

Management of Patients with Uterine Rupture

Safia Bibi, Khanda Gul, Zeenat Gul, Palwasha Gul

ABSTRACT

Objective To find out the frequency, predisposing factors, maternal and fetal outcomes and mode of management of uterine rupture at a tertiary care hospital.

Study design Descriptive case series.

Place & Duration of study Department of Obstetrics and Gynaecology Unit-4, Bolan Medical Complex Hospital Quetta, from January 2001 to December 2012.

Methodology All patients who presented with ruptured uterus during labor were included in the study. Data on various variables were recorded. This included patient related demography, obstetrical history of previous and present pregnancy and care during labor, hospital course, surgical procedure performed and maternal and fetal outcome.

Results Out of 38,747 deliveries, 201 cases of ruptured uterus were dealt with. This constitutes a frequency of ruptured uterus as 1 in 193 deliveries. Predisposing factors noted were lack of antenatal care (n=180, 90%), grand multiparity (n=100, 49.7%), injudicious use of oxytocin or misoprostol (62.7%), uterine scar (n=74, 36.8%) and residing more than 100 km from tertiary care hospital (n=69, 34.3%). Of the total 41 (20.4%) patients had subtotal abdominal hysterectomy, 60 (29.8%) had repair of ruptured uterus with bilateral tubal ligation and 93 (46.3%) had repair of uterus only. Bladder repair was done in 7 (3.5%) patients. Eighteen maternal deaths occurred in this series. Perinatal mortality was 86.7% (n=185).

Conclusions Uterine rupture remained one of the major causes of maternal and newborn morbidity and mortality. Use of oxytocin, misoprostol and herbs during labor and lack of monitoring were important observations.

Key words Uterine rupture, Maternal morbidity, Obstructed labor, Cesarean section.

INTRODUCTION:

Uterine rupture is defined as breach in the integrity of the myometrial wall with spillage of uterine contents into the peritoneal cavity. Worldwide around between 340,000 and half a million women die each year due to complications of pregnancy and child birth, mostly in developing countries.^{1,2} Uterine rupture, one of the major obstetric complications of labor, contributes significantly to maternal and perinatal mortality and morbidity.^{3,4} The occurrence of uterine rupture varies

in different parts of the world. While it is rare in developed countries, it remains a public health problem in underdeveloped countries, particularly in Pakistan.

In developed countries, the majority of cases occur in women with previous cesarean section, while in developing countries, it usually results from prolonged obstructed labor, with previous scar, grand multipara, with advanced age etc.^{5,6} Other factors that lead to this accident are poor antenatal care, home deliveries by traditional birth attendants and others.^{7,8} The aim of this study was to determine the frequency, causes, maternal and fetal outcome and modes of treatment of uterine rupture so as to highlight the grey areas where there might be a room for improvement of this avoidable catastrophe.

Correspondence:

Dr. Khanda Gul
Department of Obstetrics and Gynecology Unit 4
Bolan Medical Complex Hospital
Quetta
Email: khandagul76@yahoo.com

METHODOLOGY:

This was a descriptive case series where the relevant data from January 2001 to December 2012 of all the patients managed at the Obstetrics and Gynaecology Unit 4 of Bolan Medical Complex Hospital (BMCH) Quetta, which is a tertiary care referral center for the whole province of Balochistan was analyzed. The data was retrieved from labor ward and operation theater registers as well as from the patients' case files at the hospital medical records office.

All women who presented with ruptured uterus in labor, were included in the study. Information regarding the patients' age, address, occupation, parity, previous cesarean section, antenatal care received, estimated distance of residence from the hospital, place of intrapartum care, complications in previous delivery, type of surgical intervention (sub-total hysterectomy, repair without bilateral tubal ligation [BTL] or repair with BTL), maternal and fetal outcome, hospital stay, complications after surgery including sepsis, acute renal failure, wound infection etc were collected. Descriptive analysis was done using frequencies and percentages.

RESULTS:

During the study period a total of 38,747 deliveries were conducted in the Unit 4 (BMCH). During same period 201 cases of uterine rupture referred from elsewhere were managed. This makes an overall frequency of 0.51% or 1 in 192 deliveries. This is equivalent to 5.2 per 1000 deliveries. Of the total, 74 (36.8%) uterine ruptures occurred on scared uterus. Majority (90%) of cases with ruptured uterus were non booked. The age range of the patients was from 18 year to 45 year with mean age of 32.30 + 6.07 year (table I). The parity of women ranged from pare 0 to para18, with a mean parity of 6.89 + 3.63.

