

CLINICAL ASSESSMENT OF COMPLICATIONS & TYPE OF DELIVERY IN PREGNANT FEMALES DIAGNOSED WITH FIBROID UTERUS

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Abstract

Fibroid (myoma) is the most common benign tumors of the uterus. Effect of pregnancy on myoma may be stimulatory and it can lead to unpredictable and impressive growth during pregnancy. These tumors respond differently in different women. Fibroids may grow, regress or remain unchanged in size during pregnancy. Though in some cases it does not affect the outcome of pregnancy but they are associated with complications like preterm labor, IUGR, abortion, PROM, uterine dysfunction, placental abruption, and obstructed labor, increased risk of cesarean delivery, breech presentation, malposition. Hence based on above findings the present study was planned for Clinical Assessment of Complications & Type of Delivery in Pregnant Females Diagnosed with Fibroid Uterus.

The present study was planned in Department of Obstetrics and Gynaecology, Madhubani Medical College and Hospital, Madhubani, Bihar. In the present study 15 females diagnosed with the fibroid undergone the delivery were enrolled in the present study.

Though many of the fibroids are asymptomatic, but may adversely affect the course of pregnancy and labor depending on their location and size. The data generated from the present study concludes that pregnancy with Fibroids is considered High-Risk. Timely diagnosis and tertiary care referral and Management of Antepartum, Intrapartum, Postpartum complications with good neonatal care leads to successful outcome. Caesarean Myomectomy in selected cases can prove beneficial.

Keywords: Complications, Type of Delivery, Pregnant Females, Fibroid Uterus, etc.

Introduction

Uterine leiomyomas, better known as uterine fibroids, are benign smooth muscle tumors of the uterus. The most common tumor found in the female reproductive system, uterine fibroids are seen in 50-60% of women (rising to 70% by 50 years of age) and, in 30% of cases, cause morbidity due to abnormal uterine bleeding and pelvic pressure. African-American women have a greater chance of being affected by uterine fibroids, particularly at an earlier age than either white or Asian women. [1] Uterine fibroids can occur at any time between menarche and menopause but are most common in women 35-49 years of age. They typically resolve after menopause.

Before performing uterine fibroid embolization (UFE), it is important to document the presence of fibroids, usually either by pelvic ultrasound or by MRI. MRI is preferred because of its greater ability to demonstrate individual fibroids and denote their size, location, and number within the uterus. [1, 2] It has been estimated that 13,000-

14,000 UFE procedures are performed annually in the United States. [3]

In light of the success of embolization in reducing solid tumors and diminishing associated symptoms, uterine fibroid embolization (UFE) is performed to reduce uterine as well as fibroid volume and their associated symptoms. [4]

Prior to embolization, it is important to document the presence of fibroids. Viable pregnancy and active pelvic inflammatory disease are two absolute contraindications for the procedure and must be excluded. This can be accomplished using either cross-sectional imaging, preferably MRI, or ultrasound (US). [5] While US may be effective for confirming enlargement of the uterus and demonstrating the presence of fibroids or other pathology that can explain the patient's presenting symptoms, its efficacy depends on the equipment used and the body habitus of the patient. MRI is preferred because of its greater ability to demonstrate individual fibroids and denote their size, location, and number within the uterus.

MRI also allows easier determination of the internal characteristics of individual fibroids, as well as their vascularity. [6]

Pelvic MRI can also determine whether coexisting pathology is present within the uterus. For example, menorrhagia and other symptoms commonly associated with uterine fibroids may be similar to those of patients with adenomyosis, a benign uterine disease. Adenomyosis is characterized by the ectopic growth of endometrial glands and stroma into the myometrium and by diffuse enlargement of the uterus. On MRI, a focal adenomyoma may appear as a localized low-signal myometrial mass with poorly defined margins that often contain high-signal foci. Long-term data covering a 10-year period shows successful short- and long-term improvements in symptoms of adenomyosis with uterine artery embolization (UAE) treatment. Improvements have been noted in 75% (387 of 511) of patients. [7]

MRI is also helpful in assessing the results of embolization several months after the procedure. MRI after UAE is recommended by the American College of Radiology (ACR) not only to ensure adequate fibroid infarction but also to exclude underlying leiomyosarcoma. [5]

Technically, the radiologist should obtain measurements of the uterus and of each fibroid in 3 planes, then calculate the volume measurements using the formula for the volume of a sphere ($\text{length} \times \text{width} \times \text{height} \times 0.5233$).

