

PETERSON (R.)

A REVIEW OF TWENTY-
FIVE CONSECUTIVE
CASES OF ABDOMINAL
SECTION.

BY

REUBEN PETERSON, M. D.,

GRAND RAPIDS, MICH.

REPRINT FROM TRANSACTIONS OF

MICHIGAN STATE MEDICAL SOCIETY,

1892.



A REVIEW OF TWENTY-FIVE CONSECUTIVE CASES OF ABDOMINAL SECTION.

REUBEN PETERSON, M. D.,

Grand Rapids.

The number of cases reviewed in this paper is comparatively small, and while individually they possess no extraordinarily interesting features, collectively they can, I think, be very profitably considered.

Fifteen of the twenty-five cases were performed by my colleague, Dr. Eugene Boise, and it is through his kindness and courtesy, that I am enabled to incorporate his cases into the report and consider the work done in the gynæcological department of St. Mark's Hospital, as a whole, and not separately. Together we have worked out a system of surgical procedure, which, at least, gives fairly good results. Each was in turn, as the case might be, either operator or assistant. Therefore, the cases can properly be considered together, which would otherwise be inadmissible had each worked separately without the assistance and advice of the other. Whenever differences of opinion arose in regard to different methods, wherever practicable both ways were given a fair trial, and the one giving the best results retained.

Dr. Howard Kelly, in reviewing the work in the gynæcological department of Johns Hopkins Hospital, prefaced his article by saying that it is essential that such reports be accompanied by a description of the methods by means of which the results were obtained. Certain broad general principles are universally adhered to by all abdominal surgeons, and it is the consideration of the small details of procedure before, during, and after an operation that proves most profitable to the operator and those who care to go over his work with him. Thanks to the rapid advances of abdominal surgery during the past fifteen years, a report of fifty or more primarily successful laparotomies excites but little comment. It simply indicates that



the operator has exceptionally good methods. Therefore, in this paper the technique employed will be described at some length.

The cases have all occurred during the sixteen months prior to February of this year, the first operation having been performed September 4th, 1890, five months after the hospital was first opened. While our technique has varied from time to time, the underlying conditions, due to the fact that all the operations have been performed in the same hospital, have remained practically the same. There is no separate abdominal operating room or ward. The majority of the cases have had private rooms, but a few of them have been treated in the general surgical wards. This is an important factor to be considered in estimating results. A general hospital, excluding, though it may, cases of contagious disease, has hardly an ideal atmosphere for the best abdominal work. But all hospitals are not so endowed that they can set apart a certain portion of their space for abdominal surgery. Hence the question of how much risk is run in operating and caring for our patients, in close proximity to cases of infectious and other diseases is a vital one. Formerly it was considered little less than criminal to perform a laparotomy in an amphitheater, but experience has shown that this can be safely done and the most excellent results obtained. This certainly is a wide departure from the carbolized atmosphere at first recommended by Lister, and may have important bearings upon the question of what surroundings may be considered essential for an abdominal section.

There were advantages and, on the other hand, disadvantages in the fact that we began our work in a new hospital. Advantages, because we had no bad system to eradicate; disadvantages, inasmuch as, at the start, we had nurses untrained in the care of abdominal cases. This latter feature, as was stated by Dr. Kellogg before this section two years ago, has much to do with unsuccessful results. The part played by the trained nurse can only be rightly estimated by those who have been unfortunate enough to be obliged to depend upon other assistants. I should much prefer operating in an unhygienic atmosphere, than to trust the after-care of my patients to inexperienced hands.

The tendency of modern surgery is towards simplicity in technique. Aseptic are slowly but surely being substituted for antiseptic methods. One by one the safeguards and active measures, formerly thought necessary to prevent the entrance of microbes into wounds, are being dispensed with. Lister, with a frankness which does him honor, in an address before a recent surgical congress, said: "If, then, no harm resulted from the admission day after day of abundant atmospheric organisms to mingle unaltered with the serum in the pleural cavity, it seems to follow, logically, that the floating particles in the air may be disregarded in our surgical work. And if so, we may dispense with antiseptic washing and irrigation; provided, always, we can trust ourselves and assistants to avoid the introduction into the wound of septic defilement from other than atmospheric sources."

The aseptic operation, however, has only been arrived at by slow degrees and by a process of elimination of whatever was found non-essential. At first, we were accustomed to boil the instruments for one-half hour, after which they were placed in a strong carbolic acid solution, where they remained throughout the operation. The needles, ligatures, and sutures were also kept in a strong antiseptic solution. The sponges were carefully washed in a 1-3,000 corrosive sublimate solution. The abdominal wound was also kept well bathed in the same solution. But gradually these precautions were dispensed with and our results have improved with the changes made. Our surgical creed now is, rigid antiseptics up to the time of making the incision and as rigid asepsis from that time on.

