

A retrospective analysis of uterine rupture

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Abstract:

Background: Uterine rupture is a rare obstetrical complication associated with disastrous outcome. Since the rate of caesarean deliveries has increased in the past decades, the risk of scar rupture is also expected to increase. The incidence of uterine rupture is inversely proportional to quality of obstetric care being provided. In the developing world, uterine rupture can have devastating maternal and/or fetal outcomes due to delayed recognition and/or intervention

Materials and Methods: This is a retrospective study of patients with uterine rupture from January 2017 to December 2017, admitted in Rajendra Institute of Medical Sciences, Ranchi in the Department of Obstetrics and Gynecology. All the cases of uterine rupture were included and detailed study of their case history, obstetric history, surgical history was done. Details of their referral, duration & augmentation of labor, diagnosis on admission, site of rupture, surgical intervention requiring hysterectomy or repair and fetomaternal outcome were recorded

Results: Risk factors identified in this study which predispose to uterine rupture include multiparity, obstruction, malpresentation, injudicious use of oxytocis. Short inter-pregnancy interval in case of a repeat caesarean section is also an important factor. Uterine rupture was more common in unbooked cases and woman belonging to rural areas.

Conclusion: It's important to focus on improving antenatal care, contraception counselling and awareness, mandatory institutional deliveries in post caesarean pregnancies and timely referral of prolonged/obstructed labor.

Key Word: Uterine rupture, malpresentation, caesarean section, oxytocics.

Date of Submission: 04-07-2020

Date of Acceptance: 19-07-2020

I. Introduction

Uterine rupture is a rare obstetrical complication associated with disastrous outcome. Since the rate of caesarean deliveries has increased in the past decades, the risk of scar rupture is also expected to increase. The incidence of uterine rupture is inversely proportional to quality of obstetric care being provided. In the developing world, uterine rupture can have devastating maternal and/or fetal outcomes due to delayed recognition and/or intervention. Systematic review done by WHO shows that the prevalence is lower in developed countries than in the less or least developed countries. It is 0.006% in developed country but may reach up to 25% for women with obstructed labor in a least developed country as per the previous review.¹ The various predisposing factors for uterine rupture according to previous studies were previous caesarean section, attending <4 antenatal visits, parity ≥ 5 , and no formal education.² In developed countries, previous caesarean pregnancy undergoing VBAC trial is an important risk factor.¹ Thus, a closer look into the etiology, incidence & perinatal outcome in cases of uterine rupture becomes crucial to decrease its incidence and improve the perinatal outcome. The aim of this study is to determine the etiology, incidence & perinatal outcome in cases of uterine rupture which are crucial to decrease its incidence and improve the perinatal outcome.

II. Material And Methods

This is a retrospective study of patients with uterine rupture from January 2017 to December 2017, admitted in Rajendra Institute of Medical Sciences, Ranchi in the Department of Obstetrics and Gynecology. All the cases of uterine rupture were included and detailed study of their case history, obstetric history, surgical

history was done. Details of their referral, duration & augmentation of labor, diagnosis on admission, site of rupture, surgical intervention requiring hysterectomy or repair and fetomaternal outcome were recorded.

Study Design: observational study

Study Location: This was a tertiary care teaching hospital based study done in Department of Obstetrics and Gynecology, at Rajendra Institute of Medical Sciences, Ranchi.

Study Duration: January 2017 to December 2017.

Statistical analysis

Data was assessed in percentages, means and calculated with the help of Microsoft excel and Microsoft word.

III. Result

In the year 2017, there were a total of 7521 deliveries and a total of 53 cases of uterine rupture were recorded. Incidence of uterine rupture was 0.70% of which 24 (45.28%) were cases of scar rupture and 29 (54.27%) were cases of spontaneous rupture. Only nine cases were booked indicating poor antenatal care and 71.6% belonged to rural area. Incidence of scar rupture in post-caesarean women was 2.17%.

As shown in table 1, common risk factors identified in cases of spontaneous rupture (29) included multiparity, obstructed labor, malpresentations and injudicious use of oxytocics. Most women (15) belonged to the age group of 25-31 years.

Table 1: Causes of Spontaneous Rupture

S.N.	CAUSE	NUMBER OF CASES
1.	MULTIPARITY a) Less than/equal to 3 b) More than/equal to 4	20 9
2.	Obstructed Labor	10
3.	Malpresentations	3
4.	Hydrocephalous	1
5.	Oxytocics	4

As shown in table 2, most common site of uterine rupture was lower uterine segment (37.9%) followed closely by left lateral wall (34.5%). Around fifteen women (28.3%) of the women had extension to the surrounding structures, most commonly including cervix and vagina (5) followed by bladder injuries (4).

Table 2: Sites of Spontaneous rupture

Site of rupture	Percentage
Left Lateral wall rupture	37.9%
Lower uterine segment	34.5%
Right Anterolateral	10.34%
Left Posterolateral	10.34%
Left Anterior	3.44%
Right Lateral	3.44%

Incidence of scar rupture in post-caesarean women was 2.17%. As shown in Table 3, it was observed that thirteen women were single caesareans and eight women were previous two caesareans. About sixteen (66.67%) women had an inter-pregnancy interval of less than three years making it an important risk factor identified in this study.