These measurements provide a baseline for determining the degree of postprocedural reduction in fibroid and uterine volume. After embolization, the signal intensity of the fibroids usually decreases on both T1-weighted and T2-weighted images. Embolization seems to have little effect on the volume or enhancement characteristics of normal myometrium and endometrium.

In addition to pelvic MRI, the pre-embolization workup includes evaluation of the patient's renal function (ie, blood urea nitrogen and creatinine levels) and coagulation profile (ie, platelet count, prothrombin time, partial thromboplastin time). All prospective patients should undergo a full gynecologic workup, including a Pap smear every 3 years and/or an endometrial biopsy if a patient has menometrorrhagia. [5]

Severe anemia should be corrected and an intrauterine device should be removed before the procedure, as it could act as a source of infection. If the patient is taking a gonadotropin-releasing hormone (GnRH) agonist, there is some debate as to whether it should be stopped for several weeks, because it may make the procedure more difficult due to constriction of the arteries supplying the uterus. Although the evidence to support this is anecdotal, GnRH administration is usually ceased if possible. The newer selective progesterone receptor modulators (eg, ulipristal acetate) may be a better option to control bleeding before treatment. [7]

Prior to embolization, an intravenous (IV) line and Foley catheter are placed in all patients (see the images below). Prophylactic antibiotics usually are given before the procedure. Other premedications that may be used include corticosteroids, antiemetics, and analgesics. The procedure is carried out under conscious sedation. For an experienced interventional radiologist, UAE is a relatively simple, straightforward procedure usually completed in less than 1 hour. [7]

Goodwin et al were the first to publish experience with UFE in the United States. They subsequently conducted a prospective, multicenter study of the short- and long-term outcomes of UFE, the Fibroid Registry for Outcomes Data (FIBROID) for Uterine Embolization. In the FIBROID registry, mean symptom scores in 1,278 patients showed normalization of health-related quality-of-life; 9.79% of patients subsequently underwent hysterectomy, 2.82% underwent myomectomy, and 1.83% underwent repeat UFE. [8]

Compared with hysterectomy and myomectomy, uterine artery embolization has a significantly decreased length of hospitalization (mean of 3 fewer days), decreased time to normal activities (mean of 14 days), and a decreased likelihood of blood transfusion (OR = 0.07; 95% CI, 0.01 to 0.52). [9] Long-term studies show a reoperation rate of 20 to 33% within 18 months to 5 years.

The Committee of the Randomized Trial of Embolization versus Surgical Treatment for Fibroids conducted a randomized trial comparing UFE in 106 patients with surgery (hysterectomy or myomectomy) in 51 patients. At 1-year follow-up, quality of life was not significantly different between the groups. The UFE patients had experienced more rapid recovery (shorter hospital stays and faster return to regular activities), but 9% required repeat UFE or hysterectomy because of inadequate symptom control. [10]

Although UAE is highly effective for treating symptoms (reduction in bleeding and fibroid size), the risk of reoperation is 15-20% after successful embolization and up to 50% in cases of incomplete infarction. [1]

In the United Kingdom, the multicenter retrospective HOPEFUL study compared the outcome of treatment for symptomatic fibroids in 459 women who underwent hysterectomy and 649 who had UFE. Average follow-up was 8.6 years for the hysterectomy cohort and 4.6 years for the UFE cohort. In this study, 85% of UFE patients reported relief from fibroid symptoms, versus 95% of hysterectomy patients, and 23% of UFE patients required further treatment for fibroids. [11-12]

