

Acute Abdomen during Pregnancy with Fibroid Uterus: Red Degeneration or Torsion?

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ABSTRACT

During pregnancy, red degeneration and torsion of subserosal fibroid may present with acute abdomen, creating a diagnostic dilemma. Red degeneration of fibroid during pregnancy responds to conservative management, whereas torsion of a subserosal fibroid requires emergency myomectomy. This case report describes a clinical scenario wherein difficulties were encountered in diagnosing the cause of acute abdomen during mid-trimester in a pregnant woman with fibroid uterus and the role of imaging to differentiate the above two clinical conditions. A 26-year-old staff nurse, a primigravida with subserous fibroid presented at 19 weeks with pain in abdomen and vomiting. She was provisionally diagnosed with red degeneration and treated conservatively for 48 hours. Her symptoms persisted, and hence torsion of the subserous fibroid was suspected. However, no pedicle was visualised on 2D Ultrasound (USG). Therefore, Magnetic Resonance Imaging (MRI) was done, which revealed the pedicle, and accordingly, the decision for emergency laparotomy was taken, and the fibroid was excised. Histopathology revealed infarction of leiomyoma. The pregnancy continued in a regular course.

Keywords: Emergency laparotomy, Myomectomy, Torsion of pedunculated fibroid, Uterine fibroid

CASE REPORT

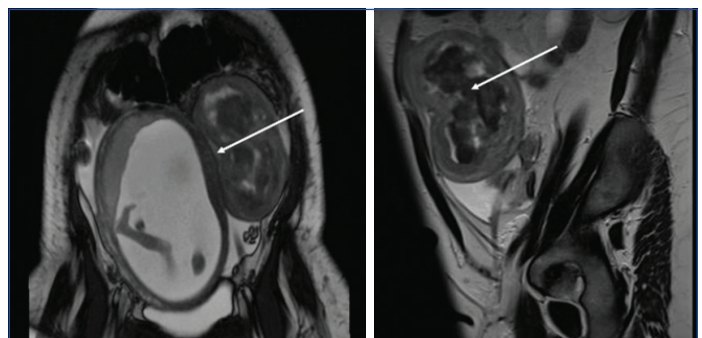
A 26-year-old staff nurse, a primigravida with fibroid uterus at 19 weeks of gestation, presented to the emergency facility with sudden onset of lower abdominal pain. The pain was continuous, dull aching, and was referred to the lower back. There was no history of vomiting or fever. Her general condition was fair on clinical examination; her pulse rate was 96 beats per minute, blood pressure was 100/60 mmHg, and her abdominal examination revealed 18 weeks size gravid uterus, which was non tender. Vaginal examination revealed discharge suggestive of candidiasis, and she has advised treatment with the clotrimazole vaginal pessary for the above. She was reassured and was asked to follow-up on an outpatient basis.

Within 24 hours, she presented again with increasing severity of pain abdomen associated with two episodes of vomiting, and there was no history of fever or obstipation. Abdominal examination revealed tenderness over the mass occupying the left lumbar region and a gravid uterus of 18 weeks in size. Ultrasound (USG) revealed a live foetus of 18 weeks gestational age, posterior placenta with good liquor, no retroplacental clot, and a 6.4×6.2 cm subserosal fibroid visualised towards the left-side of the uterine fundus. Doppler showed the presence of decreased internal vascularity in the mass, and the pedicle could not be visualised. A provisional clinical diagnosis of red degeneration of the fibroid was made, and she was hospitalised and managed conservatively with intravenous fluids and analgesics for 48 hours.

Her present pregnancy was confirmed at 10 weeks of pregnancy by USG. Single live intrauterine gestation with Crown-Rump Length (CRL) of 32 mm was seen. There was a subserosal fibroid on the anterior wall of the uterus, which measured 6×6.2 cm. She was advised to take folate tablets and review at 13 weeks for Nuchal Translucency (NT) scan. NT measured 1.6 mm at a CRL of 72 mm, and the fibroid measured 6.4×6.2 cm. She did not experience discomfort or pain during the first and early second trimesters.

