



Experience of Uterine Rupture in A Tertiary Care Institute: A Systematic Review of the Literature

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Abstract

Rupture of gravid uterus is one of dreaded and catastrophic complication frequently dealt in the developing countries which requires a high index of suspicion. This article explore four cases of uterine rupture and the measures that can be taken at various levels to avert and tackle such complication, thereby decreasing materno-fetal mortality and morbidity.

Keywords: *Uterine Rupture, Developing countries, Perinatal mortality, morbidity.*

Introduction

Maternal and perinatal mortality rates are still high in numerous developing countries where primary health care workers play a vital role in antenatal services. As per the 2015 World health organisation study estimated maternal mortality rate is 174 per 100 000 live births. One of the most feared complication of a pregnancy associated with scarred uterus is rupture of gravid uterus which despite various advances in the obstetric practice still remains a major cause of materno-fetal mortality-morbidity and loss of future fertility.

Poor socio-economic status, illiteracy, lack of health education, poverty, grand multi parity and early marriage are some of the factors for increase in the incidence of uterine rupture in our country. With the rates of caesarean delivery increasing drastically over the last decade, the incidence of rupture uterus has also risen. Other uterine

surgeries like previous myomectomy, prior cornualre section, congenital uterine anomalies, use of oxytocics and prostaglandins also predisposes to this.

The objective of this article is to report a series of uterine rupture in pregnancy which were secondary to various aetiologies, identify the various risk factors and to update on the existing medical literature.

Case Summary

Case 1

28 year old G3A2 at 25 weeks of gestation came to the emergency department with acute onset of abdominal pain. Maternal examination on admission was found to be normal with a live fetus. The patient was commenced on tocolysis and analgesics. The past surgical history of the patient included an open fundal myomectomy done 4 years ago. An ultrasound abdomen

performed revealed uterine rupture. Emergency laparotomy was performed which revealed a massive hemoperitoneum and a rent of 7 * 7 cm was noted in the fundal region through which the placenta was protruding, same was extended with an incision and baby was delivered. The incision was closed in two layers with 1 PDS. As the site of rupture had the placenta it resulted in the massive hemoperitoneum. The neonate was transferred to the intensive care unit where the baby was declared dead. The patient was intubated and ventilated, transfused with packed cell, fresh frozen plasma, single donor platelets. She was on IV antibiotics, analgesics, and oxytocics. She improved hemodynamically and eventually extubated. There on her general condition improved well and was discharged on postoperative day 16.

Case 2

30 year old G3P1L1D1 at 35 weeks with a previous history of hysterotomy for hand prolapse and previous lower segment caesarean section was admitted for burning and increased frequency of micturition. She was being conservatively managed while on day 2 of hospitalization, she complained of sudden onset lower abdominal pain and on examination her blood pressure was 100/60mmHg, pulse rate 64 beats /min with scar tenderness. Pelvic examination revealed a closed cervix and an intact amniotic membrane. The cardiotocogram was reactive with no uterine contraction, however due to scar tenderness, emergency caesarean section was promptly performed which revealed a rent of 4*3cm over which the incision was extended and baby was delivered out. A girl baby weighing 2.130kg was born with an apgar of 7/10 and 8/10. In view of atonic PPH, intra operatively she was transfused with 2 units of packed cell. Post-operative stay was uncomplicated. She was discharged on post-operative day 12 with her healthy neonate.

Case 3

29 year old G2P1L1 presented to the emergency at 22 weeks and 4 days with complaints of pain

abdomen and 2 episodes of vomiting. She is a case of bicornuate uterus with pregnancy in the right horn. This pregnancy was complicated by hypothyroidism and gestational diabetes. Her past obstetric history included a lower segment caesarean section 4 years back. Her pregnancy was uneventful till now. Examination at admission revealed tachypnea with tachycardia and hypotension with CBG of 240mg/dl. Abdomen was relaxed with no scar tenderness. Ultrasonography abdomen revealed free fluid in the peritoneum with absent FH. Emergency laparotomy was done with a suspicion of rupture uterus, 1000ml blood was sucked out, dead fetus was present in the peritoneal cavity with right horn ruptured. Ruptured part of uterus was sutured, 2 units packed cell, colloids, FFP transfused intra operatively. Patient recovered post operatively.

Case 4

A 31 year old G2P1L1 at 26 weeks 3 days with previous lower segment caesarean section, breech, IUGR (all growth parameters corresponding to 5th centile with complete placenta previa, severe oligohydramnios (AFI 6) with normal doppler admitted for evaluation. Two doses of steroids was covered 24 hours apart. Patient complained of profuse sweating, continuous pain abdomen and bleeding per vaginal. On palpation of abdomen tense and diffuse tenderness was present with fetal parts well felt per abdomen. In view of suspicion of abruption/ rupture uterus, patient was taken up for emergency lower segment caesarean section. Placenta and dead fetus was present in left hypochondrium weighing 440g, previous scar was completely ruptured. 200ml of hemoperitoneum was drained with 150ml of clots. Patient was transfused with 3 unit packed cell and fresh frozen plasma. Patient recuperated well postoperatively.