The Embolisation versus Hysterectomy (EMMY) trial, a prospective randomized comparison in 177 women, found that UFE is a good alternative to hysterectomy; both procedures led to improved health-related quality of life at 24-month follow-up. [13]

Gabriel-Cox et al studied 5-year outcomes of UFE in 562 women; overall, the rate of subsequent hysterectomy was 19.7%. However, the rate in women who had had unilateral UFE was 39.2%; this was the only identified factor that predicted subsequent hysterectomy. [14]

A systematic review and meta-analysis of 4 randomized, controlled trials with 515 patients reported that the short-term advantages of UFE over surgery include less blood loss, shorter hospital stay, and quicker resumption of work. The mid- and long-term advantages are similar, although there is a higher reintervention rate after UFE.

A fatal pulmonary embolus, which occurred 20 hours after UFE, was reported in a 65-year-old patient. [15] The source of the thrombus was believed to be the deep pelvic veins, and it may have occurred either secondary to the mass effect of the fibroid or from diminished arterial flow after embolization that resulted in stasis and thrombosis within pelvic veins.

To reduce the risk of PE after UFE, patients should ambulate as soon as possible to prevent the development of lower extremity deep venous thrombosis (DVT) and possible pulmonary embolism (PE). In addition, compression stockings have been recommended for patients with a history of smoking or oral contraceptive use, since these patients are at increased risk for thrombotic events. While these measures are important to reduce the risk of DVT and PE in many patients, they will not help if the source of a PE is from the pelvic veins. Inadvertent end-organ damage (ie, uterus) can result in ischemic injury or infection, both of which may require hysterectomy for treatment.

Infection or, more specifically, pyometrium with acute endometritis was one of the earliest reported complications of UFE. High fever and persistent pain led to hysterectomy in an early case report. Since then, infection has been reported in less than 1% of patients. Some infected patients have been successfully treated with antibiotics, while others required hysterectomy. In one patient, infection resulted in multiorgan failure and death. All patients with prolonged fever (>7-10 days) should be evaluated for possible uterine infection. Diagnosis may be aided by the performance of a pelvic examination, lab tests (including CBC, blood and urine cultures), and pelvic CT scan.

Ischemic injury of the uterus is reported in less than 1% of patients. These patients present with pelvic pain persisting several weeks beyond the expected postembolization syndrome. Classic teaching states that the uterus receives approximately two thirds of its blood supply from the uterine arteries and approximately one third from the ovarian arteries, which originate from the abdominal aorta distal to the renal arteries. One possible explanation for this complication is that embolization of the uterine arteries places the uterus at risk for ischemic injury and

infarction in cases in which there is potentially inadequate collateral blood flow from the ovarian arteries. Patients experiencing this complication may require further treatment (eg, hysterectomy) to relieve associated pain and discomfort.

Submucosal fibroids, particularly if pedunculated, are at increased risk for expulsion from the uterus after embolization-induced infarction. This particular complication has been reported in approximately 1-2% of patients. While this may occur spontaneously without clinically significant sequelae, a hysteroscopic resection or other treatment may be required to remove tissue retained within the uterus to prevent subsequent infection.

Fibroid (myoma) is the most common benign tumors of the uterus. Effect of pregnancy on myoma may be stimulatory and it can lead to unpredictable and impressive growth during pregnancy. These tumors respond differently in different women. Fibroids may grow, regress or remain unchanged in size during pregnancy. Though in some cases it does not affect the outcome of pregnancy but they are associated with complications like preterm labor, IUGR, abortion, PROM, uterine dysfunction, placental abruption, and obstructed labor, increased risk of cesarean delivery, breech presentation, malposition. Hence based on above findings the present study was planned for Clinical Assessment of Complications & Type of Delivery in Pregnant Females Diagnosed with Fibroid Uterus.

Methodology:

The present study was planned in Department of Obstetrics and Gynaecology, Madhubani Medical College and Hospital, Madhubani, Bihar. In the present study 15 females diagnosed with the fibroid undergone the delivery were enrolled in the present study.

