



Unscarred Uterine Rupture: A Retrospective Analysis

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Abstract

Background

Uterine rupture is an obstetrical emergency associated with significant maternal and fetal mortality and morbidity. Spontaneous rupture of an unscarred uterus, though rare, can occur in developing countries. Many risk factors for uterine rupture, as well as a wide range of clinical presentations, have been identified.

Objectives

to analyze the incidence, predisposing factors and to determine the maternal and perinatal outcomes of unscarred uterine rupture.

Methods

A retrospective analysis of cases of unscarred uterine rupture was conducted at the Department of Obstetrics and Gynecology, Andhra Medical College/ King George Hospital, Visakhapatnam from October 1, 2020 to October 31, 2021

Results

Out of the 8657 deliveries in our hospital during the study period, there were 11 cases of ruptured unscarred uteri giving an incidence of 0.127%. All of these (100%) were unbooked cases. Most of them (90.9 %) were multigravida. Uterine rupture occurred at term in 9 cases and 2 were pre term. Maternal mortality was 18.18 % (2 cases) and perinatal mortality was 72.72 % (8 cases). Sub-total hysterectomy was done in 4 and laparotomy with repair of the rent was performed in the remaining 7 cases.

Conclusion

Unscarred uterine rupture though a rare complication of pregnancy, can occur commonly in developing countries. Obstructed labour, mismanaged labour, injudicious use of oxytocin and grand multiparity are the common risk factors associated with unscarred uterine rupture.

Keywords: induction of labor; instrumental delivery; obstructed labor; unscarred uterine rupture; uterine rupture

Introduction

Uterine rupture in pregnancy is an obstetrical emergency associated with significant maternal and neonatal mortality and morbidity. ^{1, 2} It is not only life threatening to the mother but affects her future

fertility as well. ³ Maternal mortality varies between 1 to 13% ² and perinatal mortality between 74 to 92%. ⁴

The key predisposing factor of uterine rupture is the presence of scar. The normal unscarred uterus is very

unlikely to rupture. Spontaneous rupture of an unscarred uterus during pregnancy and labour is very rare and is usually traumatic; its incidence decreases with improvement in obstetric care. However: its incidence remains high in developing countries.⁵

The major risk factors associated with unscarred uterine rupture are obstructed labour, multi parity, injudicious use of uterotonic drugs, mismanaged labour, pregnancy in anomalous uterus, and rarely intrauterine manipulations such as internal podalic version and breech extraction.⁴ Most cases present with maternal tachycardia, bleeding per vagina and signs of fetal distress.⁶ Social factors like socioeconomic conditions, uncontrolled fertility, illiteracy, adolescent marriages and contracted pelvis also contribute to uterine rupture.²

Spontaneous uterine rupture is associated with highly variable and nonspecific maternal complaints and fetal status requiring high index of suspicion.⁷ Maternal and perinatal outcomes are improved by awareness of risk factors, recognition of clinical signs and symptoms and prompt surgical intervention.⁸ The aim of the present study is to determine the frequency of rupture in an unscarred uterus in our hospital and identifying the possible risk factors and also suggest the ways to improve the fetomaternal outcome.

Aims and Objectives

To analyze the incidence, predisposing factors and to determine the maternal and perinatal outcomes of unscarred uterine rupture.

Methodology

A retrospective analysis of cases of unscarred uterine rupture was done in our institution. (Department of Obstetrics and Gynecology, Andhra Medical College/King George Hospital, Visakhapatnam) from October 1, 2020 to October 31, 2021. All the cases of uterine rupture without any previous uterine scar or any other previous uterine surgery were included.

The age, parity, risk factors, causes of rupture, site of rupture, and fetomaternal outcome were analyzed using descriptive statistics like percentages and proportions. Data pertaining to the parity of the woman, socioeconomic status, duration of labour, and the record of management of labour was taken for the study. The details of the cases were retrieved from the hospital records and the data was analyzed using SPSS 16. The results were calculated and represented in tables and figures. Formal consent is not required for this type of study.

