c cocci also occurred in three of the five successful cases, it was not considered warrantable to attribute the fat necrosis exclusively to the action of the fat-splitting ferment of the pancreas.

In order to ascertain whether or not the result was sensibly affected by the action of bacteria, operations of the same sort had since been made upon three other cats, with the addition that in two of them the surface of the pancreas was smeared with a quantity of a fresh culture on agar of the staphylococcus pyogenes aureus, and in the third of the streptococcus pyogenes. In all three animals fat necrosis and pancreatitis ensued. In one of the fat necrosis was trifling in amount; in the other two it was present to a marked degree, although the post-mortem was performed upon one animal only twenty-four hours after the operation. These experiments yielded, therefore, a larger percentage of positive results than those in which bacteria were not added. However, their number was too small to allow far-reaching conclusions to be made, nor did continued research along these lines seem likely to settle the point in doubt.

In the article already mentioned an account was given of an experiment in which a large piece of pancreas was introduced into the abdominal cavity, resulting in accidental infection, and showing the great difficulty in culturing bacteria lying in the way of securing conditions of sterility by that plan of procedure.

It was next attempted, therefore, to introduce portions of fresh pancreas into the subcutaneous adipose tissues of cats. Numerous efforts to demonstrate bacteria in the freshly excised, healthy cat's pancreas placed on agar in the incubator found it sterile in every instance. Owing to the instability of the fat-splitting ferment, and the dangers of contamination, it was considered best to employ the substance of the pancreas itself, rather than an extract. Using every precaution to ensure sterility, pieces of cat's pancreas two to four millimetres in diameter were placed directly in the subcutaneous adipose tissues through small incisions in the skin. Bits of sterile black silk were introduced with the pancreas to mark the spot. The incisions were closed with sutures and collodion. The inguinal regions and a point a little below the sternum were the situations selected. This plan was employed in seven places upon four cats. Suppuration always occurred in from four to five days, and the results, as far as fat necrosis was concerned, were negative or indecisive, though it appeared to have occurred in some instances. Cultures were not made from the abscesses, but it was evident that they proceeded from infection. It was impossible to determine how far the alterations in the tissues were to be attributed to bacteria and how far to the working of the pancreatic ferment.

In order to observe the effect of perfectly sterile pancreas upon the adipose tissues, the following technique was devised: A cannula made of glass tubing was sterilized in a Potri dish, and a piece of freshly excised cat's pancreas one to two millimetres in diameter was placed in the large end of the cannula with a bit of sterile black silk. It was forced along to the small end with a stiff platinum wire. The skin of the cat to be operated upon, which was also anesthetized, having been shaved, cleaned and rendered aseptic as far as possible, a small incision was made through it. The adipose tissues underlying it were nicked with a knife. The small end of the cannula was then forced into the adipose tissue three or four centimetres. The pancreas and bit of silk were pushed out of the cannula by the wire, depositing them in the desired locality, when the cannula was withdrawn. The surface was closed with one or two sutures, and covered with collodion.

The success of this plan was very gratifying. In seventeen experiments made according to it upon nine animals, eleven were successful in avoiding infection, two were doubtful in that respect, while infection occurred with certainty but four times. The piece of black silk served admirably to identify the point of introduction. In each of the experiments the result was tested for by an inoculation made on agar from this point. Alterations in the fat cell similar to those seen in fat necrosis, and described in the article above mentioned, were detected in the region where the pancreas was introduced in six of the eleven cases where infection was avoided, as well as in the two that were regarded as doubtful. The same alterations were observed in some of those where suppuration took place, but it seemed best to discard these results entirely. It appears probable, therefore, that some substance contained in the tissues of the pancreas, doubtless the fat-splitting ferment, is capable of producing changes in fat cells similar to those seen in fat necrosis.

It is the writer's intention to publish hereafter a detailed account of these experiments, and a more minute description of the changes produced in the adipose tissues.

Clinical Department.

REPORT OF FOUR CASES OF HYSTERECTOMY FOR FIBROIDS.¹

BY SARAH E. PALMER, M.D.,
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Fibroid tumors of the uterus are composed of increased growth of the fibrous and muscular structure of the organ. The tumor, then, consists of a variable quantity of fibrous and muscular tissues derived from the parenchyma of the uterus.

