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Uterine fibroid

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Abstract

Uterine fibroid are the most common benign tumours occurring mostly in the reproductive age, with incidence of fibroids during pregnancy varying from 1 to 3.9%. Fibroid affect pregnancy and delivery in several ways like recurrent abortions, preterm labour, mal presentation, red d generation, difficult delivery, increase caesarean section rate, PPH, etc. Complication depend on size, location, and number of fibroids, ultra sound plays an important role in the diagnosis and for monitoring, both for fetal growth and myoma size, location and relation to placenta. The treatment of fibroids in pregnancy is usually conservative. Myomectomy during pregnancy is controversial. The surgical management of uterine leiomyoma during pregnancy may be performed successfully in carefully selected patients, which seems to imp [rove pregnancy outcome. Myomectomy during caesarean section is not always a hazardous procedure and can be performed without signifies complications by experience obstetricians. Leiomyomas are the most common benign tumour of the reproductive system. It is estimated that 22-25% of women more than 30 years of age developed uterine fibroids.

Keywords: Uterine fibroid, pregnancy, myomectomy, caesarean section, women

Introduction

Fibroid

Fibroids are firm, benign tumours of muscular and fibrous tissue, ranging in size from the very small to the very large. These are otherwise known as leiomyomas.

- Uterine fibroids (leiomyomas) have historically been viewed as important chiefly as the major indication for hysterectomy. As new therapies are developed, the heterogeneity of this disease becomes therapeutically relevant. An awareness of the role of genetics, the extracellular matrix, and hormones in tumor etiology is key to understanding this disease [1].

Incidence

The incidence of fibroid in pregnancy is about 1 in 1000.

Fibroid during pregnancy

The true incidence of fibroid in pregnancy is unknown as only 42% of fibroids in pregnancy are detected clinically when they are large and rate of detection falls to 12.5% when fibroids are less than 5cms. The growth of uterine myoma is related to their exposure to circulating oestrogen as they demonstrated their maximum growth during the reproductive period. Majority of uterine fibroids in pregnancy are corporeal with cervical fibroids present in less than 1% of cases.

Effects of pregnancy on fibroids

The incidence of pregnancy on fibroids is heterogenous; they may increase, decrease or remain static.

1. During pregnancy myometrial hyperplasia and hypertrophy occurs under the influence of hormones. Lev-toaff *et al* in an ultrasound study of 113 patients found that small fibroids of less than 5cms increased in size, large fibroids decreased in second trimester whereas all the fibroids decreased in second trimester whereas all the fibroids shrink in the third trimester. Rosati *et al* reported an increase in size of fibroids in 32.6% of their population. Some fibroids increase rapidly during pregnancy. Donnez *et al* reported a fib that increased from 7 cms before pregnancy to over 22 to 25 and weighed 2.25 kg at myomectomy.

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2. Red degeneration (necrobiosis) – it is commonly seen in large fibroids during second half of pregnancy and in puerperium. Exact cause is not known, it is probably vascular in origin. The growth of fibroid is most rapid due to increased blood flow to the uterus increasing steroid hormone levels. Subsequently they outgrow their blood supply and degenerate, and usually present as acute abdomen. Patient is generally ill with malaise, slight fever, dry tongue, tachycardia, etc. it has to be differentiated from torsion of subserous pedunculated fibroid, torsion ovarian tumour, abruptio placenta, retroverted gravid uterus, torsion of non-gravid horn of double uterus and pyelonephritis. It is very important to differentiate these conditions as treatment of degenerations is usually conservative with bed analgesics and sedatives to relieve pain. Symptoms usually subside in 3-10 days. There is no indication for myomectomy. Ultrasound and MRI helps in diagnosis. Pregnancy usually proceeds uneventfully.
3. Torsion – It usually presents as acute abdomen. It is common in pregnancy and puerperium due to alteration in abdominal wall tension and intra-abdominal space. Subserous pedunculated fibroid is usually prone for torsion.
4. Infection – Pyomyoma – Leiomyoma can be infected by bacterial seeding of necrotic foci. This occurs due to vascular insufficiency or due to haemorrhage and necrosis during pregnancy and puerperium. It is more common with submucous fibroid. It may present as acute abdomen with painful abdominal or pelvic mass. Pyomyoma is a rare complication which results from infarction and infection of a leiomyoma. Tina *et al* reported a case of post partum pyomyoma who underwent laparotomy with drainage of 1000 ml of pus and myomectomy with release of adhesions with good recovery and normal cyclical menstruation 6 months later.