The patient's abdomen is shaved over a wide area the day before the operation and thoroughly scrubbed with hydro-naphthol soap and hot water. The skin is then washed with ether and bathed thoroughly with corrosive sublimate solution, 1-1,000. A green soap poultice is then applied for some hours, followed by a sublimate gauze dressing, which remains in place until the operation. Just prior to the latter, this dressing is removed and the skin of the abdomen subjected to a second shaving, scrubbing, and bathing process. After a final wash with sterilized water, the field of operation may be considered

as ready for the incision. A vaginal corrosive sublimate douche 1-2000 is given the evening before and the morning of the operation, and the patient is always catheterized just before the anæsthetic is administered.

The operator has one assistant, who passes the instruments, does the sponging and so forth. In order to eliminate as much as possible the introduction of septic material into the wound and abdominal cavity, a second assistant is not made use of except in very difficult operations, when his services are absolutely required. One nurse has entire charge of the sponges. It has been found safer to confine her duties to this one feature, otherwise her hands are apt to come in contact with articles which have not been rendered aseptic, and septic material in this way may be introduced through the medium of the sponges. Likewise it has been found safer for one nurse to have entire charge of the needles, ligatures, and sutures and do nothing else. A third nurse stands ready to assist the anæsthetizer or do any work involving the handling of objects which are not aseptic.

The operating room is carefully cleansed before each operation, and every person wears during the operation a long sterilized white gown. The operator, assistant, and two nurses prepare their hands and arms as follows: They are scrubbed for ten minutes with a sterilized brush with hydro-naphthol soap and as hot water as can be borne, the water being frequently changed. They are then rinsed off in hot sterilized water and immersed for two minutes in 1-1,000 sublimate solution. A final rinse in hot sterilized water, and they are aseptic and ready for use.

The sterilization of the hands by immersion in saturated solution of permanganate of potassium and oxalic acid solution, as recommended by Drs. Kelly and Welch of Johns Hopkins Hospital, has been given a fair trial, but the process has been found to exert a too violent action upon the skin, when used too frequently.

The main reliance is placed upon the thorough cleansing with soap and water and we have even contemplated doing away entirely with the immersion in the sublimate solution. In our

opinion the use of the permanganate solution can be limited to those occasions where extra precautions are necessary to render the hands aseptic, as when they have previously come in contact with exceptionally septic material.

The instruments are boiled for five minutes in a solution of bicarbonate of soda, one tablespoonful to the quart of water. They are then placed in sterilized water, where they remain during the operation, except when in actual use.

The silk is placed in test tubes with absorbent cotton stoppers and sterilized for one hour in Arnold's steam sterilizer. Just before the operation they are again sterilized for one hour, removed and placed in sterilized water, where they remain until ready for use. Silkworm gut is similarly treated. The cat-gut is prepared by an immersion in 1-1,000 sublimate solution for twenty minutes, alcohol one hour, and oil of Juniper wood forty-eight hours.

The sponges, after being entirely freed from grit by immersion in dilute hydrochloric acid and frequent washings in hot water, are placed in a 1-1,000 sublimate solution for twelve hours and then preserved permanently in a three per cent. carbolic acid solution. During the operation, they are washed free from blood in sterilized hot water.

The patient's body, except the immediate field of operation, is protected by sterilized sheets and towels.

No antiseptic solution is used after the operation has once begun, unless the hands accidentally touch some object which has not been rendered aseptic. Then they are washed for a minute or two in a 1-1,000 sublimate solution and afterwards rinsed off in sterilized water.

The careful preparation of the patient is considered of prime importance. Whenever possible, this preparation is extended over a period of three or four days prior to the operation. A number of hot baths are given to insure the utmost activity of the skin, which factor may prove of the utmost importance in case the function of the kidneys is in any way impaired by the operation.

A thorough cleansing of the intestinal tract is also highly essential. A laxative is administered at night, for three or four days, and two or three daily movements of the bowels secured.

During the morning previous to the operation, two ounces of castor oil are given, which produces a number of liquid evacuations. It would seem unnecessary to lay so much stress upon this feature in the preparation, were it not for the fact that it is so often neglected and the patient subjected to an abdominal operation with intestines loaded with fæces. The paralysis of the intestines following their exposure to the air during the operation, allows the bacteria from the fæcal matter to pass through the intestinal wall and a septic infection supervenes, to the great perplexity of the operator, who, except in this regard, may have used the greatest care in excluding sepsis.