Age (year)	n (%)
<25	20 (9.9)
25-30	47 (23.4)
31-35	64 (31.8)
>35	70 (34.8)

Most of the patients were uneducated. As the tertiary care centers in Balochistan are only in the capital city Quetta, most of the patients came from far off areas of the province. Of these 89 (44.3%) patients had residence 50-100 km away, in 69 (34.3%) cases more than 100 km. The deliveries were attempted

mostly at home (n=134, 66.4%) or primary healthcare centers (n=58, 28.8%). The predisposing factors for ruptured uterus identified in the patients were obstructed or prolonged labor in 119 (59%) patients and grandmultiparity in 100 (49.7%) cases. Other factors are given in table II.

Variables	n (%)
Attended antenatal care	
Yes	21 (10.4)
No	180 (89.5)
Obstructed /prolonged labor	
Yes	119 (59)
No	82 (41)
Grandmultiparity	
Yes	100 (49.7)
No	101 (50.3)
Injudicious use of oxytocin or misoprostol	
Yes	126 (62.7)
No	75 (37.3)
Previous cesarean section	
Yes	74 (36.8)
No	127 (63.2)
Pre-one LSCS	51 (63.18%)
Pre-two LSCS	18 (25.37%)
Pre-three LSCS	5 (8.95%)

Repair of uterus was done in 93 (46.3%) cases, repair of uterus with bilateral tubal ligation was done in 60 (29.8%) and subtotal abdominal hysterectomy was performed in 41 (20.4%) patients. Repair of ruptured bladder with or without hysterectomy was done in 7 (3.5%) patients. As for fetomaternal outcome, 185 (86.7%) fetuses were dead. Only 16 (13.3%) fetuses were alive and these were in cases with partial rupture of uterus. This gave a perinatal mortality of 1 in 209 deliveries or 5.2 per 1000 births. There were 18 maternal deaths giving a maternal mortality rate of 46.5 per 100,000 deliveries. There were 12 (5.97) babies with hydrocephalus and two (0.99%) uteri were bicornuate. Of the total 162 (70.1%) babies were males.

DISCUSSION:

Ruptured uterus is a nightmare for a mother causing not only physical trauma but also psychological

dilemma. Most of the causes are preventable. The frequency of ruptured uterus in index study was 1:193 deliveries. It is lower than 1:117 deliveries as reported by Akaba GO et al.⁹ Other studies reported various frequencies. It was 1:112 deliveries as reported by Chuni N et al, and 1:92 by Diab AE.^{10,11} On the other hand very low frequency was reported from some advance countries like that of 0.0521% of Xiaoxia B et al, 0.078% of Perez-Adan M et al and 1:558 deliveries of Kara M.¹²⁻¹⁴

The scarred uterus is one of the major causes of uterine rupture, but still it is the unscarred uterus that ruptures on many occasions. In our data, 74 (36.8%) of uterine rupture occurred on scarred uterus while 127 (63.2%) on unscarred uterus. The ratio was 0.58:1. Almost same trend was seen in the study of Diab AE with rupture in 28.3% scarred and 71.7% unscarred uterus.¹¹ Chuni N et al reported 19.8% scarred and 46.5% unscarred uterus rupture,¹⁰ and Nyengidiki TK et al gave a figure of 32.5% unscarred uteri that got ruptured.¹⁵ Among those with scarred uterus in patients with more than one scar taking a trial, raises concern on the counseling done before the labor.

The main cause of rupture in our study was obstructed labor (59%). Diab AE also had almost the same causes but grandmultiparity cases were 69.8%, inappropriate oxytocin use was noted in 14% and misoprostol in 2.3%.¹¹ Chuni N et al had obstructed labor as an etiological factor responsible for 46.5% cases and oxytocin for 44%.¹⁰ Ophir E et al had 6% uterus rupture due to misoprostol use.¹⁶ In recent years induction with misoprostol has emerged as a major cause of rupture of uterus. It is easily available with low cost and promotion as an agent for abortion without emphasizing on its side effects, is a matter of concern.^{17,18}

In this study 46.3% ruptured uterus were repaired. Diab AE did repair in 38%, hysterectomy in 55%, repair plus BTL in 7% and bladder repair in 8.3%.¹¹ Chuni N et al¹⁰ did hysterectomy in 75.2%.¹⁰ The hysterectomy rate in above mentioned studies is high but in our experience, repair was more acceptable to patients. It also saved time and in most cases it was the lower segment and cervix that were affected and would not benefit from subtotal hysterectomy. Most importantly many of these patients wanted to preserve fertility.

The perinatal mortality in our study was 86.7% which is comparable to the study of Chuni N et al¹⁰ (83.3%).¹⁰ Maternal mortality was 46.5 per 100,000 deliveries in our study. It was 17.5% in Nyengidiki TK et al and 1.7% of Diab AE studies.^{10,15} The

precious lives were lost due to irreversible shock at time of presentation.