Effects of fibroids on pregnancy

Sub-fertility

Submucous and intramural fibroids can affect fertility. Some of the causes are interference with implantation of fertilized ovum hindering the ascent of spermatozoa by distorting the uterus and tubes and associated disturbance of ovulation. Forty percent conceive after myomectomy if no other cause was found for infertility. In majority of cases the presence of fibroids does not complicate pregnancy.

Complication in early pregnancy

There is increased tendency for abortion. Campo *et al* reported that abortion rate in their patients fell significantly after myomectomy from 57% to 14%, but whether routine myomectomy reduces the risk of second trimester miscarriages. Salvador *et al* reported miscarriage rate of 6.3% in 128 women with fibroids undergoing amniocentesis. The increased incidence of abortion and preterm labour may be due to:

- Interference with uterine enlargement
- Initiation of abnormal uterine contractions
- Prevention of efficient placentation
- Impaction of uterus in the pelvis

Fibroids also can cause pressure symptoms due to impaction pressure on bladder causing retention of urine and on rectum causing constipation. Rarely incarceration of whole

gravid uterine can occur when it is trapped within the pelvis with further enlargement occurring by sacculation and presents with abdominal pain and urinary retention.

Late pregnancy complication

- Preterm labour – There is an increased risk of threatened preterm labour. Predisposing factors are size fibroid, fibroid volume more than 600 cm³ and presence of multiple fibroids.
- Placenta abruption – A retrospective study of 6706 pregnant women with 93 of them having fibroids reported placental abruption in 57% with retro placental fibroids but in only 2.5% of women whose fibroids were not retro placental.
- Foetal growth restriction – The incidence is supposed to be higher in pregnancies with retroplacental sub mucous fibroids though a much larger study of 12708 pregnant women did not demonstrate any increase in foetal growth restriction in the 492 women with fibroids.
- Foetal compression syndrome – Large fibroids may exert significant pressure effects on the foetus. If the head was adjacent to a fibroid it could result in dolichocephaly.
- Malpresentation – These are common with cervical, broad ligament fibroids, sub mucous fibroids and with multiple fibroids.

Delivery

- Obstructed labour – Usually due to malpresentations which are attributed to cervical fibroids or due to fibroids very low in uterine wall below the presenting part or due to broad ligament fibroid. This results in increase in rate of caesarean section.
- Rupture uterus – If obstructed labour is not diagnosed and effective treatment not given, it will result in rupture uterus.
- Uterine inertia – It is high if major portion of uterine wall is occupied by fibroids.
- Post-partum hemorrhage and retained placenta – If placentation occurs over sub mucous fibroid, there is increased incidence of adherent placenta, chances of atonic PPH are also high due to inefficient uterine contractions. Qidwai *et al* in a retrospective cohort study of women who underwent routine second trimester ultrasound over 10 years period found a 2.7% incidence of fibroids in pregnancy with an increased risk of breech, malposition, placenta previa, increased caesarean section rate and severe PPH.

Effects on puerperium

- Subinvolution.
- Sepsis.
- Secondary PPH.
- Lochmetra and pyometra

Types

1. **Body (Corporeal):** The fibroids are mostly located in the body of the uterus and are usually multiple.
 - a. **Interstitial or intramural:** Initially, the fibroids are intramural in position but subsequently, some are pushed outwards or inwards. Eventually, in about 70% they persist in that position.

