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Case Report

Uterine Rupture After Minor Falling Down Accident in a 3rd Trimester Pregnancy

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Abstract

Background: Maternal Morbidity and Mortality has been a major WHO concern, Sub-Saharan Africa alone accounted for roughly two-thirds of maternal deaths. Uterine rupture is a fatal complication which occur during pregnancy resulting in Maternal Morbidity and Mortality. This paper reports uterine rupture in a lady who sustained blunt abdominal trauma secondary to minor falling down accident which resulted direct blow to her abdomen and managed at the Jimma Medical Center, Ethiopia.

Case Presentation: Mrs. RJ aged 30 years, Gravid 4 Para 3, Amenorric for 08 and half months. was admitted to Jimma Medical center in Ethiopia on April 08, 2021 at 5:45 with severe anemia of HCT 18.9%, BP = 90/60 mmHg, pulse 128 beats per minute. She has history of a blunt abdominal trauma after sustaining a falling down accident. She underwent a subtotal abdominal hysterectomy and blood transfusion. Her post-operative stay in hospital was uneventful.

Conclusion: Trauma is the leading non obstetric cause of death among pregnant women. Uterine rupture is a serious obstetric complication, with high morbidity and mortality. It can be eliminated under conditions of best obstetric practice and by counseling of pregnant ladies when to seek medical attention after sustaining falling down accident. The survival of patients after uterine rupture depends on the time interval between rupture and intervention, site of the uterine rupture and the availability of blood products for transfusion.

Keywords: *Uterine Rupture; Trauma; Hysterectomy; Transfusion; Blood Products*

Abbreviations

WHO: World Health Organizations; CBC: Complete Blood Count; WBC: White Blood Cell Count; HCT: Hematocrit; CI: Confidence Interval; FAST: Focused Assessment with Sonography for Trauma

Background

Maternal mortality, one of the major concerns of the WHO, remains high in most of sub-Saharan Africa, Accounting for 401 maternal deaths in 100000 live births in Ethiopia [1]. Uterine rupture is a serious obstetric.

Complication, with high morbidity and mortality, particularly in less and least developed countries. With ready access to obstetric care, including caesarean section for obstructed labor, rupture of the unscarred uterus should be rare [2]. Nevertheless, it is still a major public

health problem in developing countries in general and in Ethiopia in particular. The main direct causes of maternal death includes obstetric complications such as hemorrhage (29.9%), obstructed labor/ruptured uterus (22.34%), pregnancy-induced hypertension (16.9%), puerperal sepsis (14.68%) and unsafe abortion (8.6) [3].

Rupture of the uterus can follow from misoprostol, oxytocin stimulation, uterine scar, obstructed labor, and rarely blunt abdominal trauma [4]. Motor vehicle accidents, domestic violence, and falls are the most common causes of blunt trauma during pregnancy [5,6].

We are reporting a case of 3rd trimester Pregnancy complicated by uterine rupture and Severe anemia secondary to Blood Loss in a lady who sustained blunt abdominal trauma secondary to simple falling down accident which resulted in direct blow to her abdomen and managed at Jimma Medical Center, Ethiopia.

Case Presentation

Mrs. R.J aged 30 years, Gravid 4 Para 3 (all Vaginal Delivery and all alive), is an Oromo in ethnicity and from Ethiopia. She doesn't know her Last Normal Period and claims amenorrhea of 8 months and 2 weeks. She had ANC follow up at Local Health Center, which was uneventful. She is referred from a Primary Hospital after she sustained a falling down accident of 24 hours durations. She sustained falling to the ground which resulted in a direct blow to her abdomen. After the trauma she was having severe and continuous type of abdominal pain and minimal amount of dark red vaginal bleeding. she also has cessation of fetal movement after the incident. Otherwise, She has no pushing down pain and no other danger signs of pregnancy. All of her prior deliveries were vaginal at 9½ month of amenorrhea. She declined presence of any intimate partner violence. Has no known chronic medical illnesses like cardiac, Diabetes Mellitus and Renal disease.

On physical examination she was acutely sick looking. On Vital signs: BP = 90/60, PR = 128bpm, she had Pale conjunctiva and the abdomen was protuberant with diffuse tenderness and fetal parts were easily palpable with negative FHB and no uterine contractions. On pelvic examination cervix admits tip of finger, fetal parts were not reachable and there was dark red blood on examining fingers.