In addition, it has been shown that a thorough cleansing of the bowel prior to the operation has much to do with preventing the nausea and vomiting following the use of the anæsthetic. It has been our custom to administer twenty grains of subnitrate of bismuth the night before and the morning of the operation with a view of preventing vomiting. While this has been secured in the vast majority of cases, although ether is always used, it is questionable whether this immunity is due as much to the drug as to the thorough preparation of the intestinal tract.

In order to better facilitate the study of the cases under consideration, I have tabulated them in chronological order. In this table I have drawn attention to certain features, which can be profitably considered in all abdominal operations. A detailed report of the cases has not been attempted, but rather an effort has been made by grouping the cases to draw conclusions otherwise impossible, were isolated cases considered.

An analysis of the cases shows:

Chronic disease of both ovaries and tubes.....	14
Chronic disease of one ovary and tube.....	4
Pyelo-nephritis, enlarged mesenteric glands.....	1
Old ileo-cæcal abscess with chronic peritonitis.....	1
Hæmatosalpinx.....	1
Simple ovarian cysts.....	2
Suppurating ovarian cyst.....	1
Abscess, both ovaries and tubes.....	1
Total.....	25

No.	Name, Age, Social Condition.	Date of Operation.	Operator.	INDICATIONS FOR OPERATION.	OPERATION.	Temperature at any time above 100°	Drainage.	Stitch-Hole Abscess.	R—Recovered. D—Died.	REMARKS.
1	J. H. O. 33 S	Sept. 4, 1890.	Boise.	Chronic salpingitis and ovaritis, with adhesions. Retroversion. Dysmenorrhœa and pelvic pain for six years.	Extirpation of both tubes and ovaries. Hysterorrhaphy by passing single catgut ligature around each ovarian ligament and through abdominal muscles.	3d Day, 101°	No.	No.	R	Discharged Sept. 30, '90; uterus in good position of ante flexion. January 20, '92, uterus still in good position. Patient free from pain and in good health.
2	J. M. 30 M	Oct. 21, 1890.	Peterson.	Chronic salpingitis and ovaritis, with dense adhesions. Ovaries cystic. Pelvic pain and dysmenorrhœa for nine years.	Extirpation of both tubes and ovaries. Adhesions separated with great difficulty.	6th Day, 100.3° Gradual rise with morning remissions until 10th day it reached 104°. Gradual decline. Reached normal three weeks later.	No.	Profuse discharge from two lower stitch-holes.	R	Pedicle ligatures on left side subsequently discharged through sinus, which never closed. February 1, '92—Pain is less and patient's condition is much better than before the operation.
3	M. B. G. 29 S	Jan. 14, 1891.	Boise.	Cystic and prolapsed right ovary. Pain, located in right pelvis. Dysmenorrhœa for six years. Impaired locomotion during same period.	Extirpation of right tube and ovary.	No.	No.	No.	R	Improvement for a short period, but soon relapsed into her old condition. Examination revealed left ovary prolapsed and inflamed. Removed by second operation. (See case 23.)
4	M. G. 34 W	Jan. 21, 1891.	Peterson.	Chronic salpingitis and ovaritis, with adhesions. Pelvic pain, and for six years inability to walk without great suffering.	Extirpation of both tubes and ovaries.	No.	No.	No.	R	February 1, '92—Good health. No pain. Does her own work, and walks without pain.
5	M. G. 30 M	Feb. 3, 1891.	Boise.	Pyelo-nephritis. Tuberculosis mesenterica (?) Tumor over region of right kidney. Duration of illness, six months. Chills, fever, and pain in right pelvis.	Exploratory incision. Appendages normal. Mesentery studded with glands size of end of thumb.	2d Day, 100.8° 3d " 103.2° 4th " 103.6° Reached normal 10th day.	No.	No.	R	Wound gaped after removal of stitches; Intestines exposed; subsequent peritonitis. Tenth day after operation, abdominal cavity washed out with sterilized water and wound reclosed; drainage tube inserted. Patient made a good recovery. Feb. 1, '92—Good health.