Patients were thoroughly investigated and followed up clinically and ultrasonically till delivery outcome was recorded. Data was collected using a questionnaire regarding maternal age, parity, socioeconomic and educational status, diet, family history, history of infertility and previous abortions. Antepartum complications, mode of onset of Labour, gestational age at delivery, mode of delivery, caesarean myomectomy if done was studied. Ultrasonogram was done at successive ANC visits to evaluate the change in the size of the fibroid and any associated complications either in fibroid or in pregnancy in general were evaluated.

All the patients were informed consents. The aim and the objective of the present study were conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.

Following was the inclusion and exclusion criteria for the present study.

Inclusion Criteria: Patients having fibroids before pregnancy and later conceived, those patients having fibroids diagnosed during pregnancy and diagnosed during the time of delivery were included in the study.

Exclusion Criteria:

Results & Discussion:

Uterine fibroids (leiomyomas) are benign, monoclonal tumors of the smooth muscle cells of the myometrium and contain large aggregation of extracellular matrix composed of collagen; elastin, fibronectin and proteoglycan. [16] Fibroids are remarkably common. The prevalence of fibroid among pregnant women is 18% in African women, 8% in white women and 10% in Hispanic women, based on first trimester in pregnancy. [17] Most fibroids do not increase in size during pregnancy. Pregnancy has a variable and unpredictable effect on fibroid growth and likely dependent on fibroid gene expression, circulating growth factors and fibroid localized receptors. [18] Uterine fibroids have long been implicated as a cause of adverse pregnancy events. [19] The potential effects of these tumours on pregnancy and the potential effects of pregnancy on the tumours are a frequent clinical concern since fibroids are commonly detected in women of reproductive age. Uterine fibroids are associated with an increased rate of spontaneous miscarriages, premature labour, uterine inertia, foetopelvic disproportion, malpresentation, retention of the placenta, postpartum haemorrhage, placental abruption, Intra uterine growth restriction (IUGR), labour dystopia and caesarean section. [20]

Fibroids are associated with menstrual disorders and pelvic pain, infertility and pregnancy outcome. Incidence of fibroids increases with maternal age. Women who are older than 35 years of age and in nulliparas are especially at risk. (4 Fibroid 5 cm) tend to grow during the pregnancy. [21] The risk of adverse events in pregnancy increases with the size of the fibroid. Different complications with variable rates of incidence have been reported in pregnancy with fibroids. [22] Above mentioned complications are more commonly seen with large submucosal and retroplacental fibroids. [23]

Table 1: Age Distribution & Type of Pregnancy

Age	No. of Cases
18 – 24 years	4
25 – 30 years	6
31 – 35 years	3
36 – 40 years	2
Total	15
Type	
Primigravida	9
Multigravida	6
Total	15

Table 2: Complications

Complications	No. of Cases
Pain Abdomen	9
Fetopelvic Disproportion	7
UTI	3
PROM	3
Threatened Preterm	2
Associated Infertility	2
Malpresentation	2
IUGR	2
Preterm Labour	2
PPH	2
Abruption	0

Table 3: Type of Fibroid

Type of Fibroid	No. of Cases
Intramural	6
Submucosal	3
Subserosal	5
Pedunculated	1
Total	15

Table 4: Type of Delivery

Type of Fibroid	LSCS: No. of Cases	Vaginal: No. of Cases	Total
Detected Sonographically	8	2	10
Undetected	5	0	5
Total	13	2	15

Our knowledge of diagnosis and management of fibroids in the nonpregnant woman is abundant. By contrast, the literature examining uterine fibroids in pregnancy is scarcer and often low-quality. It is therefore difficult to describe their impact on pregnancy with any certainty, and harder still to guide management decisions. This is in spite of the fact that uterine fibroids affect up to 13% of pregnancies (Levast, Legendre, Bouet, & Sentilhes, 2016) [24], and that, due to the trend towards increasing maternal age and higher body mass indices, this prevalence is likely increasing. Moreover, the literature suggests that we tend to underestimate the number of pregnancies affected by fibroids (Ouyang, Economy, & Norwitz, 2006), reaffirming that this paucity of high-quality evidence is problematic.