- b. **Sub-peritoneal or sub-serous:** In this condition, the intramural fibroid is pushed outwards towards the peritoneal cavity. The fibroids are either partially or completely covered by peritoneum.
- c. **Sub-mucous:** The intramural fibroid when pushed toward the uterine cavity, and is lying underneath the endometrium, it is called sub-mucous fibroid. Sub-mucous fibroid can make the uterine cavity irregular and distorted.

2. Cervical: Cervical fibroid is rare (1-2%). In the supravaginal part of the cervix. It may be interstitial or sub-peritoneal variety and rarely polypoidal.

Pseudo-cervical fibroid: A fibroid polyp arising from the uterine body when occupies and distends the cervical canal, it is called pseudo-cervical fibroid.

Pathology – Red degeneration of fibroids

It predominantly occurs in a large fibroid during the second half of pregnancy or puerperium. During pregnancy, rapid growth can cause degeneration of a fibroid as it exceeds the available blood supply.

Naked eye appearance-of the tumor stymies dark red areas with cut section reveals raw beef appearance often containing cystic spaces. The odour is often fishy. The colour is due to presence of haemolysed red cells and hemoglobin, evidence of necrosis are present, vessels are thrombosed but extra-vasation of blood is unlikely.

Associated changes in the pelvic organs

1. **Uterus:** The shape is distorted; usually asymmetrical but at times, uniform. Myo-hyperplasia is almost a constant finding. It may be due to hyperoestrimism or work hypertrophy in an attempt to expel the fibroid.
2. **Uterine tubes:** The frequent tubal infection (about 15%) detected in association with fibroids seems coincidental.
3. **Ovaries:** The ovaries may be enlarged, congested and studded with multiple cysts. The cause may be due to hyperoestrimism.
4. **Ureter:** There may be displacement of the anatomy of the ureter in broad ligament fibroid. The compression effect results in hydroureter and or hydronephorsis.

Complications of fibroids

- Degenerations
- Necrosis
- Infection
- Sarcomatous change
- Torsion of sub-serous pedunculated fibroid
- Hemorrhage – Intracapsular
- Rupture surface vein of subserous fibroid – intra-peritoneal
- Polycythemia due to erythropoietic function of the tumour.
- Altered erythropoietic function of the kidney through ureteric pressure.

Clinical features

- **Symptoms:** Menstrual abnormalities (Menorrhagia 30%), dysmenorrhoea, infertility (30%).

Uterine

- Distortion and elongation of the uterine cavity.
- Difficult sperm ascent.
- Preventing rhythmic uterine contraction due to fibroids during intercourse → Impaired sperm count
- Congestion and dilation of the endometrial venous plexuses → defective nidation (implantation).
- Atrophy and ulceration of the endometrium over the sub mucous fibroids → defective nidation.

Tubal

- Corneal block due to position of the fibroid.
- Marked elongation of the tube over a big fibroid.
- Associated salpingitis with tubal block

Ovarian

- Anovulation
- Peritoneal endometriosis
- Unknown – majority

Pain lower abdomen

The fibroids are usually painless. Pain may be due to some complications of the tumour or due to associated pelvic pathology.

Due to tumour

- Degeneration
- Torsion sub-serous pedunculated fibroid
- Extrusion of polyp.

Associated pathology

- Endometriosis
- PID

Abdominal swelling (lump)

The patient may have a sense of heaviness in lower abdomen. She may feel a lump in the lower abdomen even without any other symptom.

Pressure symptoms

Pressure symptoms are rare in body fibroids. The fibroids in the posterior wall may be impacted in the pelvis producing constipation, dysuria or even retention of urine. A broad ligament fibroid may produce ureteric compression → hydroureteric and hydronephrotic → changes → infection pyelitis.

- **SIGNS:** General examination reveals varying degrees of pallor depending upon the magnitude and duration of menstrual loss.

Abdominal examination

The tumour may not be sufficiently enlarged to be felt per abdomen. But if enlarged to 14 weeks or more, the following feature are noted.

Palpation

- Feels is firm, more towards hard, may be cystic degeneration.
- Margins are well – defined except the lower pole which cannot be reached suggestive of pelvic in origin.