6	A. A. 36 S	March 14, 1891.	Peterson.	Left ovary enlarged. Hemorrhagic cyst attached to it size of English walnut. Right ovary small and cirrhotic. Invalid for nineteen years. Hysterical spasms for four years.	Extirpation of both tubes and ovaries.	9th Day, 100.2° 10th " 100.2°	No.	Suppuration in every stitch-hole.	R	February 1, '92—Can walk miles without any discomfort. Writes that she is in splendid health. No pain or spasms. Reports that she has a small ventral hernia at lower angle of wound.
7	J. H. D. 38 M	March 20, 1891.	Boise.	Chronic salpingitis and ovaritis. Dysmenorrhœa and pelvic pains for eight years.	Extirpation of both tubes and ovaries. Hysterorrhaphy as described in case No. 1.	2d Day, 100.6° 3d " 100.2°	No.	Profuse discharge from lower stitch-holes.	R	October 29, '91—Re-entered hospital and was operated on for ventral hernia. February 1, '92—Good health; no pain. Hernial operation a success.
8	M. G. 46 M	March 28, 1891.	Boise.	Pyæmia from old appendicitis of over a year's standing. Chronic pelvic peritonitis. Condition perilous at time of operation.	Abscess in right iliac fossa opened. Unable to enucleate pus sac on account of dense adhesions.	1st Day, 100.4° Sub-normal at death.	Yes, 3 days	No.	D	Inability to properly drain pus cavity caused patient to die of sepsis on third day. Second day, abdomen washed out—no avail. No autopsy.
9	H. K. 31 S	April 11, 1891.	Peterson.	Chronic salpingitis and ovaritis. Ovaries enlarged and prolapsed. Extreme varicose condition of left broad ligament. Dysmenorrhœa and pelvic pain for five years.	Extirpation of both tubes and ovaries.	3d Day, 100.4°	No.	No.	R	February 1, '92—Has resumed her duties as nurse in training school. Feels perfectly well for first time for years.
10	L. E. 24 S	April 21, 1891.	Peterson.	Chronic salpingitis and ovaritis. Ovaries size of small hen's eggs, and far advanced in cystic degeneration. Pain in back and pelvis and dysmenorrhœa for four years.	Extirpation of both tubes and ovaries.	1st Day, 100.4° 2d " 100.4°	No.	No.	R	February 1, '92—Practically no improvement. Still has great pain. Unable to walk. Reflex gastric symptoms very troublesome.
11	A. L. 27 S	July 1, 1891.	Peterson.	Both ovaries enlarged and cystic. Pelvic pains. Dysmenorrhœa for four years. Unable to work.	Extirpation of both tubes and ovaries.	No.	No.	No.	R	February 1, '92—Great improvement. Only slight amount of pain. This is gradually disappearing.
12	N. T. 23 S	July 22, 1891.	Boise.	Suppurating cyst of right ovary size of hen's egg, with adhesions. Twenty or more vesical calculi, size of peas. Dysmenorrhœa. Pain in right side. Vesical symptoms for nine years.	Cyst removed. Calculi removed by incision through vesico-vaginal walls.	No.	No.	Abdominal wound suppurated. Vesico-vaginal wound healed by first intention.	R	Wound gaped after stitches were removed. Patient chloroformed and incision re-united. Suppuration occurred a second time. Healed up by granulation. Feb. 1, '92—Good health. No pelvic or vesical symptoms.
13	K. D. 21 M	July 25, 1891.	Boise.	Enlarged cystic and prolapsed right ovary. Symptoms of ovarian trouble for over four years. Dysmenorrhœa.	Extirpation of right ovary and tube.	No.	No.	No.	R	February 1, '92—Much improved. No pains. Doing house-work.
14	N. H. 24 S	July 28, 1891.	Peterson.	Chronic salpingitis and ovaritis. Both ovaries enlarged, cystic and bound down in post. cul-de-sac by adhesions. Dysmenorrhœa. Invalid four years.	Extirpation of both tubes and ovaries.	1st day, 100.6° 2d " 100.4° 3d " 100.2° 4th " 100.2°	No.	No.	R	February 1, '92—Good health. Very little pelvic pain. Able to walk without producing pain. Great improvement in general condition.
15	E. M. 35 M	Sept. 19, 1891.	Boise.	Chronic salpingitis and ovaritis. Right ovary enlarged and cystic. Left ovary small and cirrhotic. Dysmenorrhœa. Pelvic pain for three years.	Extirpation of both tubes and ovaries. Hysterorrhaphy according to method pursued in case No. 1.	2d Day, 100.6°	No.	No.	R	February 1, '92—Great improvement. No pain. Uterus in good position against abdominal wall.
16	S. W. S. 38 M	Oct. 2, 1891.	Boise.	Simple ovarian cyst of right side, size of large orange, filled with clear fluid. Very few adhesions, easily separated.	Removal of cyst.	No.	No.	No.	R	February 1, '92—Good recovery. Best of health; no pain.
