FIBROMYOMATA AND PREGNANCY, A STUDY OF 250 CASES

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Cragin and Ryder[1] reported the cases of fibromyomata and pregnancy occurring among the first 20,000 patients admitted to the Sloane Hospital for Women. This paper deals with the similar cases among the succeeding 30,836 admissions to the Sloane Hospital to January, 1925. It completes a study of the Sloane series of fibromyomata in over 50,000 consecutive pregnancies.

A statistical study has been made of the many facts found in the clinical records bearing upon the relations of fibromyomata to pregnancy, labor and the puerperium. The following topics have been selected for discussion: (1) the incidence of fibromyomata noted during pregnancy; (2) spontaneous abortion and premature labor; (3) the effect of fibromyomata upon the course of pregnancy and labor; (4) pelvic fibromyomata; treatment and sequelae for mother and baby; (5) cases in which operative interference during pregnancy,

TABLE I. COMPARISON OF INCIDENCE OF CERTAIN OBSTETRIC ABNORMALITIES IN CASES WITH FIBROMYOMATA WITH 8317 UNSELECTED CONSECUTIVE CASES

	ABORTION PREMATURE LABOR	DRY LABOR	UTERINE INERTIA	PROLONGED LABOR	MEDIUM FORCEPS	HIGH FORCEPS
Fibromyomata	24.1% 39 of 191	44.5% 45 of 101	34.6% 35 of 101	16.8% 17 of 101	16.8% 17 of 101	2.9% 3 of 101
Unselected Cases	14%	7.5%	1%	1%	7.5%	0.6%

labor or the puerperium was thought necessary because of the fibromyomata themselves; (6) maternal mortality; (7) fetal mortality.

Observations on the behavior of the fibromyomata of these patients after pregnancy, and in subsequent pregnancies will be reported at another time.

1. THE INCIDENCE OF FIBROMYOMATA DURING PREGNANCY

In this series of 30,836 pregnant women, fibromyomata were noted in 250 or 0.8 per cent. Cragin and Ryder reported 0.45 per cent (89 of 20,000) and Pinard[2] 0.6 per cent (84 of 13,915).

Fifty-nine of the 250 women had fibromyomata so situated and so small that they could not be held to have any clinical significance. Many of these, indeed, were only diagnosticated on inspection of the uterus at laparotomy. These cases will not be mentioned further. The 250 cases are thus reduced to 191, giving an incidence of 0.6 per cent of clinically important fibromyomata.

The tumors were classified on the usual basis of their position as pedunculated, subperitoneal, intramural, intraligamentous, submucous or pelvic. Most of the cases represented combinations of two or more of these varieties so that classification became complicated and conclusions difficult. The pelvic tumors alone seemed to justify their separate grouping from the standpoint of useful clinical deductions. They will be described below.

2. SPONTANEOUS ABORTION AND PREMATURE LABOR

Abortion is defined as the discharge of the fetus before the period of viability. Premature labor is defined as labor occurring between the thirtieth and thirty-eighth week of gestation.

Only two of the 250 cases observed at Sloane aborted spontaneously in the first trimester. In consideration, however, of the uncertainty of all the facts relative to the incidence of abortion in this period, no conclusion seems justified. A striking situation, however, becomes apparent when abortion after the third month and premature labor are studied. In this period, 20 women aborted spontaneously, and 19 additional patients fell into spontaneous premature labor. Thus 39, or 24.1 per cent, of the 191 women either aborted or had premature labor. The fetal mortality of these cases was 78.7 per cent.

TABLE I—CONT'D

	BREECH DELIVERY MAURICEAU	INTERNAL PODALIC VERSION	HEMORRHAGE	FETAL MORTALITY AFTER 3 MOS.	MATERNAL MORTALITY
Fibromyomata	18.8% 19 of 101	8.9% 9 of 101	33.6% 58 of 191	32.1% 62 of 193	3.6% 7 of 191
Unselected Cases	6%	2%	4%	6.6%	0.9%

The tumors themselves were considered to be the actual clinical cause of 16 of these abortions and of 14 of the premature labors. This gives an incidence of abortion and premature labor due to the fibromyomata of 16 per cent (31 out of 191).

Similar findings are reported by other writers. Pinard found 15 per cent (13 of 84), Lobenstine[2] found 15 per cent (100 cases), while Cragin and Ryder reported a 24 per cent (22 of 89) incidence of spontaneous abortion or premature labor in cases of fibromyomata complicating pregnancy.

These facts establish clearly the high incidence of spontaneous abortion and premature labor. Fibromyomata must, therefore, be ranked clinically with the toxemias of pregnancy, syphilis, and abnormal conditions of the cervix, as one of the most important conditions causing abortion and premature labor. The question arises whether or not these accidents can be prevented to any important degree. They can if obstetricians become aware of their danger and if they will safeguard their patients by very frequent antepartum observations to detect the first signs of abnormal irritability of the uterus. In addition they must take extraordinary pains to instruct their patients as to the causes and prevention of abortion and premature labor.