There is a trend of having large families and especially male babies in our setup. Due to poverty, illiteracy, cultural taboos, women major role is still considered as reproduction. Under such circumstances primary cesarean section should be done as a very last resort with the informed consent of patient. Assisted vaginal deliveries should be attempted.

A good antenatal care, education, restructuring healthcare system, upgrading rural and district health centers, bringing awareness in women about their reproductive health, improving referral system, training the birth attendants about danger signs and early referral, discouraging the fake maternity homes, prohibiting the use of oxytocin and misoprostol by unskilled personnel, and keeping the primary cesarean rate under control will help in saving mothers and their babies.

CONCLUSIONS:

Rupture of uterus occurred in large number of women which in majority of the cases were due to preventable factors.

REFERENCES:

1. Fox NS, Gerber RS, Mourad M, Saltzman DH, Klauser CK, Gupta S, et al. Pregnancy outcomes in patients with prior uterine rupture or dehiscence. *Obstet Gynecol.* 2014;123:785-9.
2. Okido MM, Quintana SM, Berezowski AT, Duarte G, Cavalli Rde C, Marcolin AC. Rupture and dehiscence of uterine scar: case study at a low risk maternity in the Brazilian Southeast. *Rev Bras Ginecol Obstet.* 2014;36:387-92.
3. Revicky V, Muralidhar A, Mukhopadhyay S, Mahmood T. A case series of uterine rupture: lessons to be learned for future clinical practice. *J Obstet Gynaecol India.* 2012;62:665-70.
4. Berhe Y, Wall LL. Uterine rupture in resource poor countries. *Obstet Gynecol Surv.* 2014;69:695-707.
5. Riddell CA, Kaufman JS, Hutcheon JA, Strumpf EC, Teunissen PW, Abenhaim HA. Effect of uterine rupture on a hospital's future rate of vaginal birth after cesarean delivery.

- Obstet Gynecol. 2014;124:1175-81.
6. Kok N, Wiessma IC, Opmeer BC, de Graaf IM, Mol BW, Pajkot E. Sonographic measurements of lower uterine segment thickness to predict uterine rupture during a trial of labour in women with previous caesarean section: a meta-analysis. *Ultrasound Obstet Gynecol.* 2013;42:132-9.
 7. Strand RT, Tumba P, Niekowal J, Bergstrom S. Audit of cases with uterine rupture: a process indicator of quality of obstetric care in Angola. *Afr J Reprod Health.* 2010;14:55-62.
 8. Kadova I. Ruptured uterus in rural Uganda: prevalence, predisposing factors and outcomes. *Singapore Med J.* 2010;51:35-9.
 9. Akaba GO, Onafowokan O, Offiong RA, Omonua K, Ekele BA. Uterine rupture: trends and fetomaternal outcome in a Nigerian teaching Hospital. *Niger J Med.* 2013;22:304-8.
 10. Chuni N. Analysis of uterine rupture in tertiary center in Eastern Nepal: lessons for obstetric care. *J Obstet Gynaecol Res.* 2006;32:574-9.
 11. Diab AE. Uterine rupture in Yemen. *Saudi Med J.* 2005;26:264-9.
 12. Xiaoxia B, Zhengping W, Xiaofu Y. Clinical study on 67 cases with uterine rupture. *Zhonghua Fu Chan KeZaZhi.* 2014;49:331-5.
 13. Perez-Adan M, Alvarez-Silvares E, Garcia-Lavandeira S, Vilouta-Romero M, Doval-Conde JL. Complete uterine ruptures. *Ginecol Obstet Mex.* 2013;81:716-26.
 14. Kara M, Toz E, Oge T, Avci I, Eminli I, Senturk S. Analysis of uterine rupture cases in Agri: a five year experience. *Clin Exp Obstet Gynecol.* 2010;37:221-3.
 15. Nyengidiki TK, Allagoa DO. Rupture of the gravid uterus in a tertiary health facility in the Niger Delta region of Nigeria: A 5 year review. *Niger Med J.* 2011;52:230-4.
 16. Ophir E, Odeh M, Hirsch Y, Bornstein J. Uterine rupture during trial of labour: controversy of induction method. *Obstet Gynecol Surv.* 2012;67:734-45.
 17. Ezechi OC, Mabayoje P, Obiesie LO. Ruptured uterus in South Western Nigeria: a reappraisal. *Singapore Med J.* 2004;45:113-6.
 18. Ronel D, Wiznitzer A, Sergienko R, Zlotnik A, Shiener E. Trends, risk factors and pregnancy outcomes in women with uterine rupture. *Arch Gynecol Obstet.* 2012;285:317-21.