17	S. N. W. 42 M	Oct. 5, 1891.	Boise.	Enlarged cystic right ovary. Small cirrhotic left ovary. Two parovarian cysts, one on each side, size of fist. Pain in pelvis and back for twelve years. Severe menorrhagia for past three years. Very weak and anæmic at time of operation.	Removal of cyst and extirpation of both tubes and ovaries.	Temperature above 100° for eight days after operation.	No.	No.	R	February 1, '92—Much stronger. No return of menorrhagia. Color much improved. No pain.
18	J. S. S. 42 M	Oct. 7, 1891.	Boise.	Chronic salpingitis and ovaritis. Ovaries enlarged, cystic, and prolapsed. Retroversion. Excessive menorrhagia for two years, unrelieved by curetting three months prior to operation.	Extirpation of both tubes and ovaries. Hysterorrhaphy as in case No. 1.	2d Day, 101.2°	No.	No.	R	February 1, '92—General condition good. Cessation of menstruation. Uterus in good position against abdominal wall.
19	L. W. 21 S	Oct. 8, 1891.	Peterson.	Right ovary normal but prolapsed. Varicose condition of right broad ligament. Left ovary enlarged and cystic. Pain in right side for two years. Dysmenorrhœa with periodical hysterical convulsions. Inability to walk without pain.	Left ovary and tube removed. Right ovary stitched to top of broad ligament by catgut suture.	2d Day, 100.2° 6th " 100.6°	No.	No.	R	December, '91—Painless menstruation for first time in four years. February 1, '92—General health greatly improved. Walks without pain. Some slight pelvic pain, but this is not constant. April 1, '92—Old symptoms have returned. Cervix repaired March 25, '91; no improvement from operation. February 1, '92—Uterus in good position—as yet, no marked improvement in pain or nervous condition. April 1, '92—General condition improved.
20	B. C. 36 M	Oct. 23, 1891.	Boise.	Chronic salpingitis and ovaritis. Varicose condition of broad ligaments. Retroversion. Menorrhagia. Pain in back and head. Nervous wreck for over four years.	Extirpation of both tubes and ovaries. Hysterorrhaphy as in case No. 1.	2d Day, 101° 3d " 100.2° 4th " 100° 5th " 100.2° 6th " 100.4°	No.	No.	R	February 1, '92—Uterus in good position—as yet, no marked improvement in pain or nervous condition. April 1, '92—General condition improved.
21	S. W. J. 21 M	Oct. 28, 1891.	Boise.	Double pyo-salpinx with abscess of both ovaries. Patient's condition very low at time of operation from septic absorption.	Extirpation of both tubes and ovaries which were bound down to sides of pelvis by dense adhesions. Rupture of pus sac on left, with escape of a drachm of pus into peritoneal cavity.	No.	Yes.	No.	D	At one time obliged to stop operation and revive patient. Death from shock within twenty-four hours.
22	F. G. M. 25 M	Nov. 16, 1891.	Peterson.	Left hæmato-salpinx size of orange. Right ovary enlarged and cystic. Menorrhagia four months previous to operation. Pain since that time referred to left side.	Removal of tumor after separating adhesions. Right ovary and tube removed.	No.	No.	No.	R	February 1, '92—Made an excellent recovery. Now in perfect health.
23	M. B. G. 29 S See case 3	Nov. 19, 1891.	Boise.	Enlarged and prolapsed left ovary. Return of pain and old symptoms after first operation. (See case 3.)	Extirpation of left tube and ovary. Loop of intestine adherent to abdominal wall. Adhesions separated.	No.	No.	No.	R	February 1, '92—Marked improvement since operation.
24	A. V. 40 M	Nov. 24, 1891.	Boise.	Chronic salpingitis and ovaritis. Both ovaries prolapsed and bound down by adhesions. Pelvic pain and dysmenorrhœa for four years.	Extirpation of both tubes and ovaries. Hysterorrhaphy as in case No. 1.	No.	No.	No.	R	February 1, '92—Improving. Uterus in good position.
25	E. H. 34 M	Jan. 20, 1892.	Peterson.	Simple cyst of right ovary, size of hen's egg. Left ovary small and cirrhotic. Tubes and ovary bound down to pelvis by slight adhesions. Reflex gastric symptoms for four years.	Removal of left tube and ovary and tumor. Cyst broke while being removed. Filled with clear fluid.	1st Day, 100.4° 2d " 101.4° 3d " 101.4° 4th " 100.4°	No.	No.	R	January 5, '92—Cervix repaired. Cyst discovered at this time, patient being under ether.