- Surface is nodular, may be uniformly enlarged in a single fibroid.
- Mobility is restricted from above downwards but can be moved from side to side.

Percussion

- The swelling is dull on percussion

Pelvic examination

Bimanual examination reveals the uterus irregularly enlarged by the swelling felt per abdomen.

Investigation

- **Transvaginal ultrasound** can accurately assess the myoma location, dimensions and also any adrenal pathology.
- **Magnetic resonance imaging**
- **Laparoscopy**
- **Hysteroscopy or HSG**
- **Uterine curettage:** In the presence of irregular bleeding, to detect any co-existing pathology and to study the endometrial pattern.
- **Preoperative assessment:** Apart from routine preoperative investigations, straight x-ray over the tumour mass and intravenous pyelography to note the anatomic changes of the ureter are helpful.

Treatment

Conservative management is appropriate where asymptomatic fibroids are detected incidentally. It may be useful to establish the growth rate of the fibroids by repeated clinical examination or ultrasound after a 6-12 month interval.

Medical management

Progestogens

- Progestogen is of help to minimize blood loss. Norethisterone acetate or medroxy progesterone acetate 5-10 mg is administered cyclically from 5 of the cycle for 0 days.
- Antifibrinolytics have been found to reduce the amount of blood loss significantly
- Tranexamic acid 2-4gm orally daily and mifipristone 25-30 mg daily is useful for fibroid related to menorrhagia.
- Danazol 200-300 mg for 3 months can reduce the volume of fibroid slightly.
- GnRH agonists- drugs commonly used are goserelin, lparelin, buserelin or nafarelin. Mechanism of action is sustained pituitary down regulation and suppression of ovarian function.
- GnRH antagonists- centeorelix or gamirefin causes immediate suppression of pituitary and the oversees.

Surgical management

- Myomectomy
- Hysterectomy
- Endoscopic surgery

Myomectomy

Myomectomy is the enucleation of myomata from the uterus leaving behind a potentially functioning organ capable of future reproduction.

Indication

- The patient is in reproductive period desires of having a baby. The age limit is made arbitrary. It is more fruitful if done below the age of 35 but may be extended to 40.
- In cases of recurrent pregnancy wastage due to fibroid.

Contraindications

- Husband proved infertile
- Associate bilateral infective tubo-ovarian mass
- Infected fibroid
- Big broad ligament fibroid.

Vaginal myomectomy

Sub-mucous pedunculated myoma can be removed vaginally. Morcellation (removed by piecemeal) is needed of the tumour is large. A moderate size fibroid can be removed by twisting. In that case fibroid is grasped with a sponge forceps.

Hysteroscopy

Generally a fibroid of 3-4 in diameter or a polyp is re-sected with a hysteroscope. Pedicle or base of the fibroid is coagulated using electrocautery.

Laproscopy

Sub-serous and intramural fibroid could be removed laparoscopically. Electrocautery, laser and extra-corporeal sutures are used for haemostasis.

Hysterectomy

Hysterectomy is the operation of choice is symptomatic fibroid. As such, in the absence of indication of myomectomy, hysterectomy done.

- Uterine leiomyomas (fibroids or myomas), benign tumours of the human uterus, are the single most common indication for hysterectomy. They are clinically apparent in up to 25% of women and cause significant morbidity, including prolonged or heavy menstrual bleeding, pelvic pressure or pain, and, in rare cases, reproductive dysfunction. Thus, both the economic cost and the effect on quality of life are substantial. Surgery has been the mainstay of fibroid treatment, and various minimally invasive procedures have been developed in addition to hysterectomy and abdominal myomectomy. Formation of new leiomyomas after these conservative therapies remains a substantial problem. Although medications that manipulate concentrations of steroid hormones are effective, side-effects limit long-term use. A better approach may be manipulation of the steroid-hormone environment with specific hormone antagonists. There has been little evidence-based evaluation of therapy. New research into the basic biology of these neoplasms may add new treatment options for the future as the role of growth factors and genetic mutations in these tumours are better understood [2].