3. THE EFFECT OF FIBROMYOMATA UPON THE COURSE OF PREGNANCY AND LABOR

The tradition is established that fibromyomata are relatively harmless. Thus Cragin said that, "Although the association of fibromyomata and pregnancy is relatively a frequent one, disturbance by them of the normal course of labor is unusual." This attitude is probably founded upon the repeated observation that relatively few fibromyomata cause obstruction to the presenting part. While this is true, there are repeated observations in the literature that show that the incidence of many other important complications of pregnancy, labor, and the puerperium is increased by the presence of these tumors. That such is the fact is shown in Table I.

This markedly increased incidence of serious abnormalities in the cases of fibromyomata forces the conclusion that the traditional lack of respect for them as a clinical danger is unwarranted.

4. TREATMENT AND SEQUELAE OF PELVIC FIBROMYOMATA FOR MOTHER AND BABY

Pelvic fibromyomata are defined for this paper as those which were described in the clinical records as "pelvic" or "in the lower uterine segment."

The incidence of pelvic fibromyomata was 15 per cent (30 of 191). Cragin and Ryder reported 12.3 per cent (11 of 98). Of their cases two were delivered vaginally after pushing the tumor out of the pelvis. The remaining nine had the following operations: hysterectomy 4, myomectomy 2, cesarean section 1, cesarean section and hysterectomy 1, craniotomy 1. Thus 81.8 per cent of their cases required major operative interference.

In the present series of 30 cases, operative interference was necessary in 22, or 73.3 per cent. The following operations were done: cesarean and hysterectomy at term 11, cesarean and myomectomy at term 6, cesarean alone 1, hysterectomy at six months 2, vaginal myomectomy at term 1, abdominal myomectomy at two months 1. Sixteen of the 30 cases of pelvic fibroyomata were given a trial labor. Eight of these cases were delivered through the vagina. The remainder required cesarean section. The maternal mortality was 3.33 per cent; the fetal mortality was 30 per cent.

One of these patients was delivered vaginally after pushing an obstructing tumor out of the pelvis. In her next pregnancy cesarean section was necessary after a twenty-four hour trial labor.

5. OPERATIVE INTERFERENCE DURING PREGNANCY, LABOR, OR THE PUERPERIUM, WHOSE CHIEF INDICATION WAS THE FIBROMYOMATA

Major operative procedures were undertaken because of the fibromyomata in 42, or 21.4 per cent of the 191 cases. The following operations were done: therapeutic abortion 1, hysterectomy before viability 6, vaginal myomectomy 1, abdominal myomectomy 4, induction of labor with bag followed by cesarean and myomectomy 1, cesarean and myomectomy 8, cesarean and hysterectomy 19, postpartum hysterectomy 2.

The maternal mortality was 1.5 per cent; the fetal mortality 7.7 per cent. In addition, the following 48 obstetric operations were done: 9 versions, 20 breech deliveries, 3 high forceps and 16 medium forceps. This gives a total incidence for operative interference of 46.5 per cent.

Lobenstine, reporting 85 cases at or near term, found major operative interference necessary six times before or during labor, and eight times during the puerperium. This gives an incidence of interference of 16.4 per cent. In addition he reported 15 vaginal operative deliveries, so that his total incidence of operative interference was 34.1 per cent.

Pinard reported 35.7 per cent of 84 cases requiring intervention, four times during pregnancy and 24 times during labor.

Lockyer[4] summarized Sciplades' paper based upon 67 cases. Sciplades found that operation became imperative in from 30 to 33 per cent of the cases. Lockyer himself reported 23 cases in which operation was necessary in 19 cases or 82.6 per cent.

It seems possible to conclude from these combined observations, covering a large series of cases, that major operative interference becomes necessary in about 20 per cent of the cases. Vaginal operative interference becomes necessary in roughly another 20 per cent of the

Fig. 1.—Hysterectomy at six months, during labor for incarcerated retroverted uterus with large fibromyoma in fundus.

cases. With these facts established it is impossible to agree with the conclusion so often expressed in the literature that fibromyomata rarely cause trouble or require special treatment.

The following cases are typical of this group:

CASE 1.—The patient had been in labor two days. Ineffectual efforts were made with forceps to extract what was believed to be the baby's head. A consultant recognized the nature of the difficulty and brought the patient 60 miles to New York. At operation a very large fibromyoma was found occupying the entire fundus of the uterus which was incarcerated in the pelvis. There was anterior sacculation of the uterus to accommodate the six and one-half months' fetus. Hysterotomy and hysterectomy were done. The patient made a good recovery save for a phlebitis. (Fig. 1.)

CASE 2.—A twenty-four year old primigravida showed at term a large fibromyoma attached to the left anterior lower uterine segment. No symptoms from the tumor were described. Elective cesarean section and hysterectomy were done. The patient had a temperature of 105° for three days and thereafter convalesced normally. This case illustrates the anterior attachment of a pelvic tumor. The relatively narrow pedicle, the normal condition of the rest of the uterus, and the youth of the patient, suggest that myomectomy might have been attempted. (Fig. 2.)