The following associated conditions may be noted:

Retroversion (rectified in each case by hysterorrhaphy)	6
Vesical calculi.....	1
Parovarian cyst.....	1
Ventral hernia following operation.....	2

Of the twenty-five cases, there were two deaths, one of these, case No. 8, had suffered for a year with absorption of pus from an abscess in the neighborhood of the appendix. The operation was undertaken as a last resort, the friends being warned that the case was desperate and her chances of recovery poor. The whole pelvis was a mass of adhesions and the pelvic organs almost indistinguishable. An abscess in the region of the appendix was opened but it was found impossible to remove the sac containing the pus, and the patient died of sepsis and exhaustion on the third day after the operation.

The second case, No. 21, was also in a weak condition from septic absorption at the time of the operation. She entered the hospital with acute pelvic peritonitis from double pyosalpinx and abscess of both ovaries. At entrance she was delirious, with a high temperature and frequent chills. Unsuccessful attempts were made to improve her condition before the operation, which was undertaken as a last resort, at the earnest solicitation of the patient's friends. Both ovaries and tubes were enucleated from the mass of dense adhesions binding them to the adjacent organs, but the patient proved too weak to stand the shock of the operation and died within twenty-four hours. The remaining twenty-three cases recovered.

Under the heading "Indications for Operation" have been noted, first: the macroscopical appearances of the diseased organs; second, and most important to the patients, the main subjective symptoms of the disease.

Naturally, the greatest interest attaches itself to the cases of oöphorectomy, since numerically they comprise over two-thirds of the entire number of cases.

In chronic disease of the appendages, four things may well be considered:

1. The extent and chronicity of the disease.
2. The probability of its being cured by other than surgical means.

3. The chances of immediate recovery from the operation.
4. The chances of ultimate recovery.

The surgeon must judge each case separately, and neither ignore nor give undue weight to the warnings of a certain class of self-styled medical gynæcologists, who seem to think that the gynæcologist who uses a knife for the relief of his patient's sufferings is necessarily devoid of conscience, and is simply seeking to increase the number of his operations, irrespective of the welfare of his patients. The operation may have been abused in times past, and may be performed now when the conditions present hardly justify it, but this does not afford ground for its wholesale condemnation. This opposition to the operation has undoubtedly been of value in checking the too hasty resort to the knife, but while this may be true and the reaction necessary to determine the exact position of the operation in surgery, the end is only prolonged by unjust denunciation of the procedure. No one, who has watched cases drag along month after month under local treatment and after partial improvement relapse again from some slight cause, can help being struck by the difference where these same cases are treated surgically. It is difficult, indeed, to be convinced, when one sees his patients restored to health in a very few months after the operation, that unjustifiable means have been employed to bring about this result.

Our patients surely have certain rights of choice. The majority of American women cannot and do not lead lives of idleness. If, then, a working woman, suffering for years with disease of the appendages, prefers the chances of recovery minus those organs to a long drawn-out course of local treatment, with no surety of success in the end, the surgeon is bound to consider and respect her wishes. If the organs are diseased and the circumstances of the case demand their removal, no sentimentality about the "unsexing of women" should stay his hand.

The main difficulty lies in the ability to determine what cases can be cured finally without resort to the knife, and not to prolong the sufferings of those who must eventually submit to an operation in order to obtain relief.

The dangers of the operation with a good technique are small, and the chances of ultimate recovery are, to say the least, as good as by the treatment with electricity, tampons, massage, etc., and the patient is saved many months of suffering, and is not so liable to relapse.

In none of the eighteen cases, fourteen of double and four of single oöphorectomy, was an operation advised without a careful consideration of all the conditions present. In a majority of cases, local treatment in the way of hot douches, glycerine tampons, intra-uterine applications and, in some cases, electricity, had been given a fair trial and had failed to give relief.

The tubes in nearly all the cases were enlarged and showed evidences of catarrhal salpingitis. The ovaries, except in a few, where they were small and cirrhotic, were enlarged, prolapsed, and in varying degrees of cystic degeneration. The removed organs have been preserved in alcohol, and the microscopical appearances will be noted at some future time.

The permanent results bid fair to be very satisfactory, although hardly a sufficient time has elapsed since the more recent operations to speak too confidently. In every case except No. 10, they report themselves as much improved in every way. In a few instances, the pelvic pain has not entirely disappeared, but it is much less than before the operations, and is gradually decreasing.

