

Risk Factors Associated With Uterine Rupture

MISBAH MALIK, JAMSHED FEROZE, NAGINA RASHID

ABSTRACT

Objective: To ascertain the risk factors associated with uterine rupture.

Methodology: This study was carried out at the Department of Obstetrics & Gynaecology, Jinnah Hospital, Lahore from 1st March 2008 to 30th August 2008. A total of 60 patients were recruited for the study. 30 presented with uterine rupture and 30 age-matched parturient women who did not have uterine rupture were selected. Demographic data, socioeconomic status, details regarding the most probable predisposing factor, type of rupture, management, maternal and fetal outcome was recorded.

Results: In the current study, mean age of patients was 28.23±6.3 and 29.00±4.7 in cases and controls, respectively. Previous history of caesarean section was found to be significantly higher in cases than controls (odds ratio=5.68). Previous history of myomectomy was also found to be significantly higher in cases than controls (odds ratio=10.5). Injudicious use of oxytocin was significantly increased in cases as compared to controls (odds ratio=33.1) and a prolonged period of obstructed labour was also found to be a significant factor for uterine rupture (odds ratio=3.22).

Conclusion: The findings of this study show that uterine rupture though uncommon, is a life threatening condition for both the mother and fetus. Among the various risk factors, previous caesarian section is the most common risk factor, followed by injudicious use of oxytocin. Previous history of myomectomy and obstructed labour are also significant risk factors. So all labours should be carried out under supervision of a trained obstetrician with ready access to well equipped theatre facilities for caesarian section, should the need arise.

Key words: Uterine rupture, scarred uterus, previous caesarian section.

INTRODUCTION

Uterine rupture is an uncommon, but a life-threatening condition both to mothers and fetus¹. Despite great advances in modern obstetrics, uterine rupture remains one of the most feared obstetric complications affecting the pregnant woman and fetus, with high morbidity and mortality^{2,3}.

Uterine rupture is defined as full thickness tear through myometrium and serosa. Uterine rupture may be seen in both scarred and previously intact uterus. Incidence is 0.05-0.09% of all pregnancies. It is 0.5% in previous lower segment scar compared with 3-4% in vertical scar⁴. Previous scar rupture carries a much higher risk of recurrent rupture.

Predisposing factors for uterine rupture include previous caesarean birth, previous history of myomectomy, malpresentation, internal podalic version, dystocia during 2nd stage of labour, operative vaginal delivery, trauma, injudicious use of oxytocin, multiparity, fetal macrosomia and obstructed labour.⁵ Contributing factors include poor socioeconomic conditions, uncontrolled fertility, illiteracy, malnutrition, lack of vitamin D, adolescent marriages and contracted pelvis⁵.

The review of the Pakistani literature reveals 2 studies from Karachi^{6,7}, one from Rawalpindi⁸, one from Abbottabad⁹, and one from Lahore¹⁰. However, different institutions are known to cater for different

segments of population and the risk and predisposing factors may vary from population to population.

We conducted this study to identify the risk factors and to assess the potential damages to mothers and neonates as a result of uterine rupture. So that preventive measures can be taken to reduce morbidity in high risk patients due to rupture of uterus.

MATERIAL AND METHODS

Present case control study was conducted in the department of obstetrics and gynaecology, Jinnah Hospital, Lahore from 01-03-2008 to 30-08-2008. Non-probability purposive sampling technique was adopted. All cases of ruptured uterus who were either admitted or who develop this complication in the hospital were matched with 30 age-matched controls. Uterine rupture was detected by maternal tachycardia, scar tenderness, abrupt cessation of labour pains associated with disappearance of fetal heart and was confirmed on laprotomy. Cases of scar dehiscence were excluded. The patients were selected from OPD, emergency and indoors. Cases and controls were selected from the same source. Informed consent was taken from both groups for participation in the study. Demographic data, socioeconomic status, details regarding the most probable predisposing factor, type of rupture, management, maternal and fetal outcome was

recorded. The patients having rupture and their babies were properly treated. The collected information was analyzed by the SPSS version 10.0

RESULTS

Out of a total of 60 pts, thirty were cases (Group-A) and thirty were controls (Group-B). The age of patients ranged between 20 to greater than 40 years, with majority of the women between 20-30 years. Mean age of patients was 28.23±6.3 and 29.00±4.7 in cases and controls, respectively.