The tumor may become cystic. It may degenerate and become calcareous, as in the case reported by Dr. M. L. Harris, calcified uterine fibroid removed from woman of seventy years, in whom it had been known to exist forty years. The weight of opinion is that fibroids do not become malignant, although malignant growths may be associated.

They may be of any size and the symptoms caused by the neoplasm is not dependent upon the size, but rather on the position. All growths are probably at first interstitial, and then pushed in one direction or the other. The course is usually quiet, but progressive, though rarely rapid and fatal.

The cause of danger then is found in the relation to the other structures rather than in the nature of the growth itself. Hemorrhage, so often and commonly the most serious symptom, is caused by the increased growth of the uterine mucosa, due to the presence of the fibroid. It is always to be remembered that the initial hemorrhage may be nearly fatal, as in the case shown to-night.

Pressure on the ureters and a general disturbance

¹ Read before the Suffolk District Medical Society, December 22, 1887.
of abdominal circulation may cause nephritis, and correspondingly increased vascular pressure result in heart lesion. Hofmeier, in 1884, collected 18 cases of sudden death from heart failure, due to fibroids. Pressure on neighboring organs often causes functional disturbance. For instance, on the bladder, causing difficulty of urination; on the rectum, constipation, often obstinately.

Pregnancy may exist in a fibroid uterus and present a variable course. Premature delivery is sometimes caused by irritation, or the tumor may be lifted out of the pelvis and give very little discomfort. There may or may not be mechanical interference of labor. Tumor may disappear after delivery, as in four cases reported by Dr. Balere in 1896. Or the growth may be stimulated, or it may slough from pressure and cause death from septic absorption, as in a series of cases recently reported with death from septicemia after labor, from sloughing fibroids.

At the menopause the neoplasm often undergoes atrophy, but it may increase in growth and long defer the climacteric.

Many cases of fibro-myoma are undiscovered until the autopsy after death from some other cause. Others give rise to no symptoms and are discovered accidentally. Still others cause serious and sometimes fatal results.

Treatment may be divided into medical and surgical. Under medical, use of astringents to check hemorrhage and of hydrastis and ergot to stimulate contraction, in the hope of causing absorption or expulsion through the cervix and vagina. Of late, experiments have been made with the thyroid gland with not very flattering results. Ergot or its derivatives, given hypodermically or by the mouth, is the drug which has given most encouraging results. The electrical treatment has been of varying kinds. The best known is the method developed and so successfully carried on by Apostoli, of Paris, which in hemorraghic cases has often done good service, but the ultimate results in decreasing the size and causing the disappearance of the tumor have not fulfilled the early promise.

Under surgical measures we have both conservative and radical. Under conservative operations tying the uterine arteries, decreasing the blood supply. The results are, however, uncertain. Goelet has reported some successful cases without incident. The failures, however, are estimated at 10 per cent., and the operation is open to the danger of injury to the ureters, hemorrhage and shock. Vineburg reports sloughing of the cervix in three cases with increased growth and hysterectomy ultimately.

Salpingo-oophorectomy to artificially hasten the menopause and by lessen the nervous stimulus to check the growth.

Myomectomy originated by Martin of enucleating the tumors through the vagina by morcellation, or by the abdominal route.

Hysterectomy, vaginal or abdominal, is resorted to in those cases in which the more conservative methods of treatment, medical or operative, are inapplicable.

Of late the wider knowledge of the role of microorganisms in disease and the practical application of the knowledge in improved methods to promote aseptic conditions has greatly lowered the mortality. In 1891, Pozzi gives a mortality of over 21.2 per cent. Keith with a mortality of 8 per cent., yet considered it too large to justify operation, except in extreme cases.

The social state undoubtedly largely affects the question of operation, as in Case II, where a patient was unable to make her living.

The following reports comprise a series of four successive cases of abdominal hysterectomy, all recovered and the three working women are able to resume their occupations in comfort.

All the cases were prepared, with the exception of the fourth, an emergency case, with a surgical bath on the night preceding the operation, a soap poultice over the abdomen, after a thorough scrubbing, a second scrubbing with sterile water, alcohol and corrosive followed by a corrosive pad until the time of operation. The bowels had been thoroughly moved two days preceding and kept liquid. The bowel was irrigated the night preceding and the morning of the operation. No food, save a cup of black coffee, was given for eight hours preceding. One ounce of whiskey by the rectum and one-hundredth of a grain of atropia under the skin one-half hour before the administration of ether.

