin catgut and the suture continued along the broad ligament at the uterine attachment, which was cut loose. The suture was continued by a needle passed through a loop of the preceding stitch. The mesoappendix was cut and then sutured in the same way as the broad ligament, and the peritoneum of the appendix was incised all around at the base and folded down as a cuff; the appendix was ligated about one-quarter of an inch below with the same kind of catgut and then cut a short distance from ligature, the end being touched first with 95 per cent. carbolic acid and then with alcohol. The open end was closed with No. 0 pyoktannin catgut and the peritoneal cuff folded over the end and sutured with the same. The peritoneum was closed with continuous suture, No. 2, and fascia and muscles in the same way. The skin was sutured with subcuticular silkworm gut. After closing it the line of suture was irrigated with hot normal salt solution. The patient was discharged well Aug. 22, 1903.

CASE 16.—A. F., aged 22, married, was admitted to the hospital June 24, 1903.

History.—The patient has had one child, which died when 4 days old. About two weeks ago she had severe pains in the lower abdomen on both sides. About five days ago pains on left side stopped, but pain on right side persists. She says that when she urinates she has bearing-down pain on right side.

Diagnosis.—Double pyosalpinx (gonorrhea).

Operation.—Laparotomy: Salpingo-oöphorectomy. The abdomen was opened in the median line. On opening the peritoneal cavity, a large mass, consisting of adherent omentum, was brought into view. On investigation of the right ovarian region, another mass about the size of the first was discovered bound down with firm adhesions and lying more in the abdominal than in the pelvic cavity. This mass was separated from surrounding intestines, which later were walled off with gauze pads. Omental and intestinal adhesions were tied and cut. The pedicle of the mass was transfixed with needle, tied off with pyoktannin catgut and cut. The mass was lifted up, but ruptured before it could be removed. It proved to be a tubo-ovarian abscess, containing almost a cupful of yellowish pus. The pus was sponged out; the stump and edges of the

broad ligament were brought together and sutured, a running suture of catgut being introduced. These stitches tore out and later had to be reintroduced. The left side was investigated and another tubo-ovarian abscess was found and treated in the same way, except that a portion of the ovary was dissected from the mass and allowed to remain. The pelvic and abdominal cavities were sponged dry; the peritoneum was closed with catgut. Muscle, fascia and aponeurosis were closed with Billroth's chain suture, pyoktannin catgut being used. The skin was closed with subcutaneous stitch of medium silkworm gut. Patient was discharged, well, Aug. 31, 1903.

(To be continued.)

DIAGNOSIS OF AFFECTIONS CHARACTERIZED BY INTESTINAL OBSTRUCTION.

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Since the clinical phenomena presented by incomplete or partially obstructive lesions in this tube are referable, rather to the nature and location of the lesion than to obstruction, these affections will not be studied in this paper.

Complete obstruction to the passage of the contents of the intestinal canal is generally characterized clinically by the symptom-complex of an acute affection. The causative lesion, however, may be of acute (sudden) or chronic (slow) development. In accordance with the underlying clinically recognizable etiologic factor, the different varieties of acute intestinal obstruction (ileus) may be classified as (1) dynamic ileus and (2) mechanical obstruction.

1. *Dynamic Ileus.*—This is due to peristaltic paralysis either of the entire intestine or of a segment of gut and is typified by the absolute intestinal obstruction incident to general peritonitis. It is not rarely due to mechanical and chemical irritation of the peritoneum, such as is incident to extensive operations about the mesentery, vigorous toilet of the peritoneum, prolonged rough handling, chilling and exposure of this structure and was common in the days of antiseptic abdominal surgery under the use of carbolic acid spray and other antiseptics in the peritoneal cavity. Contusion of the peritoneum due to external violence is a cause. It may also result from excessive meteorism due to enteritis. Intestinal paresis may result from splanchnic and spinal nerve degeneration, cord injury, and is a common terminal condition often directly causative of death in certain systemic diseases, particularly pneumonia, uremia, meningitis, typhoid fever and others, and especially when associated with delirium, unconsciousness, coma and excessive pain and other symptoms which at the same time divert the attention from the abdomen and predispose to constipation and to meteorism. In mild form transient paretic ileus is noted after the removal of large abdominal tumors and ascites, and is the rule after childbirth. The temporary reflex intestinal paresis incident to injury of a testicle, operative procedures about the anus and rectum, during a paroxysm of severe renal, ovarian, biliary or pancreatic colic, and often conspicuous in the symptomatology of these affections, is non-progressive is severity and transient. In many cases of mechanical obstruction, particularly when due to strangulation, there may be initial reflex paresis of the entire gut, though the proximal portion soon recovers, and becomes hyperactive against the strangulated para-