CASE 3.—The patient complained at five months of pain in lower abdomen, legs and back. The pain was intermittent, knife like, disabling, preventing sleep. Hysterectomy was done because the pain was not sufficiently relieved by rest in bed. Convalescence was uncomplicated. This case illustrates the type in which very large tumors require hysterectomy before viability because of severe pain unrelieved by rest in bed.

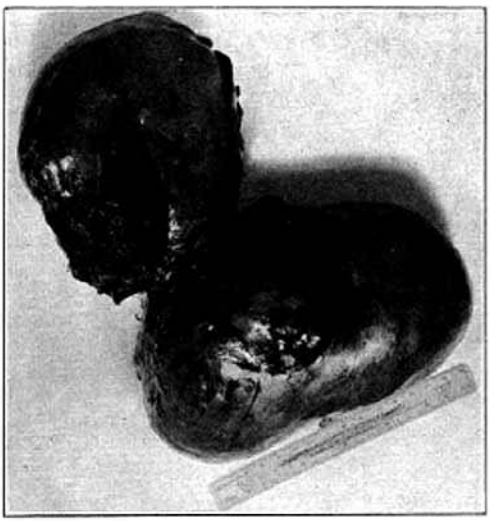

Fig. 2.—Hysterectomy for large obstructing fibromyoma attached anteriorly to lower uterine segment.

CASE 4.—The patient complained at four and one-half months of severe left upper abdominal pain with distention and vomiting. A large, tender fibromyoma was found attached to the left horn of the uterus. She was kept in bed in the hospital for the remaining twelve weeks of her pregnancy. Pain and distention recurred frequently but were relieved by sedatives, poultices and colon irrigations. The hemoglobin dropped from 75 per cent to 44 per cent without external bleeding. Cesarean section followed by hysterectomy and appendectomy were done at term. The tumors were subperitoneal, intramural and intraligamentous. That in the left broad ligament measured 12 by 9 by 8, showed necrosis and peritoneal inflammatory reaction. The appendix was firmly adherent to the anterior aspect of the uterus. Convalescence was uncomplicated for mother and child. This case shows that patients with marked symptoms can sometimes be carried to term with a good result for mother and baby if they are kept in bed and treated symptomatically.

CASE 5.—A thirty-four year old primigravida, at three and one half months, showed a large fibromyoma extending two inches above the umbilicus. There were no subjective symptoms. Her hemoglobin, however, was 37 per cent, RBC 3,500,000. The anemia may have been caused by badly infected teeth. These were extracted. With rest in bed, Blaud's Pills, and a transfusion, the red blood cells rose to 4,400,000 and hemoglobin to 52 per cent. Despite this improvement and the patient's desire for a baby, even at great inconvenience, hysterectomy was done. The belief was that the very large tumor would cause abortion anyway. Convalescence was uncomplicated.

This case is one in which difference of opinion may exist as to treatment. Many would agree that this woman should have been given her chance to carry to viability or term. (Fig. 3.)

CASE 6.—A forty-two year old primigravida at term showed multiple, large fibromyomata without symptoms. Elective cesarean and hysterectomy were done. A large, spongelike, degenerated fibromyoma was found attached by a pedicle to the

Fig. 3.—Hysterectomy at three and one half months, no compelling symptoms. Indication, large size of tumor.

left horn of the uterus. Convalescence was uncomplicated. This case shows that complete degeneration of a pedicled fibromyoma may occur without causing urgent symptoms. (Fig. 4.)

CASE 7.—A thirty-one year old primigravida was found to have a small fibromyoma when first examined for sterility. Pregnancy followed. Threatened abortion with slight bleeding occurred at the third month and threatened premature labor, with bleeding, at the seventh and throughout the eighth month. At term there was marked albuminuria and anemia: Hgb. 35 per cent, RBC 2,360,000. Two transfusions were given. Labor was spontaneous and normal. The baby weighed seven pounds. There was marked abdominal pain and unusually severe after pains postpartum. On the fifth day, the lochia became foul and the uterine cramps worse. A large necrotic fibromyoma 12 cm. in diameter was removed from the vagina on the seventh day. Convalescence was normal thereafter. This case illustrates the sloughing and expulsion of a submucous fibromyoma in the puerperium.

CASE 8.—A thirty-six year old primigravida aborted spontaneously at five months. The placenta could not be expressed and attempts to remove it manually or with instruments failed because of a large fibroid in the lower uterine segment which prevented access to the uterine cavity. The cervix and vagina were packed with gauze. Twelve hours later the placenta was still retained so that hysterectomy was done. Examination of the uterus showed the placenta not adherent but held in the uterine cavity by a tumor blocking its exit. There was postoperative shock and a febrile course for twelve days, followed by recovery. Judgment of this case is difficult. It is hard to believe, since a five months' fetus had passed that the placenta could not have been removed. Yet two experienced operators were unsuccessful.