Bed side abdominal and pelvic ultrasound findings showed that there was partially full bladder, an empty uterus with anterior defect seen, fetus was in the abdominal cavity with negative FHB and FL of 36+2 Weeks and there was significant fluid collection in the peritoneal cavity.

Double IV Lines were secured and the patient was resuscitated with crystalloid fluids. She was investigated with CBC and her WBC = 25000/ul, HCT = 18.9%, Plt = 121000/ul, her renal function test were Normal: Cr = 0.57mg/dl, BUN = 97 u/l, Blood Group was O+ve. After two Units of cross matched blood was prepared and after senior Obstetrician is involved written consent was taken and patient taken to Operation room for emergency laparotomy. Sub-umbilical mid-line incision was made to enter abdomen intraoperatively there was About 1000 ml of hemo-peritoneum and both the 3200 gm female fresh still born and placenta were in the peritoneal cavity with intact amniotic membrane. Anteriorly there was about 8cm size lower segment transverse rupture with extension to the right side laterally involving uterine vessels with broad ligament hematoma. Subtotal abdominal hysterectomy was done. The patient was transfused 3 units of whole blood during surgery and postoperative period. She was then awaken and transferred to the recovery unit where she was followed up for 8 hrs. The hematocrit level the day after surgery was 24%. She was having smooth post-operative period and discharged on 6th post op day with Ferrous sulphate.

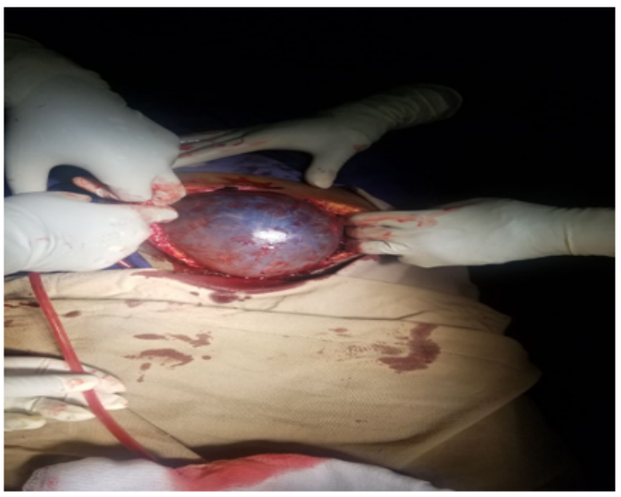

Figure 1: *Fetus and placenta in the abdominal cavity with intact amniotic membrane.*

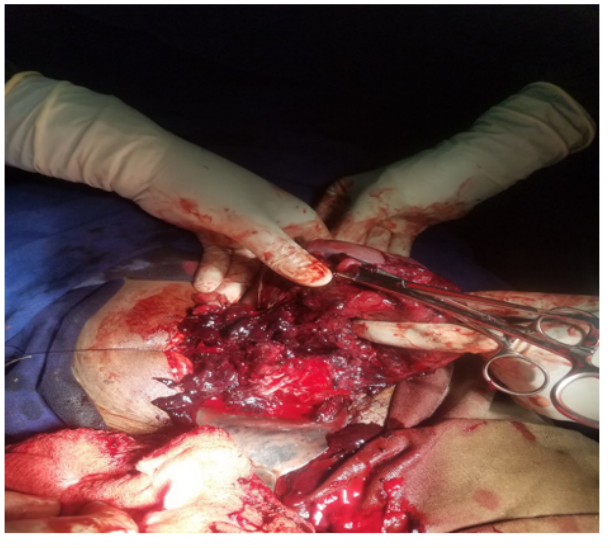

Figure 2: *Lower Uterine segment uterine rupture with extension to the right uterine vessels.*