Forty-seven (88.67%) women with uterine rupture were admitted in a state of shock. Fourteen (26.4%) women in all had massive hemoperitoneum and 19 (35.84%) required transfusion of blood & its products.

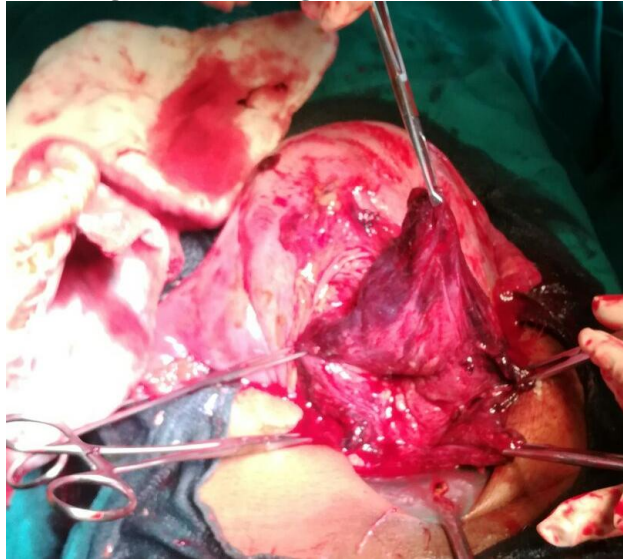
Table 3: Causes of scar rupture

c	CAUSE	NUMBER OF CASES
1.	Previous LSCS (22) a) Previous 1 Caesarean b) Previous 2 Caesarean	13 8
2.	Previous Classical Caesaren (Rupture during 6 th & 7 th month of Gestation)	2

3.	Previous uterine rupture (Scar rupture)	1
4.	Previous myomectomy or Perforation	0

Figure 1 shows lower segment uterine rupture with tear upto the vault

Figure 1: Lower segment uterine rupture



After resuscitation, they were taken up for laparotomy where Sub-total hysterectomy was the most common surgical procedure (54.7%) followed by repair (26.4%) and total hysterectomy (18.8%). Unilateral oophorectomies were required in 13.2% of the cases and 1.88% cases required bladder repair.

Figure 2 shows repaired vertical rupture in lower segment in a post-cesarean woman.

Figure 2: Repaired vertical lower uterine segment rupture in post cesarean woman



There was one maternal mortality due to uterine rupture and only one baby was delivered alive in a deeply asphyxiated state who later survived in NICU. Table 4 shows maternal morbidity in cases of uterine rupture.

Table 4: Maternal Morbidity

Complication	Percentage
Post Operative Anemia	35.84%
Uneventful recovery	28.3%
Wound dehiscence	26.41%
Acute renal failure	1.88%
Vesicovaginal Fistula	1.88%

IV. Discussion

In the present study, incidence of rupture uterus was found to be 0.70%. While the incidence of spontaneous rupture was 0.45%, incidence of scar rupture was 2.71%. Vladimir et al reported an incidence of 12 in 36000 births in their study.³ Singh A et al reported incidence among women with prior LSCS as 1.69 % and for women without LSCS as 0.152 % with overall incidence of uterine rupture being 0.35 %.⁴The incidence in the present study is seemingly high as the place of study was a tertiary care centre with high risk cases being referred to it. In this study, only nine cases were booked indicating poor antenatal care and 71.6% belonged to rural area. This is similar to other studies which also observed majority of women with uterine rupture to be unbooked and belonging to rural areas (Singh A et al: 92.5% cases unbooked, Dadi et al reported 3 times higher risk of acquiring uterine rupture for women belonging to rural area).^{4,5}

In this study, Incidence of uterine rupture was highest in the age group 21-30 years as this is the most fertile age group as observed in other studies as well.⁴Most women (15 or 28.3%) belonged to the age group of 25-31 years. Dadi et al also reported 78.5% of the women with uterine rupture belonging to the age group of 20-34.^{4,5}

In case of spontaneous uterine rupture (29 cases), risk factors identified include obstructed labour (10 or 34.48%), multiparity (>31% women with parity more than or equal to four), injudicious use of oxytocics (four or 13.7%), malpresentations (three or 10.34%) and hydrocephalous (one or 11.1%). Singh et al reported major risk factors as unbooked status (92.5 %), injudicious use of oxytocin (52.5 %).⁴ Sunanda et al reported that 20% of cases, primary rupture were seen due to injudicious use of oxytocics (10%) grand multiparity (5%) and forceps in delivery (1%).⁶ In the present study, most common site of uterine rupture was found to be lower uterine segment (11 or 37.9%) followed closely by lower uterine segment (10 or 34.5%). Other sites include anterolateral wall (six or 20%), left anterior (one or 3.44%) and right anterior (one or 3.44%). Extension to surrounding structures seen in 28.3% women. Vernekar M et al reported most common site of rupture as lateral lower segment (30.8 %) and Rizwan et al reported 80 % of the rupture in the lower uterine segment.^{7,8}