Case 10 is a bitter disappointment, both to the patient and operator. She was formerly a servant, but for four years prior to the operation had been unable to work, and was dependent upon charity. A thorough course of local treatment, including galvanism, proving unavailing, an operation was advised and eagerly accepted. The ovaries, which were as large as small hen's eggs and markedly cystic, were removed. A somewhat protracted but otherwise uninterrupted convalescence ensued, but at the present writing, nearly a year after the operation, there has been but little improvement in her condition. She is still unable to resume her occupation and the pelvic pain still persists. It is possible that these pains will diminish, if not entirely cease, in time, for it is to be noticed among the results of the operation, that in some cases improvement may be

delayed as long as two years, and eventually immunity from suffering supervene. On the other hand, she may be one of those unfortunate cases, happily a small majority, where no improvement is met with.

Menstruation has ceased in all the cases, seventeen in number, where both ovaries and tubes were removed. This does not seem to coincide with the results reported by other operators, who find that menstruation persists in fourteen per cent. of all cases where both ovaries and tubes have been removed. Possibly the fact that we were very careful to remove every particle of the ovarian tissue may afford some explanation of our results, although, of course, the number of cases is too small and the time since the operations too short to draw any very general deductions.

In the six cases where retroversion existed as a complication, the uterus was replaced and suspended from the abdominal wall by passing a large sized catgut ligature around each ovarian ligament, then through the peritoneum, muscles, and fascia. The needle was then passed through the same tissues in the reverse order and the free ends tied within the abdominal cavity. The anterior surface of the fundus was always slightly scarified before the abdominal wound was closed. These six cases have been recently examined, and in every instance the uterus is in good position. While it is impossible to predict as to relapses, up to the present time the results have proved most gratifying.

Case 5 presents some points of unusual interest. For some weeks previous to the birth of her second child the patient showed evidences of disease of the pelvis of the right kidney, caused in all probability by pressure of the foetal head upon the right ureter. Fever, chills, and sweating were present and also intense pain, spasmodic in character, along the course of the ureter. An examination of the urine showed large quantities of pus and epithelial cells from the pelvis of the kidney. The symptoms persisted after the confinement and in addition there was abdominal distention and pain. An examination under ether showed the uterus and appendages normal, but in view of the abdominal symptoms an exploratory lapar-

otomy was deemed advisable. The intestines were found greatly distended with gas and deeply injected. The mesenteric glands were enlarged to the size of hickory nuts. No enlargement of the right ureter was found. The fever and chills ceased after the operation and the amount of pus in the urine diminished. The stitches were removed on the eighth day, and in the evening a sudden attack of vomiting burst open the wound, through which the bowels were forced. Acute peritonitis supervened, but was aborted by thoroughly washing out the abdominal cavity with hot sterilized water. A drainage tube was inserted and the abdominal wound reclosed. Although the patient was *in extremis* at the time of the second operation, she made an excellent recovery. The enlargement of the mesenteric glands would point strongly towards tuberculosis, but the patient is now in good health, except for occasional attacks of pain in the right side. The pus has never entirely disappeared from the urine, and a microscopical examination shows that the pelvis of the kidney is still diseased.

Case 12 is interesting from the fact that twenty vesical calculi were removed by means of a vesico-vaginal incision. The latter healed by first intention, the urine being voided naturally after the first two days.

The gross appearances of the tumor in Case 22 indicated hæmato-salpinx, although the history strongly pointed to extra-uterine pregnancy. The left tube was dilated to the size of an orange by thick clotted blood. The adhesions binding it to the rectum were easily detached and the tumor removed entire.

A study of the temperature curves in abdominal cases is always profitable. Any errors of omission in the technique of the operation will be indicated by an increase of the body temperature. Drs. Robb and Ghiskey, of Baltimore, in a recent article, have shown the impossibility of making wounds entirely free from bacteria. But while some forms are comparatively harmless and their presence can be practically ignored, other forms are productive of much mischief, and a rise of temperature is always an accompaniment. Hence, it behooves the operator to carefully follow his temperature curves, both singly and col-

lectively, and if, in a series of cases, the rise is above what may be considered normal he should look to his technique for a cause and change it accordingly.

This we are constantly doing, for we consider that ten out of twenty-five cases is by far too small a proportion of normal temperatures, considering the absence of complications. Besides the ten cases where the temperature did not reach 100° , there were eight where it never reached the 101° mark. In the remaining seven cases, it went beyond this point.

In connection with the subject of temperature curves, it is advisable to consider the question of drainage, and it would seem as if here were an explanation of our failure to secure more normal temperatures.