CASE 9.—A twenty-nine year old primigravida started to abort spontaneously at six months. A large fibromyoma was recognized in the lower uterine segment anteriorly. Uterine contractions were irregular and ineffectual. There was persistent, moderate bleeding from the uterus. A marginal placenta previa was

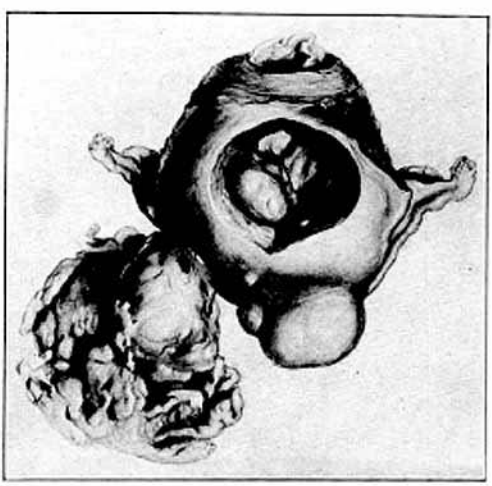

Fig. 4.—Complete degeneration of pedicled fibromyoma without marked symptoms. Hysterectomy at term.

recognized. A bag was placed in the cervix. When it came through, cord prolapsed, a version and extraction of a 30 cm. dead fetus was done. The uterus and vagina were packed with iodoform gauze. The patient ran a moderate febrile course with a fast pulse, moderate abdominal distention and tenderness over the uterus. These symptoms were interpreted as indicative of infection in the tumor. Hysterectomy and bilateral salpingo-oophorectomy were done on the seventh day. There was a small abscess involving the right tube and ovary, to which the appendix was adherent. There were signs of a pelvic peritonitis. The patient recovered from severe shock after twelve hours and made an uneventful recovery. The pathologist reported an acute inflammation of premature placenta, endometritis, right salpingitis, and peritonitis. Section of the tumor showed varying degrees of degeneration but no inflammation.

The question brought up by this case is whether or not the presence of fibromyomata in infected puerperal uteri justifies hysterectomy. The treatment of puerperal uterine infection in general by hysterectomy has no standing. The pathology reported in this case suggests little reason for so radical a departure from the

accepted teaching. Yet the patient after a critical twelve hours recovered splendidly, more quickly than would have been expected with conservative treatment.

Consideration of these cases suggests the question whether or not interference was always justified. Many would agree that the five myomectomies during pregnancy were ill advised. Even if allowed to go to term, however, it is probable that four of those cases would have required major operative interference. The necessity of two of the hysterectomies before viability, in cases without compelling symptoms of pain, bleeding or pressure, could be questioned, for opinion is strong in the literature that conservatism should be practiced. No operation is justified by the fear of symptoms or complications which may arise but only by urgent ones that actually have appeared.

6. MATERNAL MORTALITY

Eight of the 250 women (3.2 per cent) died. Necropsy showed that one of these women died of an acute bronchopneumonia following a normal labor and delivery. There is, therefore, a mortality due to obstetric causes of seven of 250 (2.08 per cent). Cragin and Ryder reported a gross maternal mortality of 3.3 per cent (89 cases); Pinard 3.6 per cent, Lobenstine 4 per cent (100).

The clinical histories of the fatal cases follow:

CASE 1.—The patient showed at term, before labor, an obstructing fibroid. A large necrotic fibroid was removed *per vaginam*, the colpotomy wound being packed with iodoform gauze. Membranes ruptured spontaneously three days later. A nine hour labor with frank breech delivery of a stillborn fetus followed. The patient died of pelvic and general peritonitis.

At the present day vaginal myomectomy would not be done and spontaneous trial labor would be permitted to determine whether or not the pelvic tumor would withdraw or could be pushed out of the pelvis. Failing to dispose of the obstructing tumor, abdominal cesarean section would be done followed by myomectomy or hysterectomy.

CASE 2.—A thirty-six year old primigravida fell into spontaneous labor at term. She had a forty-six-hour labor, twenty-six hours with ruptured membranes. A bag was placed in the cervix to combat inertia and favor dilatation. Finally, cesarean section without myomectomy or hysterectomy was done. The indication given was "large child, flat pelvis, R. O. P., head high, no advance." The operator described the uterus as "studded with very many larger and smaller fibroid nodules, the largest, size of walnut—but uterus contracted well and there was little bleeding." The nine pound baby lived. The mother died of uterine sepsis and general peritonitis. The excessively prolonged labor and the use of the bag were not justified. An examination under anesthesia early in labor might have permitted the recognition of the fibromyomata and made more clear the other indications for cesarean. Most important of all, it is clear that a hysterectomy should have been done in view of the prolonged labor with vaginal interference, the pathology of the uterus, and the patient's age.

Case 2 represents a very important, though relatively uncommon, type; namely, that in which there are very numerous small fibromyomata throughout the uterus whose presence is not usually recognized until cesarean section is done. The following case history is a similar one which shows, in the good result for mother and

from the extensive adhesions. The patient took her anesthetic badly throughout. The adhesions were left alone. The uterus was restored to the abdominal cavity with great difficulty. A single small fibromyoma was enucleated from the uterine wound. The eight pound baby survived. The mother died of shock and hemorrhage five hours later.