In scar rupture (24 cases), interpregnancy interval emerged as an important risk factor as 16 (66.67%) cases had a gap of less than three years from their last pregnancy. Eight women (33.34%) were previous two caesareans. T. D. Shipp et al reported that for interdelivery intervals up to 18 months, the uterine rupture rate was 2.25% (seven of 311) compared with 1.05% (22 of 2098) with intervals of 19 months or longer (P =.07).⁹

In the present study, 88.67% of the patients were admitted in a state of shock. After resuscitation, they were taken up for laparotomy. Subtotal hysterectomy or STH (44%) was the most common surgery performed followed by repair (27%), total abdominal hysterectomy (13%), STH with USO or unilateral oophorectomy (10%) and TAH+ USO (4%). Bladder repair was required in 7.54% cases. Fourteen (26.4%) patients in all had massive hemoperitonuem. 19 patients (35.84%) required transfusion of blood & its products.

Mukasa et al reported in their study that Total abdominal hysterectomy was done in 22 (28.6%) women with uterine rupture, subtotal hysterectomy in 29 (37.7%), uterine repair with BTL in 4 (5.2%) and uterine repair without BTL in 22 (28.6%).²

There was only one case of maternal mortality in this study (1.88%) however, fetal mortality was 98.11% and only one baby was salvaged, delivered in a deeply asphyxiated state, managed in NICU. Vernekar M et al reported 4 maternal deaths (30.8 %) with perinatal mortality being 53.8 %.⁷

Due to increased rate of caesarean sections, risk of scar rupture is on the rise since past few decades. All patients with previous caesarean scars should be told about the importance of antenatal care in all subsequent pregnancies and when in labor, careful pre-natal supervision, proper selection of cases for vaginal delivery, early hospital admission should be done. When a woman lands with the diagnosis of rupture uterus, it was found that 86% were in a state of shock. Therefore, after initial steps of resuscitation. Emergency laparotomy should be done wherein, the best procedure for rupture uterus is the one which is the shortest in duration and which is not aggravating the patients state of shock and which will get the patient off the operating table in best possible condition.

V. Conclusion

Risk factors including multiparity (parity more than 3), deliveries unattended by trained professionals, lack of counselling in cases of post caesarean pregnancies regarding institutional deliveries and spacing of pregnancies (most cases of uterine rupture occurred when there was gap of less than 2 years in subsequent pregnancies) were identified. In a place like Jharkhand, to minimise cases of uterine rupture, it's important to focus on improving antenatal care, contraception counselling and awareness, mandatory institutional deliveries in post caesarean pregnancies and timely referral of prolonged/obstructed labor.

References

- [1]. G. J. Hofmeyr, L. Say, and A. M. Gülmezoglu, "WHO systematic review of maternal mortality and morbidity: the prevalence of uterine rupture," *International Journal of Obstetrics and Gynaecology*, vol. 112, no. 9, pp. 1221–1228, 2005
- [2]. P. K. Mukasa, J. Kabakyenga, J. K. Senkungu, J. Ngonzi, M. Kyalimpa, and V. J. Roosmalen, "Uterine rupture in a teaching hospital in Mbarara, western Uganda, unmatched case-control study," *Reproductive Health*, vol. 10, no. 1, article 29, 2013
- [3]. Revicky, V., Muralidhar, A., Mukhopadhyay, S., and Mahmood, T. (2012). A case series of uterine rupture: Lessons to be learned for future clinical practice. *Journal of Obstetrics and Gynecology of India* 62, 665–673
- [4]. Singh A, Shrivastava C. Uterine Rupture: Still a Harsh Reality. *J.ObstetGynaecol India*. 2015;65:158–61. doi: 10.1007/s13224-014-0551-2
- [5]. Dadi, T.L., and Yarinbab, T.E. (2017). Estimates of Uterine Rupture Bad Outcomes Using Propensity Score and Determinants of Uterine Rupture in Mizan-Tepi University Teaching Hospital: Case Control Study. *Journal of Pregnancy* 2017.
- [6]. N., S., &Ranganth, P. (2016). A two-year analysis of uterine rupture in pregnancy. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 5(11), 3983-3986. doi:<http://dx.doi.org/10.18203/2320-1770.ijrcog20163875>
- [7]. Vernekar M., Rajib R. Unscarred uterine rupture: a retrospective analysis. *J. Obstet. Gynaecol. India*. 2016;66(Suppl. 1):51–54
- [8]. Rizwan N, Abbasi RM. Uterine rupture, frequency of cases and fetomaternal outcome. *J Pak Med Assoc*. 2011;61(4):322
- [9]. Shipp TD, Zelop CM, Repke JT, Cohen A, Lieberman E. Interdelivery interval and risk of symptomatic uterine rupture. *Obstet Gynecol*. 2001;97(2):175-177. doi:10.1016/s0029-7844(00)01129-7

Dr. Nikita Chauhan, et. al. "A retrospective analysis of uterine rupture." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(7), 2020, pp. 28-32.