Obstetric complications in this study was spontaneous abortion in 15%. High incidence of abortions in patients with fibroids is also supported by earlier studies. [25-26] The proposed mechanism is compressed endometrial vascular supply, affects the fetus adversely resulting in abortion. Pain was the mainly reported by women with fibroids ≥ 5 cm) during 2nd and 3rd trimesters of pregnancy. Fibroids may grow quickly and cause intense pain during pregnancy. [27] Pain may be due to red degeneration, which is thought to be result of effect of progesterone on fibroids that occurs more commonly in pregnancy. [28]

The position of leiomyoma with respect to the placenta might predict the pregnancy outcome. Weiner-Muram et

al [29] found that women whose fibroids were located retroplacentally, were associated with a higher incidence of adverse outcome. But Lev Toaff et al [30] presented a large series, where they did not find an association between the placental site in relation to fibroid and pregnancy outcome. In our study, three patients had fibroids located near the placenta. Of these, one had a second trimester abortion and one had an abruptio placentae. Though theoretically, fibroid is known to increase in size and undergo degeneration during pregnancy, we found such changes only in one case. Even, Winer- Muram et al had similar findings. They thought that the lack of variation in fibroid size may be due to increase in progesterone level during pregnancy which actually may decrease apparent fibroid size.

Generally fibroids are associated with multiparity and infertility. The relative risk of fibroids decreases with each additional term pregnancy, the risk is reduced to 1/5th, with five term pregnancies compared with nulliparous women. [31] Women with fibroids have had fewer term pregnancies and are of lower parity than their contemporaries without this problem.

Incidence of postpartum hemorrhage is high and is due to decrease of force of uterine contractions because of fibroids in myometrium or because of disruption of the coordinated spread of contractile wave, thereby leading to dysfunctional labour. Fibroids have been associated with various complications during pregnancy. They may increase in size, undergo degeneration or torsion. Most fibroids remain uncomplicated and do not increase in size. Up to 10% undergo degeneration typically in the second trimester and is usually a self limiting process, occasionally requiring bed rest, adequate hydration and analgesia. The variation in size of fibroid is due to increase in progesterone level during pregnancy which actually may decrease apparent fibroid size. Rarely retention of urine and torsion of uterus can occur. Risk of postpartum sepsis may be increased because of extensive necrotic degeneration of fibroid attributed to hormonal changes of pregnancy and the puerperium.

Ultrasonography is helpful in evaluating the size, number position, location, and relationship to placenta and echogenic structure of fibroids. We found that fibroids were less frequent in women in their first pregnancy compared to multigravida and grand multigravida. This is in contrast to the study by Kokab et al.; who reported fibroids to be more frequent (52.25%) in patients presenting in their first pregnancy. [32]

Uterine artery ligation appears to be a promising method in reducing blood loss during caesarean section in patient with leiomyomas who want to conserve their fertility. It has been reported that fibroids in the myometrium may decrease the force of uterine contractions or disrupt the coordinated spread of contractile wave thereby leading to dysfunctional labour. Neonatal outcome was encouraging

as perinatal mortality was 37/1,000 live births, thus indicating that fibroids do not impair foetal growth. However Bromberg et al.; [33] reported that there was high neonatal NICU admission in patients with fibroids.

Conclusion:

Though many of the fibroids are asymptomatic, but may adversely affect the course of pregnancy and labor depending on their location and size. The data generated from the present study concludes that pregnancy with Fibroids is considered High-Risk. Timely diagnosis and tertiary care referral and Management of Antepartum, Intrapartum, Postpartum complications with good neonatal care leads to successful outcome. Caesarean Myomectomy in selected cases can prove beneficial.

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