The one small surviving fibromyoma in the uterus had nothing to do with the clinical disaster. It serves, however, to bring up for discussion the treatment of these most troublesome cases; namely, those in which the uterus has been subjected to multiple incisions for fibromyomata and in which, consequently, there is feared during subsequent labor the dangers to mother and child of uterine inertia on the one hand and rupture of the uterus on the other. There are no cases on record at the Sloane of the latter complication. Moreover, the researches of Williams[5] and Gamble,[6] on uterine wound healing after cesarean section, and those of Wilson[7] on the incidence of rupture of the uterus in labor subsequent to cesarean section, suggest that the danger of rupture of the uterus during labor is not great after myomectomy.

The Sloane cases of pregnancy after myomectomy are not available for this report. It is our impression, however, that the incidence of dystocia from uterine inertia is considerable. The danger in such instances is of course greater for the child than for the mother. The clinical history just detailed shows the danger to the mother of cesarean section. There is probably an increased morbidity and mortality in such cases due to the extensive peritoneal adhesions which are often present and prevent contraction of the uterus and allow hemorrhage.

No precise conclusions are possible from these observations. It is our opinion, however, that a conservative policy should be followed in such cases and that cesarean section should not be done unless there are indications in addition to that of the former myomectomy.

The other two maternal deaths were attributed in one case to acute bronchopneumonia, and in the other to hemorrhage from a cervix badly lacerated from a precipitate delivery.

7. FETAL MORTALITY

The gross fetal mortality in 191 pregnancies with fibromyomata was 35.6 per cent (64 of 193). Cragin and Ryder reported 34.8 per cent, Pinard 32.6 per cent and Lobenstine 21 per cent. Yet textbooks do not emphasize fetal prognosis or mortality in their discussion of fibromyomata and pregnancy. As stated before, they give the impression repeatedly that fibromyomata are relatively harmless. How differently an internist or surgeon would react to the conduct of a clinical problem in which there was a mortality of 35 per cent!

Study of the records showed that the fibromyomata were probably clinically responsible for 40 (60.20 per cent) of the 64 fetal deaths. This gives a corrected fetal mortality due to the fibromyomata themselves of 20.7 per cent. The chief cause of this fetal mortality was prematurity (37 of the 40 babies lost, because of the disturbing fibromyomata, were premature).

No further facts are necessary to indicate the wisdom of giving to the parents a guarded prognosis for the baby in all cases of pregnancy and fibromyomata. The obstetrician, on his part, must exert every effort to carry these patients to term thereby reducing to an important degree the fetal mortality from prematurity.

SUMMARY AND CONCLUSIONS

1. The incidence of clinically important fibromyomata, 191 in 30,836 consecutive pregnancies, was 0.6 per cent, of which 15 per cent were in the pelvis.

2. Spontaneous abortion or premature labor occurred in 24.1 per cent of the cases.

3. The incidence of important obstetric abnormalities and complications is markedly increased by fibromyomata.

4. Major operative interference was necessary because of the fibromyomata in 21.4 per cent of the 191 cases (42 of 191). It was necessary in 73 per cent of the 30 pelvic cases.

5. The gross maternal mortality was 3.2 per cent (8 of 250). The mortality due to obstetric causes was 2.08 per cent.

6. The gross fetal mortality was 35.6 per cent (64 of 193). The mortality for cases in which the fibromyomata were probably responsible was 20.7 per cent. Prematurity was the chief cause of fetal death.

7. The literature does not sufficiently emphasize the danger of fibromyomata to mother and baby, particularly to the latter.

8. During pregnancy special effort should be made to prevent abortion and premature labor. Interference is indicated only by the appearance of severe symptoms of pain, bleeding, or pressure, which do not yield to treatment. At term a test of labor is often desirable.

During labor if obstruction from the tumor persists, or other varieties of dystocia are marked, cesarean section should be done with myomectomy or hysterectomy, according to the indications. The third stage of labor requires particular attention to prevent hemorrhage from a poorly contracting uterus.

In the puerperium, fibromyomata may undergo degeneration and necrosis. They may slough into the uterine cavity and become infected. Where signs and symptoms point to the tumor itself as being primarily affected radical surgery is indicated. Where, however, the tumors are simply included in a general morbid process (such as an acute uterine infection), radical interference is not so clearly indicated.

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(For discussion, see page 391.)

DR. R. N. PIERSON presented (by invitation) a paper entitled **Fibromyomata and Pregnancy**. (For original article see page 333.)

DISCUSSION

DR. I. C. RUBIN said with reference to the incidence of myomata in sterility, that if some statistic study, comparative in character, should be made, and based on such a large study as Dr. Pierson has presented, it would help us to formulate definite ideas as to the best way to treat this complication.