Drainage was employed in but two cases, and then only because of their intensely septic nature. We have depended, and in our opinion in many cases with too much confidence, upon the absorptive power of the peritoneum to carry away the blood and serum poured forth after an operation. While this can safely be done in many cases, where no adhesions have existed, in other cases the risk that is run in overtaxing the peritoneum is shown by a rise of temperature and an increase in the pulse rate. Hence, the difficulty of deciding which cases can be safely left undrained leads us to use the drainage tube more, rather than less, frequently.

There is no one mode of procedure in cases of abdominal section which affords so much opportunity for the exercise of good judgment as the use of the drainage tube. While improvements in the method of caring for the tube have, to a great extent, done away with its dangers, it must necessarily always be a cause of anxiety, on account of its affording a direct communication between the external atmosphere and the peritoneal cavity.

It is because of this danger of sepsis that many operators go so far as to say that no case should be drained. This surely would seem an extravagant position to assume upon the question.

Whenever pus is met with in the abdominal cavity, it is safe to drain.

Moreover, while the normal peritoneum may be able to dispose of the blood and serum within the abdomen, its absorptive powers may be so seriously impaired by chronic inflammation, that it will, in its crippled condition, be unable to perform this function. Hence, a drainage tube should always be employed in the presence of adhesions.

Drainage may also prove of great value where the skin and kidneys are unable, for any reason, to perform their functions, by markedly lessening their labors. Hence, the necessity of a careful examination of the urine and a painstaking preparation of the patient before an operation.

The care of the drainage tube should never be left to any except trained assistants. Otherwise the introduction of septic material becomes inevitable, and the drainage tube will be unjustly held responsible for failures which should have been ascribed, not to its use, but to the lack of care in its employment.

The danger would seem to lie in drawing too hasty conclusions from a succession of cases where the tube could be dispensed with, and neglecting to drain the next case, where it is urgently called for. At least, such has been our experience, for a dread of using the drainage tube undoubtedly caused us to jeopardize the life of a patient in a more recent case, where the outcome showed conclusively that drainage was imperatively demanded.

There were stitch-hole abscesses in but four of the twenty-five cases. Three of these occur among the first seven cases, where silk was used to suture the abdominal wound. In the remaining eighteen cases, sterilized silkworm gut was used. Only one stitch-hole abscess occurred, Case 12, and here the infection can be ascribed not to the stitches, but to the contamination of the wound by the contents of a suppurating ovarian cyst.

Silkworm gut is an ideal suture, for it is easily sterilized, pliable, and non-absorptive. It is our custom to use this suture everywhere, except within the abdominal cavity.

The abdominal sutures are passed two or three to the inch through the skin, subcutaneous tissue, fascia, muscles, and

peritoneum, and reversing this order, through the other side. Great care is taken to see that the retracted fascia is drawn towards the central line before the sutures are passed. Neither the peritoneum nor the fascia are stitched separately, the single suture, with the precautions noted above, apparently accomplishing a strong union of the parts.

Two hernias have resulted, Cases 6 and 7. In both of these the wound suppurated. Case 7 subsequently re-entered the hospital and the hernia was operated upon by Edebohl's method, the object of which is to unite the split muscles without opening the peritoneal cavity. The wound healed by first intention, and the patient is now perfectly well.

The abdominal wound, before the dressings are applied, is covered with a thick layer of powder of iodoform and boracic acid, (1-7). This is not used because of its antiseptic, but because of its dessicative properties. The firm crust thus formed over the stitches effectually protects the wound from the invasion of any extraneous material. Over this is placed a layer of sterilized gauze and sterilized absorbent cotton. The entire dressing is held in place by a sterilized gauze spica bandage, which remains undisturbed until the seventh day, when the stitches are removed.

Nothing is administered by mouth for the first twenty-four hours, except occasional sips of hot water. The bowels are moved on the second day by repeated doses of Epsom salts, when the stomach can retain them, or, if this be impossible, by repeated small doses of calomel, followed in a few hours by a turpentine enema.

We have had to learn the lesson of the bad effects following the use of opiates for the relief of pain during the first twenty-four or thirty-six hours succeeding the operation. In one or two instances, obstinate paralysis of the bowels ensued. More recently it has been dispensed with entirely, and dependence is placed upon hot applications and hot vaginal douches, for the relief of the pain. The patients are allowed to lie upon either side at will, and this simple procedure goes far towards diminishing the pain.

They are permitted to sit up during the third, but not to walk until the fourth week. They are also required to wear an abdominal bandage for six months, precautions seemingly necessary on account of the possible occurrence of hernia.

