develops an enormous amount of complement—in fact much more than would an equal amount of blood—probably because of the increased number of leukocytes, the probable source of complement.

It should be stated here that complement will develop at quite low temperatures, but that the activity of human amboceptor and complement is much reduced at a temperature of 23 C. (73 F.) or less. Thus the very process it is desired to favor may be materially interfered with by too much cold.

We seem to have herein an explanation for the good derived from cold applications to inflammations, even to the effect of high and incidentally cool climates in tuberculosis of the lungs. The temperature of the diseased foci is lowered by the constant inhalation of cold air.

The possibilities along the lines suggested are so great and the work necessary for the evolution of technic adapted to each of the many problems, both cultural and therapeutic, that will be suggested from time to time and in which this theory plays a part so extensive that one worker will be unable to do any considerable line of experimentation and confirm or contradict the opinions here expressed.

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ABSENCE OF APPENDIX

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History.—Miss N., aged 22, has for the past three years suffered from attacks of nausea after meals with occasional vomiting spells; at times the nausea has existed irrespective of the ingestion of food. Associated with this condition she has had epigastric pain and obstinate constipation. Menstruation has been painful since its inception. She has been treated for the above conditions by several able physicians who have tried all the usual antidyseptic remedies without avail. Symptoms and signs included slight epigastric pain on deep pressure; distinct pain over the region of the appendix on pressure. A diagnosis of chronic appendicitis with epigastric symptoms and constipation preponderating.

Operation.—Numerous adhesions in the region of the caput cecum were at once encountered, i. e., between the cecum, colon, and right lateral parietal peritoneum; between the small intestine and the large bowel, especially in the region of the ileocecal juncture. These adhesions extended well up the ascending colon; they were freely broken down, necessitating suture of the intestinal peritoneum at several points. The anterior band of the colon was followed to the usual seat of the appendix, but no appendix was found. The case was thought to be one of unusual location of the organ, or of adhesions hiding it; the search was therefore continued in a most sweeping way. The mesocolon was split, and the retrocolonic space searched for a distance of 4 inches above the caput cecum; the ascending colon and the transverse colon were followed as far as the splenic flexure, the sigmoid flexure was examined, and still no sign of an appendix; there were no diverticula; the right tube and ovary were involved in the adhesions. An hour had passed, and since it was felt that the search had been a complete one, the wound was closed.

For years I have taught that the failure to find the appendix was the fault of the operator, and that a careful search, backed by anatomic knowledge and experience, would in all cases discover it. I still hold that, in the very large majority of cases, this is true. I am constrained to admit that, in this case, however, after many hundreds of operations, I have met with an actual case of congenital absence of the appendix vermiformis.

During the operation I had in mind the possibility of the organ being obliterated by former inflammation causing a fibroid degeneration, and its place taken by cicatricial tissue, a condition sometimes called fibrosis; of this there was no evidence. The operation, to date, has relieved the patient of all of her symptoms. This is no doubt due to the relief of the drag of the adhesions caused by an old perityphlitis.

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STRANGULATED PEDUNCULATED SUB-SEROUS FIBROID COMPLICATING PREGNANCY AT FOUR AND ONE-HALF MONTHS

OPERATION, RECOVERY WITH DELIVERY OF CHILD AT TERM *

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The coexistence of fibroids of the uterus and pregnancy was formerly considered to be a rarity. By some, the occurrence of fibroids was thought to be an expression of disappointed destiny on the part of the uterus, a morbid activity of a functionally inactive organ. Again, the sterility was looked on as the result of the presence of the fibroids. One author, Carstens,¹ explains the early sterility and late impregnation as being due to a correction of a malposition of the uterus by the developing fibroids, thus allowing conception to take place. The coexistence of these two conditions, fibroids and pregnancy, is not so rare as was formerly supposed, as one finds quite an abundance of these cases reported in the past few years. So, that while functionally inactive uteri may have a greater tendency to fibroid development it would seem that the presence of the fibroid, unless it be of the submucous variety, is not, *per se*, antagonistic to the occurrence of conception. C. P. Noble² in an exhaustive article on the complications and degenerations of fibroids with a review of some 7,000 cases, refers to the effect of pregnancy and labor on the tumors, and the possibility of such accidents as "twisted pedicle, necrosis and infection of the tumor," occurring. Mann³ reports ten cases of pregnancy associated with fibroid and quotes Pinard's report in 1905, of eighty-four fibroids in 13,917 labors and Stratz's report from Schroeder's clinic of 20,000 cases of pregnancy in which there were twelve operated on because of fibroid complication.

In discussing the accidents which might occur in a case of pregnancy and fibroid, Mann says:

Three conditions must be differentiated: bursting of a pus tube, necrosis of a tumor and twisting of a pedicle. Necrosis generally occurs post abortum or post partum, but occasionally is met with in pregnancy. Twisting of a pedicle of a fibroid is certainly rare and must be extremely so in connection with pregnancy. I have met with two cases of twisting of the pedicle of the fibroid but in neither case was pregnancy possible.