Now at 19+3 weeks after admission with a provisional diagnosis of red degeneration, the abdominopelvic pain increased in severity, and

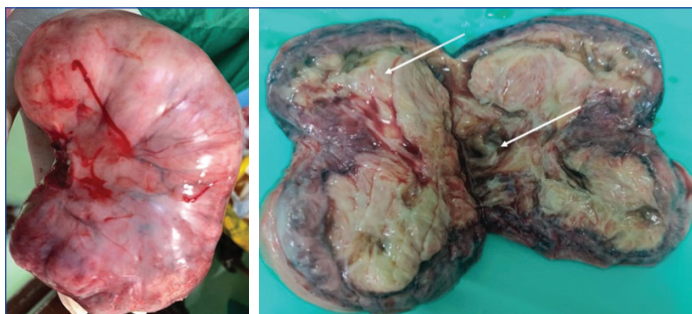
she developed an increased frequency of micturition and vomiting, which persisted for more than 48 hours; hence torsion of fibroid was suspected. Her USG findings in the non pregnant states were reviewed, but there was no mention regarding whether the subserous fibroid was pedunculated or not. Hence, Magnetic Resonance Imaging (MRI) of the abdomen and pelvis was performed to differentiate between torsion of subserous fibroid and red degeneration. The MRI revealed a large subserosal pedunculated fibroid along the left lateral myometrium, which showed heterogeneous signal intensity with internal areas of haemorrhage, possibly red degeneration of fibroid [Table/Fig-1,2]. A diagnosis of torsion of the pedunculated subserosal fibroid was made along with clinical features.



[Table/Fig-1]: Magnetic Resonance Imaging (MRI) plain of abdomen and pelvis T2 weighted image showing bean-shaped left lateral myometrial subserosal pedunculated fibroid of size 7.2×7.5×12.1 cm with the pedicle. **[Table/Fig-2]:** Magnetic Resonance Imaging (MRI) of abdomen and pelvis T2 weighted image showing heterogeneous signal intensity with internal areas of haemorrhage, possibly red degeneration of fibroid. (Images from left to right)

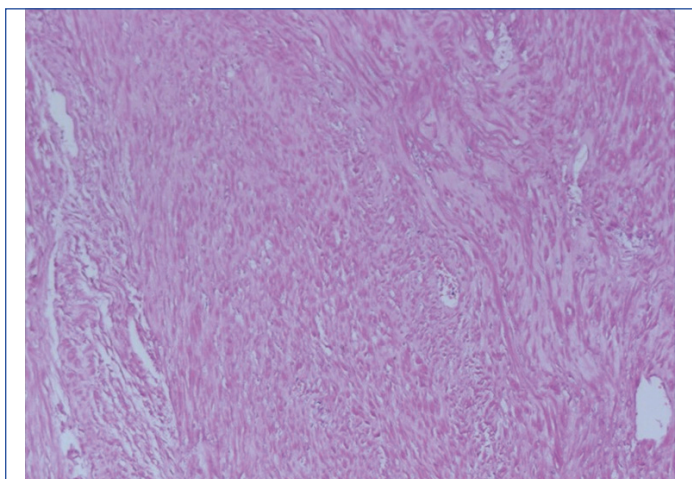
She was counselled regarding the need for surgery and the operative and postoperative risks associated with uterine surgery during pregnancy. A senior obstetrician and two assistants performed an emergency laparotomy under spinal anaesthesia at 19+3 weeks. Considering the fibroid location and size, a vertical supraumbilical incision extending 2 cm below the umbilicus was given. The haemorrhagic fluid of approximately 100 mL was present inside the

peritoneal cavity. A large mass of 12×6 cm (International Federation of Gynaecology and Obstetrics (FIGO) type 7) arising from the left anterior wall of the uterine fundal region with a small (<1 cm) partially necrotic pedicle with partial torsion was present in the left posterolateral aspect of the gravid uterus causing minimal torsion of the gravid uterus to the left. The mass was gently brought out of the incision, and the pedicle was detorted, clamped, cut, and ligated. After closing the abdomen, a USG was performed for foetal cardiac activity and amniotic fluid, which were normal. The removed mass was larger than the preoperative imaging estimated, and it was soft in consistency. The cut-section showed bluish necrotic areas with areas of infarction [Table/Fig-3,4].