Discussion

The term uterine rupture is defined as a disruption of the full thickness of the uterine wall including the serosa, while uterine scar dehiscence is

disruption and separation of the pre-existing uterine scar^[1]. In 1956, William Smellie was the first to have observed a rent in the uterus in vivo^[2]. The incidence of uterine rupture in unscarred uterus is 1 in 10,000 births whereas the incidence in post caesarean delivery is 0.5% with a very high chance of recurrence. The incidence in developed countries is 10 times higher^[3]. The hysterectomy rates following uterine rupture is 0.09% as estimated by Chauhan et al^[4]. It usually occurs during the second trimester and there are only a hand full of case reports of its occurrence in the third trimester as in our cases.

Maternal tachycardia, abdominal pain and tenderness, fetal heart rate abnormalities, clinical signs of shock, cessation of uterine contractions were the main features observed with the patients in this study.

Maternal and fetal morbidity include severe blood loss, fetal distress and expulsion of fetus or placenta into the abdominal cavity. This obstetric hazard is also associated with other maternal morbidities like rectovaginal fistula, vesicovaginal fistula, rupture of the bladder, foot drop, psychological trauma and if the complication results in sterilization it can even lead to divorce and loss of economic support for women. With a general observation of our experience and the literature we have found uterine rupture after the myomectomy occurs mostly during pregnancy and not during labor whereas after cesarean sections, uterine ruptures occur mostly during labor, because cesarean sections are done in the lower uterine segment.

Risk of recurrence is higher in patients with previous uterine rupture rather uterine dehiscence. A study in Lebanon which is a developing country reported 33% recurrence of rupture in patients with prior uterine rupture. Majority of these women had preterm labour^[5] Whereas, a study of 5 patients with prior rupture uterus in Netherlands had good outcome, none of them had recurrent rupture uterus. In a study conducted by Shick S and his colleague has reported the 37% recurrence of uterine rupture while all the cases with prior

uterine dehiscence has a better outcome^[6]. Thus to the best of our knowledge extensive review of literature clearly reveals that the outcome of the patients with prior uterine rupture was more appreciable in developed countries while in developing countries like India their incidence is high.

Reports have suggested that the risk of uterine rupture was notably high in women who underwent preterm caesarean delivery even if lower segment transverse incision is performed as compared with women who underwent caesarean delivery at term. It was also reported that the incidence of rupture was twice more with single layer closure of the uterus when compared to double layer closure. Prevention of excessive use of electrosurgical device and entry into the endometrial cavity, prevention of hematoma formation along with multilayer closure of the uterus is some of the recommendation we put forth after a comprehensive analysis of the existing literature.

A meta analysis done by Claeys et al revealed a prevalence of uterine rupture following myomectomy was comparably equal to that of caesarean delivery and there no significant difference in the incidence following laparoscopic and open myomectomy^[7]. Interesting they observed a higher primary caesarean section rates following laparoscopic myomectomy which we suggest could have also been because of the rising incidence of safe caesarean deliveries in the era of laparoscopic surgeries. Vaginal birth following myomectomy has been successful in 90% of the cases when attempted.

There are various factors after myomectomy which may influence the chances of rupture like location, number, size of fibroids and competence of the surgeon. Nevertheless the chance of uterine rupture after myomectomy is rare (less than 1%) The question of whether the risk of uterine rupture is more following laparoscopic myomectomy is relatively more compared with abdominal myomectomy is still largely debatable as several studies have brought out conflicting results. A

study of 523 who underwent laparoscopic myomectomy (LM) reported by Koo et al.^[8] had an incidence of 0.6% while another study by Bernardi et al.^[9] reported a rupture rate of 10%.

There are no particular guidelines on the duration between surgery and pregnancy as it does not predict the chance of rupture. The most common postoperative complication is disseminated intravascular coagulation secondary to severe blood loss which was observed in our cases. Prompt diagnosis, timely intervention with surgery and adequate transfusion of blood products plays a pivotal role in maternal survival. These patients should undergo antenatal care in high risk obstetric clinics and should be educated on keeping a close notice of abdominal pain and uterine contractions. Close monitoring and delivering by elective caesarean section prior to the onset of labour will ensure good obstetric outcomes.

Conclusion

It is mandatory that the maternity care physician counsel their patients of the risk and alarming symptoms. Educating primary health care workers is a core essential step for developing countries where primary health care workers take care of the antenatal visits for the women of rural areas, hence adequate health education on such emergencies which are neglected should be reinforced through adapted policy. These workers should be trained for a period of at least one week in a gynaecology department to recognise these signs. The various obstetric factors which increase the chance of rupture must be kept in mind by the treating obstetrician. Double layer closure of the uterus should be preferred for women who are considering to become pregnant again.

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