* Read in the Section on Obstetrics and Gynecology of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

1. Carstens, J. H.: Fibroid Tumors Complicating Pregnancy. A Short History and Report of All Recorded Cases up to January, 1908, *Am. Jour. Obst.*, March, 1909.

2. Noble, C. P.: Fibroid Tumors of the Uterus, *THE JOURNAL* A. M. A., Dec. 8, 1906, p. 1881.

3. Mann, M. D.: Fibroid Tumors of the Uterus in Pregnancy, Labor and Puerperal State, *Am. Jour. Obst.*, June, 1907.

Schauta,⁴ in a thorough study of the records of his obstetric and gynecologic clinics from 1891 to 1908, reviews some 111,000 cases in which the coexistence of pregnancy and fibroids occurred in the proportion of seven to ten thousand. In 60 per cent. of the cases of advanced pregnancy, the delivery was normal; in only two cases was interference necessary because of mechanical difficulties. From these various reports and from the fact that the vast majority of cases of pregnancy complicated by fibroids go to term without any accident happening so that they remain unrecognized and unreported, it would appear that the existence of the fibroids is not so inimical to conception as has been supposed. The coexistence of the two conditions, therefore, has ceased to be of interest as a pathologic rarity, but has taken on a very great practical interest from the accidents which may occur in these cases during the course of pregnancy, labor and the puerperal period.

The effect of the presence of the fibroids on the course of pregnancy, once it has occurred, varies with the number, kind and location of the fibroids. Submucous fibroids and deep-seated intramural fibroids by their effect on the endometrium may cause early abortion, placenta prævia or adherent placenta. Noble has reported some cases of tubal pregnancy which were apparently caused by a pressure of a fibroid on the opening of the tube, thus preventing the entrance of the ovum into the uterus. The labor and the puerperal period may be very markedly and deleteriously affected by the presence of the tumor. Fibroids in the lower uterine segment or pedunculated growths from the corpus hanging down into the true pelvis may either so obstruct the entrance to the pelvis as to make the delivery mechanically impossible or cause such a malposition of the presenting part as to make it very difficult. Retention of the placenta and post-partum hemorrhage are also much more common than ordinary, the former because of the changes in the endometrium and the latter because of interference with proper contraction and retraction of the uterine muscle by the presence of the fibroid in the uterine wall. The puerperium may also be complicated by the occurrence of necrosis of the fibroid and sepsis due to the pressure to which the tumor has been subjected during the delivery; this being especially liable to occur in those cases in which forceps delivery has been done. Mumford⁵ reports a case of post-partum infection of a fibroid with peritonitis and recovery after hysterectomy.

The effects of the pregnancy on the fibroid are usually the cause of operative interference during pregnancy. These tumors rapidly increase in size during pregnancy, the increase being due to actual growth rather than to edema according to Mann; while Schauta and a number of others ascribe the increase in size rather to the edema. By pressure symptoms, these rapidly growing tumors may demand operative interference before the presence of the pregnancy is suspected.

Quite a number of cases are reported in which operation was performed for multiple fibroids and the pregnancy only discovered at the time of operation. An interesting case is reported by Spaeth,⁶ who operated with a diagnosis of torsion of a pedunculated tumor and found an interstitial fibroid which had caused a torsion of the pregnant uterus through 180 degrees, the fibroid

which was in the right wall of the uterus being found in the left side of the pelvis. Interstitial tumors may, during the course of pregnancy, be extruded from the uterine wall and become subserous. Submucous tumors may be extruded from the uterus and be the cause of abortion. Gangrene of the tumor during pregnancy is caused either by pressure of the developing uterus on an incarcerated tumor with red degeneration of its substance or by direct interference with its blood-supply by torsion of the pedicle. Taylor⁷ reports the case of a patient whom he operated on because of constant and increasing pain and from whom he removed a pedunculated fibroid and two sessile subserous tumors. The pregnancy went on to term with normal delivery. The microscopic report of the pedunculated fibroid showed it to be "a necrotic fibromyoma, suggesting that the blood-supply had been interfered with." He states, however, that there was no torsion of the pedicle so that the changes were probably due to the constant and increasing pressure on the tumor itself.