Results

Our series comprised of 11 cases of rupture in unscarred uterus. The total number of live births during the study period was 8657, giving an incidence of 0.127%. The mean age of the women was 31.41 ± 4.151 years with an age range of 27-40 years.

All the cases (100%) in our series were unbooked; most of them referred from peripheral health centers (Table 1). Most of the cases were in obstetric shock at time of presentation to the hospital (Table 2).

Out of 11 cases, 8(73%) were of term pregnancies and the remaining 3 (27%) were preterm. In our study, 2 cases (18%) were managed at hospital during labour and 9 (82%) were managed at home. Majority of the women (82%) were in the second stage of labour when they reached the hospital. Only one case of rupture was in primi and the remaining 10 were among multi gravida.

There were 2 (18.18%) maternal deaths. In our study, 3(27%) cases required ICU admission with a maximum stay of 2 days. Subtotal hysterectomy was performed in 4(36%) cases and repair of the rent done in 7(64%) cases. The perinatal mortality attributable to uterine rupture was 81 %.

Obstructed labour, mismanaged labour and injudicious use of oxytocin were found to be the major risk factors.

TABLE 1: Referred & non referred patients (n=11)

Referred cases	Number	percentage
yes	9	81.8%
no	2	18.18%
total	11	100%

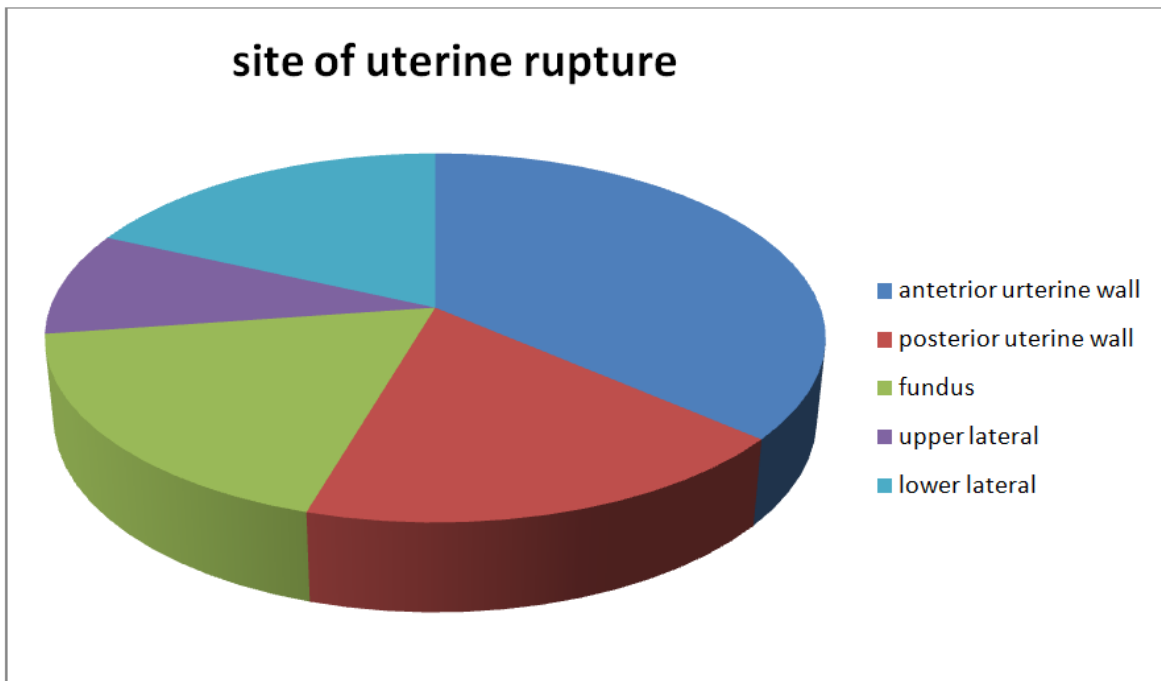
TABLE 2: Causes of unscarred uterine rupture (n=11)