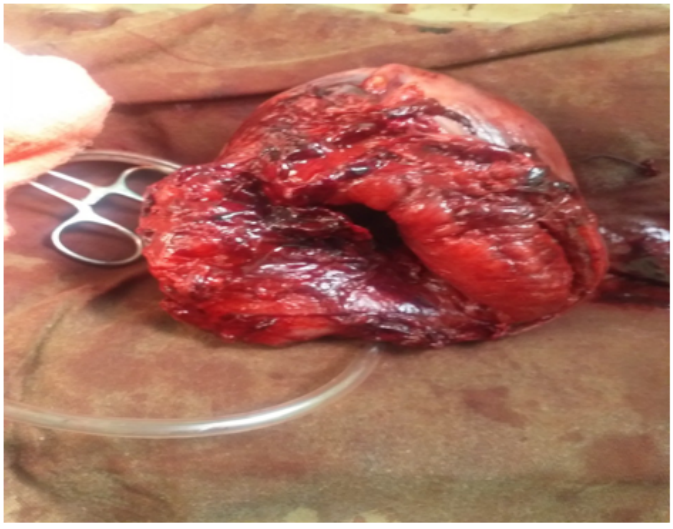

Figure 3: *A subtotal hysterectomy specimen after surgery.*

Discussions

Trauma happens 1 in 12 pregnancies, and is the top non obstetric cause of death among pregnant women [7-9]. Causes of Traumatic injuries to pregnant women can be unintentional or intentional. unintentional causes incudes due to motor vehicle crashes in 48% of

cases, falls in 25% of cases, poisonings and burn. Intentional causes includes assaults/intimate partner violence in 17% of cases, suicide in 3.3% of cases, homicide, and gunshot wounds in 4% of cases [8,10].

Most of traumatic injuries during pregnancy are classified as minor, accounting for about 90% of cases. But minor traumas account for 60% to 70% of fetal losses after trauma [10]. By convention, to declare a trauma as a minor, their should be no involvement of the abdomen, there shouldn't be rapid compression, deceleration, or shearing forces and the patient shouldn't report pain, vaginal bleeding, loss of fluid, or decreased fetal movement [11]. In this case although the mechanism of the injury looks minor the patient lost her baby and Hysterectomy was mandated to save her life.

Both Anatomic and physiologic changes that occur during pregnancy has an impact on assessment, management, and prevention of trauma. During the first trimester, the uterus is small in size and has thick wall and doesn't go beyond the pelvic cavity and is well protected from trauma by the pelvic girdle. In the second trimester, amniotic fluid volume protects the fetus. By the third trimester, however, the uterus wall will thinned out due to fetal growth and formation of lower uterine segment. So prominent uterus is exposed to blunt and penetrating abdominal trauma [9-12].

Falls are the causes of maternal trauma in 3% to 31% of cases [13]. Complications resulted from falls includes preterm labor and premature rupture of membranes, Abruptio Placenta, uterine rupture, fetal growth restriction, and intrauterine fetal death. Pregnant woman particularly those in 3rd trimester after 32 weeks are at increased risk of accidental falling down, the reasons behind this are [13]:

- Growing belly shifts the center of gravity forward and increase in lumbar lordosis making it harder for the ladies to stay upright, especially on uneven surfaces like a sidewalk curb.
- Because of hormonal effect of relaxin as the gestational age increases the looser the joints becomes.
- Generally Pregnant women are exhausted, feels uncomfortable, are always preoccupied by other things and overwhelmed, all of which would put them at an increased risk for a stumble.

Trauma related uterine rupture is rare accounting for 0.6% of all maternal injuries. Trauma related uterine rupture seen more frequently with a scarred uterus or with direct abdominal impact during the latter half of pregnancy [14]. Only 10% of falls are associated with significant maternal or fetal complications resulting maternal and fetal morbidity and mortality [15].

Two third of (75%) uterine ruptures involve the fundal area. The degree of rupture may vary from complete rupture of the uterus to incomplete serosal hemorrhage and abrasions. Uterine rupture may compromise the life of the mother and unless picked early mortality of the fetus is universal. If uterine rupture is diagnosed or suspected, prompt urgent laparotomy to control bleeding and facilitate resuscitation is recommended [16].

Evaluation of a pregnant trauma patient

Assessment of a pregnant trauma patient requires evaluation of a multidisciplinary team including trauma specialist, an obstetrician, a neonatologist, an anesthetist, and skilled nursing staff. The pregnant patient should be fully assessed, with a detail history, physical examination, laboratory tests, imaging studies, and if indicated with invasive diagnostic procedures. If the gestational age had past the date of viability fetal evaluation should have to performed [16].