Regarding presenting complaints, history of loss of fetal movements was present in 33% cases and in 97% controls. History of vaginal bleeding found in

33% cases and 13% controls. Trial under care of dai and LHV had been performed in 60% cases and in 10% controls. All cases (100%) were multigravida while 97% of controls were multigravida and only 3% of controls were primigravida.

The risk of caesarean section was found to be increased significantly in cases than controls (Table-1). Use of oxytocin was significantly increased in cases as compared to controls (Table-2). The risk of myomectomy was found to be increased significantly in cases than controls (Table-3) Risk of obstructed labour was found to be increased significantly in cases when compared to controls (Table-4).

Table 1: Previous history of caesarean section

C-section	Cases (n=30)	Controls (n=30)	Odds Ratio	95% confidence interval
Yes	19(63.3%)	7(23.3%)	5.68	1.62 -20.7
No	11(36.7%)	23(76.7%)		

$\chi^2=9.77$ df = 1 P value 0.001

Table 2: Injudicious use of oxytocin

Use of oxytocin	Cases (n=30)	Controls (n=30)	Odds Ratio	95% confidence interval
Yes	16(53.3%)	1(3.3%)	33.1	3.85 -739.3
No	14(46.7%)	29(96.7%)		

$\chi^2=18.47$ df = 1 P value < 0.001

Table 3: Previous history of myomectomy

History of myome-ctomy	Cases (n=30)	Controls (n=30)	Odds Ratio	95% confidence interval
Yes	8(26.6%)	1(3.3%)	10.5	1.17 -241.7
No	22(73.3%)	29(96.7%)		

$\chi^2=6.41$ df = 1 P value 0.011

Table 4: Obstructed labour

Obstructed labour	Cases (n=30)	Controls (n=30)	Odds Ratio	95% confidence interval
Yes	3(10%)	1(3.3%)	3.22	0.27 -85.7
No	27(90%)	29(96.7%)		

$\chi^2=1.07$ df = 1 P value =0.300

DISCUSSION

Uterine rupture is usually a serious and potentially catastrophic event because of massive uterine bleeding. Early surgical intervention is the key to successful treatment of uterine rupture¹¹.

It is evident that the single most important factor in determining the risk of uterine rupture is whether the uterus has a previous scar or not. The past injuries such as Cesarean delivery, hysteroscopic resection of uterine septum, myomectomy, and cornual resection are considered to be the causes of uterine rupture¹².

It is reported that spontaneous rupture of unscarred uterus occurs in 1 in 15,000¹³. It may occur in a patient who has high parity¹⁴, placenta increta or percreta, adenomyosis, abortion with instrumentation, manipulation during delivery, induced delivery by

misoprostol¹⁵, vigorous fundal pressure during delivery, cocaine abuse and idiopathic cause¹³. Most of the causes show that uterine rupture mainly occur before or during labour after the second trimester.

Induction of labor increases the risk of uterine rupture among women with one prior cesarean delivery and labor induced with use of a prostaglandin confers a greater relative risk. The overall effect of induction of labour with prostaglandins on uterine rupture is still unclear and may vary according to the preparation used, the regimen, and the degree of cervical readiness for induction¹⁶.

One longitudinal cohort study in Nova Scotia estimated that the relative risk of uterine rupture associated with a trial of labor, as compared with elective repeated cesarean delivery, was 5.2, but

only 11 women had uterine rupture, and this increase in risk was not significant¹⁷.

There is strong association between uterine rupture and previous caesarean section. This study showed that around 63.3% of women having uterine rupture had previous caesarean section. These results are in accordance with the study conducted by Hossain and Soomro at civil hospital, Karachi between December 2000 to December 2001⁶.