CAUSES	No of cases	Percentage
Obstructed labour	6	54.54%
Mismanaged labour	3	27.27%
Injudicious use of oxytocin	2	18.18%

TABLE 3: Signs at presentation

Signs	Number of cases	percentage
Absent fetal heart rate	6	54.54
Loss of uterine contractility	5	45.45
Vaginal bleeding	3	27.27
Shock	7	63.63

Figure1: Diagram showing the site of rupture on the uterus



Discussion

Unscarred uterine rupture is a relatively rare complication of pregnancy that results in life threatening maternal and fetal complications. Considering the easy access to obstetric care

including cesarean section, rupture of the unscarred uterus in modern obstetric practice should be rare.⁶

Its incidence varies from 0.005% to 0.017%.^{6, 8, 9} The incidence in our study is 0.127% which is higher than that reported in literature. The fact that all our cases

were unbooked and many patients did not receive any ante natal care could have been the cause of high incidence. Moreover our hospital is a tertiary care centre and referral center for the neighboring districts: this must have also contributed to the high incidence.

In our series, the percentage of unbooked was 100% and this was higher than in studies like Rashmi et al.¹⁰ Rizwan et al.² Majority of the ruptures in our series occurred in Para 4(45.4%) followed by Para 2 (27.2 %), Para 5 (18.18 %), and Para 1 (9.09 %), respectively which are similar to the findings by Rizwan et al.²

Most of the ruptures occurred in the second stage of labor (82 %), and before the initiation of labor only 18 % ; which is comparable to the study as reported by Nahum (86 and 14 %, respectively).¹¹

Obstructed labor, mismanaged labor, and injudicious use of oxytocin were found to be the common risk factors (Table 2) which were similar to the findings of Miller et al.⁸

In our review, there were 2 maternal deaths (18.18 %) which are higher than that reported by Ahmadi et al. [12] where it was 7.1 %. In our study, perinatal mortality attributable to uterine rupture was 72.7 % which was comparable to that of Rashmi et al. (78.66 %) ¹⁰

The most common site of rupture was in the anterior uterine wall (36%), followed by lower segment (18%) posterior wall (18%), fundus (18%), and upper segment (9%) respectively (Figure1). Subtotal hysterectomy was performed in 4(36%) cases and repair of the rent done in 7(64%) cases.

If a gravid women presents with hypotension, abdominal pain, vaginal bleeding, associated with any signs of fetal distress, uterine rupture should be suspected. ^[7] Clinical signs of uterine rupture during pregnancy are non specific and can be confusing. It is not always easy to distinguish it with other abdominal emergencies (appendicitis, gallstones, pancreatitis etc.). In all cases of abdominal pain in pregnancy, the fetal status must be systemically checked.

Early surgical intervention is usually the key to successful treatment of rupture. ⁸ The therapeutic management is total or subtotal hysterectomy. Repair

of the rupture can be performed and helps to preserve the reproductive function of the patients with risk of recurrent uterine rupture assessed between 4 and 19% in the subsequent pregnancy. ^{13, 14} For this reason, it has been recommended that women with a previous uterine rupture undergo an elective caesarean delivery as soon as fetal lung matures.

This study has some limitations; primarily being a retrospective study, it could be open to selection bias. Secondly, it lacks data on body mass index, diabetes mellitus, uterine pathologies (i.e., myoma uteri) and surgeon's experience. The strength of the study is the very broad cohort of cases despite being a single-center study.