[Table/Fig-3]: Gross specimen of the subserosal fibroid 12×6 cm bean-shaped soft mass with a small pedicle. **[Table/Fig-4]:** Cut-section of specimen of the subserosal fibroid with areas of infarction and necrosis. (Images from left to right)

The histopathology of the mass was found to have interlacing fascicles of smooth muscle cells, elongated nucleus, bland chromatin, eosinophilic cytoplasm with hyalinisation and large areas of infarction. The final diagnosis was reported as leiomyoma with extensive areas of infarction [Table/Fig-5]. The postoperative hospitalisation lasted five days, while antibiotics, tocolysis with nifedipine, and progesterone therapy were maintained. The pregnancy continued normally, and she delivered vaginally a 2.9 kg healthy male baby at 39 weeks after a spontaneous onset of labour.



[Table/Fig-5]: Interlacing fascicles of smooth muscle cells, elongated nucleus, bland chromatin, eosinophilic cytoplasm with hyalinisation and large areas of infarction (Haematoxylin and Eosin staining; 10X).

DISCUSSION

Fibroids are hormone-sensitive benign tumours of uterine smooth muscles, commonly encountered during pregnancy. The prevalence in non pregnant women ranges from 10-50%, but in pregnancy, it is reported to be 2-10% [1,2]. Fibroids are typically asymptomatic during pregnancy, but some women experience pain for various reasons. Red degeneration, torsion, abortion and infection that complicate pregnancy may present with acute pain abdomen apart from preterm labour and antepartum haemorrhage in late pregnancy [3,4].

Fibroid-related complications occur in 10-20% of women during pregnancy [5], and red degeneration occur in 8% [6]. The fibroid's red/carneous degeneration is defined as haemorrhagic infarction of

a previously hyalinised myoma caused by ischaemic necrosis, as the rapid fibroid growth outweighs its blood supply [7]. It most often occurs during pregnancy and is associated with oral contraceptive use. However, the patient did not have any history of taking oral contraceptive pills. Red degeneration can also occur rarely in non pregnant women [8]. Clinically, this condition is characterised by acute onset focal abdominal pain, mild fever, nausea and vomiting, localised tenderness over the fibroid and leucocytosis [9]. Torsion of the fibroid must be suspected when pain persists beyond a reasonable period or a previously diagnosed pedunculated fibroid. Rare reports of uterine torsion in the third trimester secondary to large or multiple subserous fibroids have also been described [10,11]. The incidence of torsion of a uterine fibroid is less than 0.25% in non pregnant individuals [12].

Red degeneration and torsion of fibroid during pregnancy have similar clinical features, leading to a diagnostic dilemma as in the present case. Therefore, it is essential to differentiate between red degeneration and torsion, as red degeneration is managed by conservative treatment, whereas torsion needs surgical management. Imaging plays a significant role in deciding the management in this challenging situation.

Close inpatient monitoring of the patient's symptoms like persistent or increased pain, and vomiting, despite conservative management with analgesics, must lead to clinical suspicion of torsion of the fibroid. Still, confirmation is necessary to avoid unnecessary surgical procedures during pregnancy, leading to pregnancy loss. A brief literature review also suggests that the clinical features of red degeneration of fibroid and torsion of the subserosal fibroid overlap, and imaging is required to arrive at an accurate clinical diagnosis. USG doppler and MRI are usual imaging modalities. MRI has the highest diagnostic accuracy in differentiating these two conditions [13]. With 2D USG, it can be challenging to identify very small pedicles of subserosal fibroids. Either transabdominal or transvaginal ultrasound is a simple, non expensive way to locate fibroid and diagnose degeneration if present. In the present case, 2D USG could not identify the subserous fibroid's small pedicle (<1cm), and MRI was more helpful in reaching an accurate diagnosis. The sensitivity and specificity of MRI in diagnosing degeneration of uterine fibroids are 60% and 93.7%, respectively [14]. MRI should be considered in conditions where the pain persists beyond a reasonable period as it helps to evaluate acute leiomyoma complications during pregnancy. Fibroids with red degeneration appear as peripheral or diffuse hyperintensity on T1 weighted images, and variable signal intensity with the hypointense rim on T2 weighted images [15]. Torsion of a leiomyoma on MRI shows a high-intensity signal on the T1 image, and the centre of the mass would be more intense than the periphery of the mass on the T2 image [16]. The pelvic mass appears without enhancement due to a lack of vascularity compared to an adequately perfused enhanced uterus in the post-contrast study [16]. In the present case, the small pedicle was visualised by MRI, and it was reported that there were areas of haemorrhage suggesting that it was a pedunculated fibroid that may have undergone torsion.