This might be made to include: (1) cases of sterility associated with fibroids, no operation having been performed; (2) cases of sterility, or pregnancy complicated by fibroids which have been removed by myomectomy; (3) cases of myomectomy done during pregnancy where, (a) either abortion took place or, (b) the pregnancy went on to term.

The reason for such a statistic study is what Dr. Healy has emphasized, and that is that sterility is very common in women who have fibromyomata. Pregnancy may take place in these cases not only during the early reproductive life, but rather late, and at the premenopause in some instances. The first pregnancy very commonly terminates in abortion; the second probably too. The question arises whether we shall in a second pregnancy in a woman who has had a previous abortion, probably due to the fibroid condition of the uterus, do everything in our power to carry her to term, even to the extent of keeping her in bed for three or four months, and then meeting the situation as it might arise during labor, by trial, etc.; or whether we shall let her have her abortion the second time, and then subsequently do a myomectomy in the nonpregnant condition.

It has been Dr. Rubin's practice in the effort to help these women, to give them every chance and not risk doing myomectomy when there is slight bleeding because of the possibility to terminating that very early pregnancy which might have gone on to term and which might have given her the only chance of becoming a mother.

DR. JOHN O. POLAK called attention to the two or three instances of meddling with labor in the presence of fibroids by the introduction of a bag. There is no more pernicious practice than the introduction of a bag for dilatation of the cervix in fibroid uteri. We usually have an inertia in these cases due to a bad uterine wall with potential sepsis owing to defective drainage. We can prevent abortion in a large number of these women if we teach them how to behave during pregnancy. The tendency to abortion is much more frequent when fibroids complicate pregnancy than in normal pregnancy. These patients should be taught to rest at the time of the expected period and to abstain from sexual relations until the pregnancy has passed the fourth month, and to take the knee chest position night and morning for a period of ten minutes. By assuming this posture incarceration of the heavy uterus is prevented and pelvic engorgement relieved.

Dr. Polak believed a large number of these pregnant women with fibroids will take care of themselves during labor, and he lets these women go to term, and gives them a test of labor. If they do not deliver spontaneously (and they usually deliver promptly if they are going to deliver spontaneously) he does a cesarean which is followed by hysterectomy. These uteri contract and retract poorly and uterine drainage is interfered with which results in morbidity or mortality. Six or eight years ago he had several cases in succession in which conservatism was attempted. They all drained badly and two of them died from infection.

DR. A. B. DAVIS called attention to pedunculated myofibroma of the uterus, with or without torsion of the pedicle, as a complication of pregnancy. In 1925, a primiparous patient came under his care when she was three months pregnant. Nausea and vomiting were troublesome symptoms which continued to some extent throughout the pregnancy. There was a report that when two months pregnant she had a short sharp attack of bleeding which ceased.

Upon first examination normal uterine pregnancy was found, and also a rather freely movable mass to the left side of the uterus. A diagnosis of pedunculated fibroid was made, taking its origin to the left, anterior and somewhat below the fundus, with rather a long pedicle. It was decided to manage this case expectantly. From time to time there were reports of sudden cramp-like pains in this region, lasting for a short time and as suddenly disappearing; also, occasionally, slight spotting appeared. There was nothing noteworthy in the blood pressure, transitory glycosuria was noted from time to time. Pregnancy continued in this way until the end of the sixth month when the patient suffered very severe pain in the region of the tumor. Morphine was given freely, affording only partial relief. The patient was then admitted to the hospital with the appearance of being very ill and suffering acutely. Temperature 101° F., pulse 120 and very high leucocyte and polymorph count. There was well-marked albuminuria with hyaline and granular casts. Marked tenderness was evident over the site of the tumor and for a considerable area about it. There were no uterine contractions or disturbances in the fetal heart.

The abdomen was opened disclosing a tumor mass, evidently strangulated, about 7 cm. in diameter; two-thirds of its surface was covered with adherent omentum and plastic lymph, a portion of the small intestine was also adherent. These adhesions were easily separated, the pedicle was found tightly twisted one and one-half turns. This was clamped and ligated and the tumor excised. Peritoneum was sutured over the stump and the abdomen closed in layers. Postoperative course was febrile and painful for a few days and thereafter uneventful. There was no attempt at onset of labor and the pregnancy continued to full term when a living child, vertex R.O.P. was delivered by easy low forceps.

Another case of normal uterine pregnancy with a very large pedunculated fibroid: In this instance the pedicle was short, about 5 cm. in diameter, taking origin to the right posterior and just below the fundus. Beyond discomfort and pressure

this gave no trouble until early in the seventh month. At this time it was so large that great distress was caused by pressure, especially in the region of the liver. The tumor was removed and the stump treated as in the former case. It proved to be larger than the then pregnant uterus. Characteristic red degeneration was well advanced. Recovery from operation was uneventful and the pregnancy continued to full term.