Conclusion

Unscarred uterine rupture though a relatively rare complication of pregnancy; is fairly common in developing countries. This study concluded that mismanaged labour is the main cause of unscarred rupture uterus followed by injudicious use of oxytocin and obstructed labour. Women with mismanaged labour, grandmultiparity and obstructed labour must be managed by trained personnel at a tertiary care centre in order to avoid high maternal and perinatal mortality and morbidity. Measures aimed at reducing the high maternal and perinatal mortality and morbidity associated with uterine rupture include health education, proper antenatal care, early referral of high risk patients and promoting institutional delivery

DECLARATIONS

Ethical Approval & Consent to participate Approval of the hospital ethics committee has been taken. As this was a retrospective study no prior consent of the patients was taken.

Consent for publication: Not applicable

Availability of data and materials: The datasets generated or analyzed during this study and supporting the conclusions of this article are included in this published article and also available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interests involved in this study

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Authors' contributions: All authors were actively involved in the study. B.K analyzed the age, parity, risk factors, causes of rupture, site of rupture, and fetomaternal outcome using descriptive statistics like percentages and proportions. P.S. analyzed the results of this study. All have read and approved the manuscript

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References

1. Gibbins K, Weber T, Holmgren C, et al. Maternal and fetal morbidity associated with uterine rupture of the unscarred uterus. *American Journal of Obstetrics and Gynecology*. 2015; 213(3): 382.e1–382.e6, doi: 10.1016/j.ajog.2015.05.048.
2. Rizwan N, Abbasi RM, Uddin SF. Uterine rupture, frequency of cases and fetomaternal outcome. *JPMA-Journal of the Pakistan Medical Association*. 2011 Apr 1;61(4):322.
3. Akhtar Y. Ruptured uterus; an on-going tragedy of motherhood. *The Professional Medical Journal*. 2010;17(2):314–7. 4] Justus Hofmeyr G, Say L, Metin Gülmezoglu A. Systematic review: WHO systematic review of maternal mortality and morbidity: the prevalence of uterine rupture. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2005 Sep;112(9):1221-8.
4. Turner MJ. Uterine rupture. *Best Pract Res Clin Obstet Gynaecol*.2012;16(1):69–79.
5. Mazzone ME, Woolever J. Uterine rupture in a patient with an unscarred uterus: a case study. *WMJ: official publication of the State Medical Society of Wisconsin*. 2006 Mar 1;105(2):64-6.
6. Dow M, Wax JR, Pinette MG, Blackstone J, Cartin A. Third-trimester uterine rupture without previous cesarean: a case series and review of the literature. *American journal of perinatology*. 2009 Nov;26(10):739-44.
7. Miller DA, Goodwin TM, Gherman RB, Paul RH. Intrapartum rupture of the unscarred uterus. *Obstetrics & Gynecology*. 1997 May 1;89(5):671-3.
8. Porreco R, Clark S, Belfort M, et al. The changing specter of uterine rupture. *American Journal of Obstetrics and Gynecology*. 2009; 200(3):269.e1–269.e4, doi: 10.1016/j.ajog.2008.09.874
9. Rashmi, Radhakrishnan G, Vaid NB, et al. Rupture uteruschanging Indian scenario. *J Indian Med Assoc*. 2001;99(11):634–7.
10. Nahum GG, Pham KQ. Uterine rupture in pregnancy. (Online)2011 (Cited 2008 Jan 15). Available from URL <http://emedicine.medscape.com/article/275854>.
11. Ahmadi S, Nouria M, Bibi M, Boughuizane S, Saidi H, Chaib A, Khairi H. Rupture utérine sur utérus sain gravide. À propos de 28 cas. *Gynécologie obstétrique & fertilité*. 2003 Sep 1;31(9):713-7.
12. Chibber R, El-Saleh E, Fadhli R, et al. Uterine rupture and subsequent pregnancy outcome – how safe is it? A 25-year study. *The Journal of Maternal-Fetal & Neonatal Medicine*. 2010; 23(5): 421–424, doi:
13. Lim A, Kwee A, Bruinse H. Pregnancy After Uterine Rupture: A Report of 5 Cases and a Review of the Literature. *Obstetrical & Gynecological Survey*. 2005; 60(9): 613–617, doi: 10.1097/01.ogx.0000176677.26657.6c.