Ether was the anesthetic, and a quart of normal salt solution was given by the rectum before the patient was returned to bed. The vagina was thoroughly disinfected. In all cases the cervix was left, canal cauterized from above, and the stump closed over with catgut, the peritoneum being closed over that, after the manner suggested by Goffe, making the stump extra-peritoneal. Catgut was the suture material employed and silver wire for the fascia. Wound was closed in layers, the skin by buried suture, fascia by buried silver wire.

The catgut, obtained from Baltimore, was prepared by the method of Dr. F. W. Johnson, soaked in ether for one week, in absolute alcohol for twenty-four hours, stretched and cut in thirty-inch pieces, wound in coil, folded in paraffine paper, baked in dry oven at 60° C., one hour, and the next day at 180° C. for one hour and 140° C. for three hours, and examined by Dr. E. A. Darling, of Harvard bacteriological laboratory, and found sterile.

Case I. R. N., married, forty years of age. Complains of bearing down, of pain in back and side; dysmenorrhea followed by weakness, amounting of late to prostration. Patient is extremely nervous, and on examination had hysterical convulsions. She had married at seventeen; four children; no miscarriage. Menstruation established at sixteen, regular and painful.

Physical examination showed complete laceration of the perineum through the spinchter ani into the rectum. Uterus enlarged, fibroid in posterior wall adhered to rectum, and acts as a ball-valve closing the lower bowel. Patient entered the hospital April 19, 1896, prepared for operation after the manner indicated above. Vagina cleansed and cervix closed with silk.

Operation, April 21st. The fibroid uterus torn out of the adhesions to the rectum; ovarian arteries tied on either side; broad ligaments cut and clamped down to the uterine artery, which was tied; bladder separated in the front; uteros separated from the cervix about the vaginal junction; canal seared with thermocautery; cervix sewed over; broad ligament on left side closed with a whip-stitch; peritoneum brought together over the cervix, extending up in the same manner over the nut side.

The patient stood the operation very well; cordelia (one and one-half grains) given for pain, and repeated...
in two hours; strychnia (one twenty-fifth grain) every two hours for four doses.

Convalescence complicated by great difficulty in feeding. The thought of milk, or indeed any form of liquid food, was abhorrent to her. On the second day patient seemed likely to fall from starvation; nourished through the rectum, which was somewhat difficult because of the lacerated sphincter. She told me at this time she thought she would go home, by she liked the cabbage and beef so much better than the milk they gave her. Nervous and slept poorly. At the end of a week temperature rose to 103°, pulse 120; and staid three days, evidently from the silk used in the vagina.

Discharged May 18th, well.

July 14th she came in, free from her nervous disturbance, and begged me to take her to hospital for repair of the sphincter ani, which I did, July 24th, by Tait's method with perfect result.

This patient I have seen to day in splendid condition, free from her old symptoms.

CASE II. J. Q., thirty-nine, widow for fourteen years. Menstruation always profuse; has increased during the past nine months, accompanied by severe pain in the left side, recurring at intervals of two or three weeks; lasts about a week. The profuse flow and accompanying pain has kept her in bed much of the time. She has, therefore, been obliged to give up her occupation of detective in one of the large stores. Patient was strong in early life. Menstruation at first regular. Married at twenty-four; husband died in nine months. Five years ago had severe hemorrhage.

Physical examination showed the uterus irregularly enlarged, hard, drawn to the left side. Diagnosis, fibroid with adhesions.

Operation, December 21, 1896, assisted by Dr. Grace Walcott. Uterus with two interstitial fibroids. Operated as before, with the exception of the silk in the vagina. Recovery uneventful. Patient discharged well at the end of three weeks. She came to the office this week in perfect health.

CASE III. M. E. P., single, forty-seven; works in a straw factory. Patient complains of pain in the left groin and back, of constipation, of frequent and painful urination; appetite capricious; marked mental depression. Menstruation established at sixteen; somewhat too frequent and profuse from the first. For the past few years, interval between the flow, of two or three weeks. Flow very profuse, and accompanied by discomfort rather than pain. Father died at thirty-four, from typhoid fever; mother at sixty-four, from cancer.

Patient entered the Deaconess Hospital, May 30th, and the operation was done two days later.

Physical examination showed tumor and uterus in one mass about the size of a child's head.

