Original Article

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A Three Year Clinicopathological Study of Cases of Rupture Uterus

Obstetrics and Gynaecology Section

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ABSTRACT

Introduction: Rupture uterus is a life threatening obstetric complication with serious maternal and fetal side-effects. We report a 3 year (2010-2013) retrospective clinical study of pregnancy with rupture uterus cases attending a tertiary care hospital.

Aim: The aim of the study was to evaluate the incidence of rupture uterus, incidence as per age, parity, clinical presentations, risk factors, complications and management.

Materials and Methods: Retrospective data of 74 cases of rupture uterus in SCB Medical college, Cuttack was collected from case records of 26,547 deliveries during a 3 year span (2010-2013). Parameters like cause of rupture, type, site of rupture and outcome were recorded. The collected data was analysed by SPSS software v19.

Results: Out of 26,547 deliveries during the three year period, there were 74 cases of rupture uterus with an incidence of rupture 1 in 359 (0.28%). The mean age of rupture uterus was 27.4 years. 95.8% were multigravida and majority were referred cases from low socioeconomic status. Only 40.5% had the required minimum of four antenatal visits as recommended by WHO (World Health Organisation). A total of 48.6% of cases with rupture uterus had history of previous Caesarean section. Prolonged labour was present in 75.6% of the cases. Only 12.2% of the cases had history of oxytocin use whereas 9.5% had undergone an operative vaginal delivery. Obstructed labour was the cause in 24.3% of cases, 85.1% had complete rupture. Majority had a rupture in the anterior wall (69%) and 81.1% had rupture in lower segment of uterus. Only 17.6% had broad ligament haematoma, 10.8% colporrhexis and 6.8% had associated bladder injury. Repair was possible in only 39.2% of cases, whereas majority landed up in hysterectomy. Internal iliac ligation was done in 2.7% of cases. Perinatal mortality was 90.5% whereas maternal death was seen in 13.5% cases. One patient developed VVF (vesicovaginal fistula). Duration of hospital stay was upto 14 days in 81.1% cases.

Conclusion: Education and proper care especially of high risk patients like previous caesarean by competent personnal, proper use of oxytocin and early referral may help to reduce the incidence of “rupture uterus”.

Keywords: Caesarean section, Fetal mortality, Maternal morbidity

INTRODUCTION

Uterine rupture is one of the preventable obstetric complications where the diagnosis is often missed or delayed leading to maternal and fetal mortality and/or morbidity. The incidence of ruptured uterus is high in women with previous scar ranging from 0.3 to 1.7% in comparison to women with unscarred uterus where it ranges from 0.03 to 0.08%. The incidence of maternal mortality rate in rupture uterus cases ranges between 1 to 13% while perinatal mortality is as high as 74 to 94% [1]. Recently there is a significant drop in the incidence of uterine rupture in the developed countries and mostly seen in women undergoing VBAC (Vaginal Birth After Caesarean Section) [2]. Rupture of unscarred uterus is extremely rare, estimated as <1 in 10,000 to < 1 in 1,000 [3]. Spontaneous rupture of an intact uterus may be due to injudicious use of oxytocin, prostaglandins, cephalopelvic disproportion, malpresentation, multiparity, difficult instrumental delivery and obstetrical manipulations. The high incidence of rupture uterus cases in developing countries is due to more number of unbooked obstetric emergencies arising from poor antenatal care in rural areas [4]. The risk factors for spontaneous uterine rupture in unscarred uterus are grand multiparas, macrosomia, uterine anomaly, abnormal placentation and previous history of an invasive mole [5]. Spontaneous rupture of rudimentary uterine horn pregnancy has also been reported in literature [6].

This retrospective three year clinical study was undertaken to evaluate and analyze the various aspects of uterine rupture.

MATERIALS AND METHODS

A retrospective analytical study of cases of rupture uterus in pregnant women admitted to Department of Obstetrics & Gynaecology, SCB Medical College, Cuttack during a span of 3 years (2010-2013), was evaluated. Clinical records of 74 cases of rupture uterus out of 26,547 deliveries during the study period were reviewed. The hospital gets most of the cases from Cuttack district and surrounding areas also. Relevant sociodemographic and clinical data, previous antenatal obstetric history, period of gestation, duration of labour pain, history of delivery, site of rupture, type of surgery performed, unit of blood transfusion, length of hospitalization, maternal and fetal outcomes were recorded. The collected data was analysed by SPSS software version 19.

RESULTS

A total of 26,547 deliveries were conducted and 74 cases of rupture uterus were managed during the three year study period. Only two cases of silent antepartum rupture occurred in the hospital while the rest of cases were diagnosed as rupture uterus at the time of admission. The incidence of uterine rupture was 1 in 359 deliveries (0.28%). [Table/Fig-1] shows the sociodemographic and clinical characteristics. The mean age of rupture uterus was 27.4 years. A 21.6% had parity, three and above and majority were referred cases from low socioeconomic status. All the cases of rupture were seen in after 36 weeks. Only 40.5% had the required minimum of four antenatal visits as recommended by WHO and 12.2% of babies weighed over 3.5 kg.