Torsion of the pedicle of a subserous fibroid during pregnancy seems to be exceedingly rare as stated by Mann. In a careful search of all literature at my command, I can only find the report of three cases of this accident, with a possible fourth. This last one is a reference by McMurty,⁸ who says, "Subperitoneal fibromyoma which has become pedunculated has been observed, served with a twisted pedicle and consequent necrosis, as a result of the increased mobility incident to its ascent from the pelvis to the abdomen." As he does not give the case report, it is impossible to state as to whether it is one of the three, the reports of which I have been able to find. The first two cases are referred to by Olshausen and Veit⁹ in their text-book on obstetrics, one of which was Cappie's case in which gangrene of the fibroids led to the death of the patient from peritonitis, and Kleinhans' case in which the tumor was removed during pregnancy and the patient recovered and was delivered at term. The third reported case was that of Barrows¹⁰ who in an article on uterine fibroids complicating pregnancy, describes as his tenth case a pedunculated fibroid, twice the size of a fetal head which had crowded the pregnant uterus down into the pelvis and which had numerous adhesions. He operated with a diagnosis of torsion of an ovarian cyst and removed the fibroid which was becoming gangrenous, the circulation having been shut off by two twists in the pedicle. The patient aborted a fifth-month pregnancy two days after the operation and then had an uninterrupted convalescence.

In view of the extreme rarity of this complication as evidenced by the very few cases reported, among the hundreds of operations for the various accidents in which pregnancy and uterine fibroids coexisted, I thought it would be of interest to report in detail the following case of strangulation by torsion of a pedunculated subserous fibroid complicating a four and a half months' pregnancy.

History.—On the morning of April 15, 1910, I was called to see Mrs. G., who gave the following history: She had had the ordinary diseases of childhood. The year before she had been under a doctor's care for what she said was heart trouble. She said her heart beat too many times. She first menstruated

4. Schauta, F.: *Myom und Geburt*, Wien. med. Wchnschr., 1909, Nos. 40, 41 and 42.

5. Mumford, J. G.: *Pregnancy, Uterine Myomata and Peritonitis*, Boston Med. and Surg. Jour., Aug. 20, 1909.

6. Spaeth, F.: *Myomotomie in der Schwangerschaft*, Wegen Aechtsendrehung des Uterus, Deutsch. med. Wchnschr., March 5, 1908.

7. Taylor, F. E.: *A Case of Myomectomy During Pregnancy*, Clin. Jour., April 27, 1910.

8. McMurty, L.: *Treatment of Fibroid Tumors of Uterus Complicated by Pregnancy*, Surg., Gynec. and Obst., March, 1908.

9. Olshausen-Veit: *Reference to Cases of Cappie and Kleinhans*, Text-Book of Obstetrics, p. 600.

10. Barrows, C. C.: *Uterine Fibroids Complicating Pregnancy*, Am. Jour. Surg., 1908, xxii, 100.

ated at 13 years of age, was always regular, periods recurring every twenty-four days, the flow was scanty, and she had no pain. There never was any intermenstrual bleeding. She had been married five years. She had never used any preventive measures against conception and had never conceived until this time. Her last period had been about Jan. 1, 1910. Since that time she had had the usual symptoms of a beginning pregnancy. About March 1, 1910, she first noticed a lump in the right lower abdomen which could be moved about rather freely. She consulted her women friends, who assured her it was the baby's head, and that it was all right. I afterward learned that she complained of pain in her right side from the beginning of pregnancy. Before she was aware of her pregnant condition she had consulted a doctor who told her she had a "water ball tumor" which should be removed. April 14, 1910, about 2 o'clock a. m., she got up to urinate and was taken with a sudden, severe, sharp pain in the lower right abdomen, which almost caused her to faint. She had to have her husband help her back to bed. She remained in bed all that day and the pain eased considerably, but the following day it was worse again.

Examination.—The patient was flat in bed, her temperature 98.6, pulse 115 to 120. On examination of the abdomen the pregnant uterus was felt about three fingers' breadth above the symphysis pubis and deflected somewhat to the left side. On the right side of the abdomen, extending from the pubis to McBurney's point was a well-defined mass, which at first felt like a fetal extremity at term; it had a distinct notch in it. The mass was extremely tender, especially at McBurney's point. On account of the extreme tenderness it could not be distinctly outlined from the uterus. On vaginal examination, the cervix was found softened, the os closed, the uterus enlarged to the size of about four and one-half months' pregnancy; Hegar's and Braxton-Hicks' signs could be elicited. High on the right side of the cervix was felt a sharp edge of a mass. Diagnosis was made of a four and one-half months' pregnancy complicated by either an extra-uterine pregnancy, appendicitis, pus tube, ovarian cyst with torsion of the pedicle or a pedunculated fibroid with torsion of pedicle. Patient was sent to the hospital for further observation and probable operation.

April 15, at 5 p. m. temperature was 99.2, pulse 120. The mass in the right lower abdomen was apparently a trifle larger and considerably more painful; the patient was obliged to sit up in bed with legs drawn up to get any relief from pain.