Slight edema of feet and legs reported when patient was at work; none noticed at the time of examination. Examination of urine negative.

Hysterectomy was done as in Case II, assisted by Dr. F. W. Johnson. Patient did well for a few days; then a slight rise of temperature. Wound was examined, and found to have suppurated superficially. However, she made a fine recovery. After a long investigation by the superintendent of nurses and myself, it was proved with little question that the towels supplied had been used in a case of mastoid abscess and had not been thoroughly boiled. The Arnold sterilizer was used, and, as is well known, the heat and pressure is not sufficient to kill germs already present. The trouble began superficially; the towels were freely used about the wound. Patient reports at the office this week in fine condition. Returned to her work in the straw-shop, and says that the awful depression of her mind has gone, and that she no longer wants to die.

The occultor finds that she can dispense with distance glasses, from the improved muscular condition of the eye. Two of the silver stitches have come out this past month.

CASE IV. L. H., single, twenty-six, feather-curler by trade. With the exception of infantile paralysis, which left her very lame, patient was well until 1893. Menstruation established at fourteen. Regular and not profuse at first. In 1893, when twenty-three years of age, the flow became irregular. Through that year the history was of amenorrhea of two or three months, each time followed by profuse flow. She came to the dispensary, and a fibroid tumor about the size of a three months' pregnancy was found. She improved somewhat under medical treatment. In August of 1894, hemorrhage from the uterus; curare used under ether, and afterward, in absence of the author from the city, she was put in the care of another doctor. All palliative measures failing, she was sent to the New England Hospital, and salpingo-oophorectomy performed. Patient was thought too weak for a more radical operation.

The tumor seemed to decrease somewhat in size after this; but the result was as before; amenorrhea for two or three months, followed by profuse flow. Called to see her in December, 1896. Flow amounted to hemorrhage. Curtetting under ether. Patient too far exhausted to be moved or bear further interference. No flow for fourteen weeks, save a slight discharge. She rapidly gained health, strength and flesh.

May 21st, the flow began again; and, contrary to advice, she waited for hemorrhage before sending. Was removed at once to the Deaconess Hospital.

Admitted to the hospital May 28th. Temperature 99°; pulse 88. Loud anemic murmurs over base of heart. Next morning pulse had increased to 104, and temperature to 101°. Flow continued in spite of palliative measures, and patient was now exsanguinated. Immediate hysterectomy decided upon, in view of her past history. During the operation patient's pulse was very rapid and weak; she was kept alive with strychnia and digitals and other stimulants; (four quarts of normal salt solution was given into the tissues). Uterus and tumor delivered with difficulty on account of former operation which had shortened pelvic ligaments and formed adhesions. The omentum was especially troublesome, large vessels were tied off. Bladder—adhered in a very curious manner—high upon the tumor, the right side extending up on to the broad ligament. At the sides and in the ligament a largeplexus of veins above the uterine artery showed a condition in which it would have proved very difficult to control hemorrhage by the vaginal route.

Operation as before, assisted by Dr. Clara Alexander.

Convalescence was complicated by an irritable stomach, and a profuse watery discharge from the vagina, of which Baldy speaks in some of his cases. Six; however, went home June 17th, three weeks after the operation. Is now well and able to work nights as never before since the first symptoms, in 1893.
The writer would not be understood to advise hysterectomy where myomeotomy is applicable.

In the cases reported the relation of the uterus to the growths was such that hysterectomy seemed the wiser course, with less shock to the patient.

In all the cases an earlier operation would have conserved both time and strength. In all, great improvement in the nervous condition is marked.

Of late the writer has modified the closing of wounds, using silkworm-gut and the Noble stitch for the fascia, the muscle being united by interrupted catgut, the fat and skin by through-and-through silkworm-gut.

CASAREAN SECTION.1

BY THEODORE C. HIRN, M.D.,
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The spirit of the obstetrician to day is conservative. His duty is to serve the mother and patient and to save and not destroy fetal life. Craniotomy upon the living fetus is in direct violation of all principles of surgery, unjustifiable from any standpoint whatever. The craniotomist in a case where the mother’s pelvis does not permit the child’s birth in the natural way defends his position by saying, “If craniotomy is not performed both mother and child must die, while if this operation be done on the fetus, the mother at least will survive.” But a living fetus need not be sacrificed, for a Casarean section comes to its rescue. The field of operation for embryotomy cannot be rendered fully aseptic and should incidental lacerations of tissues occur, which are very likely in a diminished paruterial canal, we may have sepsis, peritonitis, salpingitis, ovaritis, etc., not knowing whether the mother’s life is to be ended by one or all of these together. The defenseless fetus in utero has rights which must be respected and the wilful and premeditated destruction of the child’s life has long ago ceased to be a justifiable procedure. Aseptic surgery and an improved operative technique have established the Casarean section as a rational and scientific procedure. I will briefly mention a case.