It is rather surprising how many cases we see of even very large fibroids of the uterus as complications of pregnancy and to note how well the developing uterus will adjust itself to this encroaching mass, especially if the abdomen is large and roomy. It is noteworthy that these tumors diminish in size after labor. Sometimes interstitial fibroids of comparatively small size proved to be the offending agents, causing threat to abort. Many times these can be removed by myomectomy and the pregnancy continue. Dr. Davis was not successful in having pregnancy continue in cases of myomectomy in which a considerable area of membrane has been exposed, for within a very short time the patient aborts, or goes into premature labor. He had many fibroids of the uterus complicating pregnancy in patients upon whom he had performed cesarean section but did not recall that he had ever done a hysterectomy or lost a patient in such cases.

DR. ELIOT BISHOP said that treatment depends on the location of the fibroid. That which seems the most serious is the large *obstructing tumor*, which, grave as it is, suggests its own treatment,—delivery from above. The second location of the tumor is much more common than we would infer from the paper, because, presumably, in most instances, it is inconsequential, and that is the *subserous* tumor, which in some instances causes pain so severe as to need very definite treatment and, in very rare instances, to become necrotic, as Dr. Kosmak reported at a meeting of the State Society a few years ago.

The next location is *intramural*, and here the tumor produces trouble by interfering with that part of the physiology of labor that is insufficiently emphasized—retraction. If the tumor is in the lower uterine segment, retraction is delayed, or often prevented, the first stage refuses to proceed, and section is imperative. If, however, the delivery is accomplished spontaneously, contraction and retraction in the third stage may be interfered with to the extent of a postpartum hemorrhage. Later on, the physiology of the puerperium may be faulty, and subinvolution, with its train of symptoms, develops.

DR. GEORGE W. KOSMAK said that a study of this kind, involving such a large number of cases so closely observed by a single body of men, will undoubtedly be quoted repeatedly in medical literature, because it constitutes a most valuable contribution to the subject. He took exception to the attitude toward myomectomy during pregnancy and believed that fibroids should be regarded more seriously before and after labor than during labor.

Dr. Kosmak referred to a case reported before this Society some years ago, in which myomectomy during pregnancy saved the woman, saved her uterus, and allowed another pregnancy to take place subsequently. This patient was about five months pregnant and her uterine mass reached to the ensiform. She was bleeding slightly, she had a little elevation of temperature and a great deal of abdominal pain. She was in such condition that something had to be done to relieve her. Dr. Kosmak did an exploratory laparotomy, expecting to do a hysterectomy, and found one fibroid in the anterior wall at the fundus, one at one cornu, and another one on the posterior wall, far down, so that this lowermost fibroid really occupied almost the entire pelvic cavity. There was no difficulty in removing the fibroid in the anterior wall and that near the cornu, but it required complete delivery of the uterus outside the abdominal cavity to get at the fibroid on the posterior wall, and this extended down practically to the endometrium.

The three tumors were excised, she went on with her pregnancy and was subsequently delivered. This case was at the Lying-In Hospital. Before that in another case a fibroid as large as a good-sized grapefruit was removed from the fundus of the uterus, near the cornu, which was also accompanied by slight elevation of temperature and extreme pain. She went on to term and was delivered without any difficulty. The first patient was delivered a second time less than two years ago without difficulty whatsoever.

Dr. Kosmak believed if fibroids cause symptoms during pregnancy, including pain and tenderness, slight elevation of temperature, and perhaps bleeding, that we should in all such cases attempt a myomectomy. If after the abdomen is opened, we find conditions are such that it might be more advisable to terminate the pregnancy, we can always do so; but a great many of these women can have their uteri saved for a possible future pregnancy if we pursue this more conservative course.

As to the fibroids after delivery, Dr. Kosmak believed that we are confronted with a more serious situation. In these cases a conservative policy, while it seems to be indicated, is one that cannot always be followed. He had a few cases in which he did a radical operation for sloughing fibroids after labor, with good results. It means if the fibroid is in such a position that you can get at it, it can sometimes be removed without sacrificing the uterus and save the uterus for a future pregnancy, particularly in the young woman. On the other hand, the process may be so extensive that we may have to remove the entire uterus; but his point in making these remarks is to direct attention to the possibility of conservative treatment in the presence of fibroid tumors in which during pregnancy there is a rapid growth and which cause symptoms and where especially in the young woman, we do not want to sacrifice her ability to bear children subsequently.

DR. R. T. FRANK said that the viewpoints so far submitted seemed to have come largely from the obstetricians. He thought that those who see these cases earlier look at them from a slight different standpoint. If asked to determine whether it is safe for those women to go through labor, there is no harder question to answer when such a woman presents herself in the second or third month of pregnancy. Just as Dr. Kosmak has said, and Dr. Bishop, too, when the tumors obstruct the pelvis, the answer is easier to give. In other cases it always is advisable to suggest waiting, under close observation, for a month or two and see the rapidity with which these growths increase. We all know they are apt to slow up after the fourth month, but, again and again, by the time the fourth month it reached, the question has answered itself. If by that time the pregnancy occupies one-third of the mass and the fibroid two-thirds, he thinks the likelihood of such a patient carrying to term is extremely small. Furthermore, he thinks the most favorable time for myomectomy, (and in this he agreed with Dr. Kosmak) in many cases should be considered as around the fourth month.