Uterine Fibroid Embolization (UFE)

It is a treatment that cuts off the blood supply to the uterus and the fibroids so they shrink. UFE is proving to be an alternative to hysterectomy and myomectomy many women can have UFE and go home the same day. Recent study also suggest that most fibroid tumours are not likely to re-grow after UFE, although more long term data is needed.

- A prospective study was done to evaluate the effectiveness and safety of selective embolization of the uterine arteries in the management of symptomatic uterine leiomyoma and results found that Bilateral embolization of the uterine arteries was performed in 76 women; unilateral embolization, in four women. Menorrhagia disappeared in 72 (90%) women. In five (6%) women (including three women with unilateral embolization), clinical improvement was not observed, and myomectomy was needed. In one woman with a large submucosal uterine leiomyoma, hysterectomy was needed because of septic uterine necrosis. Normal menstruation resumed in all but six women. Full-term pregnancy occurred in three women after the procedure. Superselective arterial embolization of the uterine arteries is an effective means of controlling symptomatic uterine leiomyoma. However, the ideal embolic regimen remains to be determined [3].
- A prospective study was done by Gyalene Pron *et al* on uterine fibroid reduction and symptom relief after uterine artery embolization for fibroids and the objective of this study were To evaluate fibroid uterine volume reduction, symptom relief, and patient satisfaction with uterine artery embolization (UAE) for symptomatic fibroids. The study result found that UAE reduced fibroid uterine volume and provided significant relief of menorrhagia that was unrelated to initial fibroid uterine size or volume reduction. Patient satisfaction with short-term UAE treatment outcomes was high [4].

Removal of ovary

It is preferable to remove the ovary in post menopausal women and to preserve the same in earlier age if they are fond healthy.

Advantage of hysterectomy

- There is no chance of recurrence
- Adnexal pathology and the unhealthy cervix are also removed

Cervical fibroids

Symptoms

In non-pregnant state the symptoms are predominately due to pressure effect on the surrounding structure. In pregnancy it remains a symptomatic but produces inseparable obstruction during labour. Fibroids arising from the vaginal part of the cervix may remain asymptomatic during non-pregnant state bt produces obstruction during labour. If pedunculated, those may be a sensation of something coming down or if infected a foul smelling discharge per vagina.

Treatment

Supravaginal fibroids

Myomectomy may be tried if the patient is young and desirous of having a baby. But, it is not technically difficult but the anatomic and functional restoration of the cervix cannot be adequate to achieve the objection of future reproduction.

Vaginal part fibroids

If the tumour is sessile, myomectomy and if pedunculated is done.

Nursing management

Assessment and Nursing diagnosis

Assessment should include a history of symptoms (which might include abnormal bleeding, abdominal pain, dysmenorrhoea, pelvic fullness or heaviness, or problems with elimination) and a pelvic examination.

1. Anxiety related to:
 - a) Uncertain diagnosis
 - b) Fear of malignancy
 - c) Potential of surgical treatment.
2. Pain altered comfort related to:
 - a) Leimyomas
 - b) Risk for sexual dysfunction related to dyspareunia.

Expected Outcomes of care

- Verbalise a decrease in anxiety related to the diagnosis and therapeutic regimen.
- Verbalise understanding of treatment options to make an informed decisions.
- Report no compromise in sexual fntionaning as a result of the therapeutic intervention.

Plan of care and intervention

Knowledge of the medical-surgical management of leiomyomas is essential in planning nursing care. The knowledge enables the nurse to work collaboratively with other healthcare providers and to meet the woman's informational and emotional needs.

Conclusion

Uterine fibroids are rubbery modules that begin as irregular cells in the muscular layers of the uterus and grow slowly into tumour-like masses of connective tissue and smooth muscle.

Uterine fibroids being the most common benign tumours in reproductive age can complicate pregnancy, labour and delivery. A successful pregnancy and delivery is possible with appropriate surveillance and supportive management without much morbidity.

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