Oxytocin administration increases the risk of uterine rupture or dehiscence. Our current study revealed that 53.3% of women had oxytocin administration. The results are close to study carried out in USA⁵. Uterine rupture is more frequent when women are left in for prolonged periods in obstructed labour. This is more likely occurring in the developing countries¹⁸. These results are close to current study in which 10% of women had obstructed labour.

CONCLUSION

Uterine rupture is a life threatening complication that can be prevented by properly counseling and selecting the patients, categorizing them into high risk and low risk groups and managing them in the presence of highly experienced and skilled obstetrician.

Any subsequent labour after a lower segment caesarean should be conducted in a well equipped maternity hospital with ready access to caesarean section. Fetal heart should be monitored vigilantly. An important aspect of management is proper postnatal counseling and exploration of events as often there is no time for detailed discussion at the time of emergency. This should be undertaken by the consultant incharge of woman's care.

REFERENCES

1. Kuwata T, Matsubara S, Usui R, Uchida S, Sata N, Suzuki M. Intestinal adhesion due to previous uterine surgery as a risk factor for delayed diagnosis of uterine rupture: a case report. *J Med Case Reports* 2011;5:523.
2. Xia X, Fan L, Xia Y, Fang Y. Uterine rupture during pregnancy. *Clin Exp Obstet Gynecol* 2011;38:286-7.
3. Park YJ, Ryu KY, Lee JI, Park MI. Spontaneous uterine rupture in the first trimester: a case report. *J Korean Med Sci* 2005; 20:1079-81.
4. Thompson W, Harper M. PPH and abnormalities of the third stage of labour. In: Chamberlain G, Steer PJ, editors. *Turnbull Obstetrics*. London: Churchill Livingstone, 2001. p.629-30.
5. Diaz SD, Jones JE, Seryakov M, Mann WJ. Uterine rupture and dehiscence: ten-year review and case-control study. *South Med J* 2002; 95:431-5.
6. Hossain N, Soomro N. Uterine rupture in Labor *J Surg Pak* 2002;7:17-9.
7. Malik HS. Frequency, predisposing factors and fetomaternal outcome in uterine rupture *J Coll Physicians Surg Pak* 2006;16:472-5.
8. Butt MH. Uterine rupture: a study of its frequency and etiology at Military Hospital Rawalpindi *J Postgrad Med Inst* 2005;19:47-51.
9. Khan S, Parveen Z, Begum S, Alam I. Uterine Rupture: A review of 34 cases at Ayub Teaching Hospital Abbottabad. *J Ayub Med Coll Abbottabad* 2003;15:50-2.
10. Bashir A, Ashraf R, Shakoor S, Ali F, Rehman K, Chohan A. Uterine Rupture: an audit to analyze management options, maternal and fetal outcome *Ann King Edward Med Coll* 2005; 11:54-7.
11. Suner S, Jagminas L, Peipert JF, Linakis J. Fatal spontaneous rupture of a gravid uterus: Case report and literature review of uterine rupture. *J Emerg Med* 1996; 14: 181-5.
12. Turner MJ. Uterine rupture. *Best Pract Res Clin Obstet Gynaecol* 2002;16 69-79.
13. Sallam AH, Preston J. Idiopathic uterine perforation in late pregnancy. *J Obstet Gynaecol* 2002; 22: 317.
14. Miller DA, Goodwin TM, Gherman RB, Paul RH. Intrapartum rupture of the unscarred uterus. *Obstet Gynecol* 1997;89: 671-3.
15. Berghahn L, Christensen D, Droste S. Uterine rupture during secondtrimester abortion associated with misoprostol. *Obstet Gynecol* 2001; 98: 976-7.
16. Tan TL, Kolhe S, Shafik A. Spontaneous uterine rupture following intercourse in a scarred uterus. *J Obstet Gynaecol* 2005;25:392.
17. McMahon MJ, Luther ER, Bowes WA Jr, Olshan AF. Comparison of a trial of labor with an elective second cesarean section. *N Engl J Med* 1996; 35:689-95.
18. Rashmi A, Radhakrishnan G, Vaid NB, Agarwal N. Rupture uterus – changing Indian scenario. *J Ind Med Assoc* 2001; 99: 634-7.