A thorough history is very important to know the mechanism of injury and presence of possible concealed damage in a pregnant patient. The physician should also know about past obstetrical history including previous uterine surgery, past obstetrical complications and the course of the current pregnancy. The history should also include specific complications of trauma in pregnancy like passage of amniotic fluid, vaginal bleeding, severe abdominal pain, uterine contractions, and fetal kick count [16].

The physical examination of pregnant trauma patients is not different from the non-pregnant patients with modifications for pregnancy-related complications. The recommendations proposed by the Advanced Trauma Life Support Course of the American College of Surgeons' Committee on Trauma approach can be used [17].

Physical examination of pregnant trauma patient should start by exposing all body parts. Because of physiologic compensation of pregnancy derangement in vital signs occur late. Placental Abruption may present with Tenderness over the fundal area of the uterus. Fetal parts may easily palpable in case of uterine rupture [18]. After excluding placenta previa by ultrasound vaginal examination should be performed for cervical dilatation, effacement, fetal presentation, and station. A speculum examination should be performed to assess cervical status, amniotic membrane and presence of any passage of conceptus tissue [16].

Maternal assessment includes investigation of the following: x-ray of the chest spine and pelvis, CBC, FAST, and peritoneal lavage.

Evaluation of fetal condition should start as early as possible since there is a risk of placental abruption during the trauma [19].

According to guidelines for the management of a pregnant trauma patient of Canada if pregnant patient present with trauma has the following condition it suggest hospitalization and intermittent fetal heart rate and uterine activity monitoring by EFM for 24 hours. The conditions includes: significant abdominal pain, uterine tenderness, vaginal bleeding, frequent uterine contractions, passage of liquor, nor reassuring fetal heart rate pattern, if the mechanism of injury is high risk like motorcycle, pedestrian, high speed crash, or if serum fibrinogen level is < 200 mg/dL. To be on safe side, patients without the above mentioned risk factors close follow up of 4 hours is sufficient to rule out major trauma-related complications in low risk [16].

There is no universal standard for management of uterine rupture. Depending on the nature of the rupture and the condition of the patient, the uterus may be either repaired or removed Total or subtotal abdominal hysterectomy, repair, or repair with tubal ligation can be considered depending on the location, hemodynamic status of the patient, and future fertility desire [16]. In our case Total Abdominal Hysterectomy was done as the patient presents after 24 hours of the incident and the rupture also involved the major vessels on one side.

There is no much case Reports that show Uterine Rupture from minor falling down accident, only one case report from India in which a 25 years old Gravid 4 Para 3 mother diagnosed with uterine rupture after one month of sustaining a fall from a bridge of 6 feet [20,21]. But there are Multiple case reports of uterine rupture after Motor Vehicle collisions including one case report from our Hospital, Jimma University Medical Center, on 2015 which resulted in a complete transverse tear measuring 10 centimeters in the left upper segment of the uterus, extending laterally to involve the left uterine vessels managed with Total abdominal hysterectomy and left salpingo-oophorectomy and discharged with improvement [22].

Conclusion

This is a preventable complication had the woman been properly counseled with precautions that should have to make during pregnancy including:

- To avoid slipping, look carefully at surfaces for water or other liquids.
- Avoiding high heels or "wedge" shoes.
- While climbing downstairs to hold on to hand rails.
- To avoid heavy weight loads.
- Walking on surfaces which are leveled and avoiding slippery grounds.

Fear of falling shouldn't have to be a contraindication for physical activities. Instead, they should do their daily activities on surfaces which are smooth and even like a treadmill or track [23].

Near presence of a minor fall only is not enough to cause a risk with the pregnant and/or the fetus, unless there is a presence of the following symptoms which necessitate to visit health facility:

- If it is a fall that resulted in a direct blow the stomach.
- Passage of fluid per vagina or Vaginal Bleeding.
- If there is severe pain, especially to the pelvis, stomach, or uterus.
- If starting to have contractions.
- If the fetus isn't moving as often.

So once falling down accident happened to a pregnant woman it is advisable to counsel on the above points to seek medical attention [23].

Competing Interests

The authors declare that they have no competing interests.

Available of Data and Material

The dataset(s) supporting the conclusions of this article could be obtained from the authors on request by the editors.

Consent to Publish

Written informed consent was obtained from the patient for publication of this Case Report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Ethics Approval and Consent to Participate

Authorization was obtained from the Director of the Jimma Medical Center and Consent was obtained from the patient to report the case.

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