Mrs. G., thirty-eight years of age, seventh pregnancy, was sent to the St. J. J. Cronin. She had been in labor about thirty hours, the membranes having ruptured spontaneously nearly twenty-four hours before. The os was nearly fully dilated; position of fetus, O. L. A., and fetal heart 140 per minute.

The history of former pregnancies was as follows: At the first delivery the child was born dead. The second and third children were delivered alive. The remaining three pregnancies all resulted in the death of the children during the delivery. Forceps or version were done each time at five of the deliveries and once embryotomy. All six confinement occurred in Philadelphia.

Measurement of pelvis showed the distance between the anterior superior spines to be 9 inches; crests, 10 inches; external conjugate, 7 inches; and conjugate vera, about 2½ inches.

Full surgical anesthesia was given, and dilatation of the os completed. The occiput had not fully engaged, and forceps with axis traction were applied three times, each time slipping, and once tearing the cervix slightly. Version was not tried because of the dry uterus and justo-minor pelvis.

Taking into consideration the existing conditions with the child’s head at the brim of a small pelvis, with a conjugate vera of about three inches, the performance of Casarean section offered the best chance for the life of the mother and the only chance for the preservation of the life of the child. There was a chance of non-union and perhaps the addition of forceps or version were symphysisotomy tried. Just before patient was prepared for the laparotomy the fetal heart was found to have increased to 176. The patient was antiseptically prepared for the operation. Vagina was washed with soap and water and doused with solution corrosive sublimate, 1 to 3,000. The abdominal wall was scrubbed with green soap and water, followed by permanganate and oxalic solutions, corrosive 1 to 1,000, ether and absolute alcohol.

The incision, about four inches long in the median line, between umbilicus and pubes, was enlarged upwards to allow removal of uterus from the abdominal cavity. The placenta was located on right of median line. A rubber ligature was placed about cervix ready to draw taut should the hemorrhage become uncontrollable. The incision in the uterus came over the child’s back and admitted easy extraction of the child. The cord was immediately tied, and the child was handed to Dr. H. J. Keenan, for resuscitation. After removal of placenta, the uterus immediately contracted. About three or four ounces of blood were lost. A subcutaneous injection of ergotin (two grains) was given. A vaginal laceration was produced in the right lateral cul-de-sac of sufficient size to exhibit a full view of the os when the fundus was tilted backwards. This rent was immediately sutured with kangaroo tenon. Two layers of kangaroo-tenon sutures were placed in the uterus, and the abdominal wall closed with silkworm-gut. Time of operation about thirty-two minutes. Maternal pulse 120. Salt solution was given by rectum.

Dr. Cronin said the temperature ranged from 100° to 103.5° during first few days following operation. The pulse never rose above 120. Considerable detention accompanied this; but after a few doses of saturated solution of epsom salts, it disappeared, and the patient made a good recovery in four weeks. The child, a female, weighed eight and a half pounds, and showed one forceps mark on her head, which soon disappeared.

The patient was etherized by Dr. T. J. Reardon, and Dr. J. B. Lyons assisted during the operation.

Casarean section was first done on the living mother about 1498. In the earliest cases the uterine wound was not closed because the contractions and retractions were thought to tear out the stitches. It was in this century that sutures were introduced, but the death-rate remained high until Porro, in 1876, introduced his method of amputating the uterus and including the stump in the abdominal suture. The greatest advance was made in 1882, by Si-nger, of Leipsic. He introduced a strict aseptic technique, closure of the uterine wound by a largely increased number of interrupted sutures to get early union of periloneal surfaces, and lastly, deliberation in selecting the operation of abdominal section for the case in hand and before onset of labor, and the performance of the operation before the patient’s strength had been exhausted by repeated examinations or vain attempts to deliver by forceps or version.

In elective cases it is better to perform the section

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1 Read before the Suffolk District Medical Society, Dec. 22, 1897.