Dr. Frank referred to two striking cases where in doing a myomectomy he saw the fetus shining through the membranes. The endometrium was actually partly injured in the enucleation of the tumors. Both those cases went to term, and one of them has had a second child since then without the slightest trouble. If we find at the fourth month that enucleation of the tumors jeopardizes the likelihood of carrying the fetus to term to such a degree that an immediate abortion is likely to occur, it is perfectly feasible to empty the uterus and then sew it up as if you were dealing with a cesarean section at term, and with the exception of one case, where there was a very advanced thyroid condition present, no fatality occurred in all the cases Dr. Frank treated in that fashion at this early period of pregnancy. On the other hand, if you open the abdomen, particularly

in multiparae, and find the conditions for myomectomy are so unfavorable that the likelihood of carrying through on account of the fibroids occupying a large part of the entire mass is small, Dr. Frank would not hesitate to do a hysterectomy.

DR. S. H. GEIST referred to a primipara in the fourth month of pregnancy (upon whom he had done a myomectomy). She went into labor normally and delivered herself spontaneously of a seven-pound male child. She had a retained placenta and finally it was necessary to remove it manually. He found the placenta perfectly free except along a straight line from fundus half way to cervix. Dr. Geist found that for a distance of seven centimeters in length and one and a half centimeters in width, there was no evidence of placental tissue, but simply a thin shaggy scar where the placenta was attached. In the removal of the fibroid the circulation of the endometrium, or rather the decidua, had been so interfered with that it was replaced by scar tissue, and the condition was practically a placenta accreta.

She had a second baby later without any difficulty with the placenta.

DR. WILLIAM P. HEALY said that pregnancy going to term is unusual in women having fibromyomatous tumors. Therefore, when we come across a patient who is pregnant and who has a fibromyomatous uterus, we should bear in mind that this may be the only pregnancy, especially if it is her first one, that she may ever carry to term, and we ought to approach it very conservatively. If it is in the first four or five months of gestation and the number of tumors is not great, and the location is such, as in the case mentioned by Dr. Ward where there is an incarcerated, retroverted or retroflexed uterus with a tumor lying anteriorly, the woman is going to abort if you do not do something to get the uterus out of its malposition, and that means removing the tumor, and you may save the pregnancy for her. He considered it better to do the myomectomy in the presence of the pregnancy and take the risk of a possible subsequent spontaneous abortion, rather than to interrupt the pregnancy with the idea of doing a myomectomy later and hoping that then she will conceive and go to term. On the other hand, if you have a large number of myomata in the uterus, it is infinitely better to leave the patient alone with her pregnancy, because, as has been mentioned by the reader of the paper and by Dr. Polak and most of the speakers, we are constantly amazed to note how apparently impossible conditions are overcome spontaneously in the normal growth of the uterus with the pregnancy.

DR. PIERSON (closing): Dr. Polak spoke of the use of the bag as being practically never indicated for the reason of fibroids alone. We had eight cases in this series of 250 in which a bag was used, but only one case in which it was used because of the fibroids. In that case, it was ineffective.

As for the viewpoints of Dr. Kosmak, Dr. Frank, and Dr. Ward in respect to myomectomy during pregnancy, Dr. Pierson agreed that there are cases in which myomectomy may be properly done, but that conservative treatment is wiser in the majority of cases, for the reason as mentioned by Dr. Healy and Dr. Rubin that it may be the patient's last chance to have a child. For experience shows that, many times, the attempt at conservative myomectomy during pregnancy has to be abandoned because of difficulties arising during the procedure, so that finally hysterectomy is done.

Dr. Geist's report of a case in which the placenta was adherent to a former myomectomy scar is interesting. There were 15 cases of adherent placentas in this series of 250. This is, however, a clinical and not a pathologic diagnosis. It is probable that only a few of these cases were true adherent placentas.

Dr. Rubin spoke of the relationship of fibroids to sterility. No report was here included of the cases upon which myomectomy was done as a treatment of sterility. Dr. Rubin spoke also of the time of election for doing myomectomy

from the standpoint of improvement of errors of reproductive capacity. This is a very important and difficult problem. Dr. Pierson was reminded of a case first seen at about the sixth month of pregnancy with an anterior intramural fibroid about 5 cm. in diameter. This patient aborted at six and one-half months. With involution of the uterus the tumor disappeared. The patient, in a few months, wanted to know if she should again become pregnant. The late Dr. Studdiford agreed that since no tumor was palpable, she should be allowed to become pregnant. Pregnancy occurred promptly and the fibroid reappeared at about the fourth month. At five and one-half months, she again had an irritable uterus and threatened premature labor. The patient was put to bed for the rest of her pregnancy. Even so, there was premature rupture of the membranes at the eighth month. Fortunately, her five-pound child survived. Such an experience makes one wonder if one would be justified in such a case in doing a myomectomy in the puerperal period, or shortly thereafter, in order to improve the patient's future reproductive capacity. The tumor just described has again involuted with the uterus, so that it cannot now be felt.