Conservative management is the gold standard for red degeneration of fibroid, including hospitalisation, analgesics, intravenous fluids, and antiemetics, which are almost always successful [7]. Low-dose narcotic analgesia is preferred over Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) as there is a risk of premature closure of ductus arteriosus on prolonged NSAID usage [7]. A timely diagnosis and management are required as there can be a possibility of spontaneous perforation/rupture of a red degenerated fibroid which may require peripartum hysterectomy due to uncontrollable bleeding [17]. Red degeneration can also result in intracapsular bleed causing haemodynamic instability and requiring exploratory laparotomy [18]. One such case was reported by Kaur H and Kumar N, wherein a 27 week primigravida underwent laparotomy for a

28 cm multilobulated fibroid uterus and had a subtotal hysterectomy due to torrential haemorrhage [18].

The surgical management of fibroid during pregnancy includes torsion, failure of medical management (more than three days) of a degenerated fibroid and severe pressure symptoms [19]. In most individuals, laparotomy is performed, though laparoscopy has been used for a 24 cm subserosal pedunculated myoma in a woman at 15 weeks gestation [20]. Hence, laparoscopy can successfully be performed mainly when the torsion occurs in the first trimester [21]. Laparotomic myomectomy is rarely done during an ongoing pregnancy due to the increased risk of stillbirth, abortion, and preterm labour. Most patients of laparotomic myomectomy described in the literature have been done during a caesarean section, while few case reports of antepartum myomectomy are described. To prevent adverse foetal outcomes, care must be taken to avoid electrocautery use and limited manipulation of the uterus during myomectomy. In a clinical case reported by Umezurike C and Feyi-Waboso P, a 30-year-old primigravida presented at 19 weeks of gestation had a gradually increasing abdominal swelling over three months associated with pain and severe epigastric discomfort [22]. USG revealed a 30 cm multilobulated cystic tumour at the right posterosuperior aspect uterus. Because of the severity of symptoms and USG findings, surgery was proposed, and laparotomy was done. A cystic subserosal fibroid of 32 cm arising from the right posterior-superior aspect of the uterus was removed. The histopathology was consistent with hyaline degeneration without any evidence of malignancy. She had an uneventful spontaneous vaginal delivery at 38 weeks. An operated pedunculated myoma in mid-trimester can be allowed for a vaginal delivery provided there are no obstetric indications for caesarean section. A successful vaginal delivery at term following laparotomic myomectomy for a failed medical management of a suspected necrotic fibroid had been reported. Intraoperatively there were three subserous pedunculated myomas, of which the largest measured 15 cm and had a torted pedicle. A successful myomectomy was performed at 17 weeks, and the cut surface of the myoma showed widespread necrotic areas [23].

An important differential diagnosis of acute abdominal pain related to leiomyoma in pregnancy is torsion of a pedunculated subserosal fibroid which is challenging to diagnose with a 2D USG. Therefore, a higher imaging modality like MRI is required when there is a diagnostic dilemma.

CONCLUSION(S)

This clinical case report illustrates the diagnostic difficulties often encountered in managing acute abdomen during pregnancy complicated by fibroid uterus. MRI is a beneficial adjunct investigation to differentiate red degeneration from torsion of fibroid, as clinically both conditions have similar clinical features. In this case, ischaemia and infarction occurred following torsion of the fibroid.

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