Diagnosis.—Appendicitis was excluded because of definite outline and firm consistency of the mass, of its having been freely movable during first two months of pregnancy and because of a lack of previous symptoms which would indicate appendicular trouble. Pus tube was also excluded because of distinct outline of tumor, its density and previous mobility; extra-uterine pregnancy was also excluded for the same reasons and because of term of pregnancy, four and one-half months, rupture would probably have taken place earlier, besides which normal pregnancy was unquestionably present. Probable diagnosis made of a strangulated pedunculated extra-uterine tumor complicating pregnancy. As to the nature of the tumor, subserous pedunculated fibroid was not considered probable because of absence of previous symptoms of fibroids and because of rarity of these tumors giving trouble of this kind during pregnancy. It was thought that the tumor was an ovarian cyst with a torsion of the pedicle because of previous physical signs and also because of diagnosis of the doctor who saw her two months previously. Operation was urged because of undoubted symptoms of strangulation. Dr. W. W. Richardson was called in consultation and agreed with the diagnosis of extra-uterine tumor and concurred as to the advisability of operation. It was decided to wait until the next day as the family was averse to operative interference. April 16, 1910, condition remained about the same as the previous day, the pain possibly being somewhat increased. The patient and family were again urged as to the necessity of the operation and at their request Dr. E. C. Moore was called in consultation. He agreed with the probable diagnosis of ovarian cyst with torsion of the pedicle. Operation was consented to and was performed at 2 p. m., April 16, 1910.

Operation.—With the patient under anesthesia the tumor mass could be definitely separated from the pregnant uterus. Incision was made in the median line of the abdomen. After opening the abdomen the hand was passed down to the tumor which felt very much of the size and shape and consistency of a kidney. The tumor which had no adhesions and was freely movable in the abdomen was easily delivered out of the wound and found to be a pedunculated, subserous fibroid with torsion of the pedicle. The pedicle was attached to the right lateral wall of the pregnant uterus and was a narrow, long strand of tissue, which was twisted on itself to the size of small twine. The tumor was quite dark in appearance. A catgut suture was passed through and around the pedicle and the tumor was removed. The stump of the pedicle was sewed over with catgut. A small interstitial fibroid about the size of a quarter was found in the anterior wall of the uterus between the tubal insertions. The tumor did not project beyond the surface of the uterus and as it was in a place where it would do no harm during pregnancy and labor and as its removal might cause an abortion, it was not disturbed. The abdomen was closed with a continuous catgut suture of the peritoneum; figure-of-eight silkworm-gut sutures through skin, fascia and muscle; a continuous catgut (No. 2 doubled) approximation of fascia; and a few silkworm-gut approximation sutures of the skin. Time of operation, forty minutes.

May 1, 1910: The convalescence was uneventful, except for a high pulse, 90 to 110, which continued up to the time of her discharge from the hospital. On the fourth day after operation, April 20, the patient felt fetal movements for the first time. The sutures were removed on the tenth day, the wound showing primary union throughout.

Course of Pregnancy and Labor.—The patient was fitted with an abdominal supporter. Throughout the course of pregnancy the patient was very nervous, the pulse remaining constantly from 90 to 100, there was a mitral regurgitant murmur at the apex of the heart, a distinct enlargement of the thyroid gland with other symptoms of hyperthyroidism. The small fibroid increased considerably in size and projected from the surface of the uterus immediately under the cicatrix to such an extent as to be discovered by the patient herself. The cicatrix remained firm but widened somewhat with the advance of pregnancy and became deeply pigmented throughout its course. The urine showed a trace of sugar throughout pregnancy.

Sept. 9, 1910, 6 p. m. the patient started in labor, the second stage beginning about 2 a. m. September 10; at 5 a. m. the pains were recurring about every three minutes and were good uterine contractions. As the patient was very nervous and would not help, the pains were ineffective and there had been no advance for about two hours. Median forceps were applied and a male child delivered without any difficulty. The child was in good condition. Delivery of the placenta occurred one-half hour later and the uterine contraction was good. There was no postpartum hemorrhage. The puerperal period was uneventful. The involution of the uterus was good and at the examination some four weeks after delivery, the small fibroid in the anterior wall of the uterus was not palpable.

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ABSTRACT OF DISCUSSION

Dr. J. S. BAER, Camden, N. J.: I have never had experience with cases of torsion of the pedicle of a fibroid, but I can recall five cases of fibroid tumor complicating pregnancy, and I was especially interested in the conclusion of the paper showing that this tumor had apparently atrophied. In the five cases I speak of there was some difficulty in the delivery. Each case became a forceps case and in each the tumor was not to be distinguished a year afterwards. I want to congratulate Dr. Lazard on the outcome of his case and on the excellence of his report of it. I had another case of fibroid in the posterior wall of the uterus low down in a pregnant woman at term in which a Cesarean section was necessary to deliver the child. I cannot tell anything about the outcome of that tumor because the patient died from pneumonia in about six days, but the child is still living. It has been my experience that all these patients bleed more than usual during delivery.