Sl. No.	Parameters	Percentage (Number)
1	**Maternal age in years**	
	20-25	32.4%(24)
	26-30	55.4%(41)
	>30	12.2%(9)
2	**Parity**	
	0	4.1%(3)
	1	48.6%(36)
	2	25.6%(19)
	3	18.9%(14)
	>3	2.7%(2)
3	**Locality**	
	Rural	89.2%(66)
	Urban	10.8%(8)
4	**Referral status**	
	Direct cases	28.4%(21)
	Referred cases	71.6%(53)
5	**Antenatal care**	
	Nil ANC visits	1.4%(1)
	1-3	58.1%(43)
	>3	40.5%(30)
6	**Birth weight**	
	<3.5 kg	87.8%(65)
	>3.5 kg	12.2%(9)

[Table/Fig-1]: Demographic characteristics

Sl. No.	Risk factors	Percentage(Number)
1	**Past Obstetric History**	
	Previous LSCS	48.6%(36)
	Surgical MTP	14.9%(11)
	Nil surgical intervention	28.4%(21)
2	**Prolonged labour**	**75.6%(56)**
3	**Labour**	
	Oxytocin	12.2%(9)
	Prostaglandin	2.7%(2)
	Instrumental delivery	9.5%(7)
4	**Obstructed labour**	**24.3%(18)**
5	**Previous LSCS**	
	Previous 1 LSCS	40.5%(30)
	Previous 2 LSCS	8.1% (6)
6	**Others**	
	CPD	17.6%(13)
	Malpresentation	6.8%(5)

[Table/Fig-2]: Risk factors

[Table/Fig-2] shows the risk factors associated with rupture uterus. 48.6% (36) of ruptures were seen in scarred uterus. Out of these 36 cases, instrumental delivery was tried to cut short second stage in six cases, ten cases had prolonged labour and two cases had silent antepartum rupture. Five cases had history of inverted T shaped incision in previous caesarean section whereas six cases were seen with a history of previous two caesarean sections. Rupture in unscarred uterus contributed to 51.4% of cases among which major aetiology were prolonged labour, obstructed labour, Cephalopelvic Disproportion (CPD), injudicious use of oxytocin, instrumental vaginal delivery, malpresentation like transverse lie and breech. A 97.3% had intrapartum rupture whereas 2.7% (2) cases of antepartum silent rupture were seen in cases of scarred uterus (previous 2 LSCS).

The most common presenting feature in case of rupture uterus was found to be absent fetal heart sound (87.8%). Other presenting features include haemodynamic instability (64.6%), dull aching pain in abdomen (56.9%), and superficial fetal parts (43.1%). [Table/Fig-3] gives the site and type of rupture, surgery and postoperative complications. Eleven cases presented with incomplete rupture out of which 10 cases had history of previous caesarean section. The site of rupture was most commonly present in anterior wall (51 cases) of uterus in lower segment (60 cases). Broad ligament haematoma was present in 13 cases whereas bladder injury was seen in five

Sl. No.	Characteristics of Rupture	Percentage(Number)
1	**Type of rupture**	
	Incomplete	14.9% (11)
	Complete	85.1% (63)
2	**Timing of rupture**	
	Antepartum	2.7%(2)
	Intrapartum	97.3%(72)
3	**Site of rupture**	
	Anterior	69% (51)
	Posterior	17.6%(13)
	Lateral	13.5%(10)
4	**Segment of uterus involved**	
	Upper	10.8% (8)
	Lower	81.1% (60)
	Both	8.1% (6)
5	**Associated complications**	
	Nil	64.9% (48)
	Broad ligament hematoma	17.6% (13)
	Bladder injury	6.8% (5)
	Colporrhexis	10.8% (8)
	Internal iliac ligation	2.7%(2)
6	**Surgical treatment**	
	Repair	39.2%(29)
	Subtotal hysterectomy	36.5%(27)
	Total hysterectomy	24.3%(18)

[Table/Fig-3]: Intraoperative findings.

Sl. No.	Parameters	Percentage(Number)
1	**Mortality**	
	Perinatal mortality	90.5%(67)
	Maternal mortality	13.5%(10)
2	**Other complications/morbidity**	
	Anaemia	93.2%(69)
	Blood transfusion(≥2 units)	87.8%(65)
	Shock	33.8%(25)
	Pyrexia	27%(20)
	Wound infection	21.6%(16)
	UTI	20.3%(15)
	VVF	1.35%(1)
	Septicemia	5.4%(4)
	Paralytic ileus	4.1%(3)
	NICU admissions	9.5%(7)
3	**Causes of maternal mortality**	
	Septicemia	2.7%(2)
	ARDS	10.8%(8)
4	**Duration of hospital stay**	
	10-14 days	81.1%(60)
	15-21 days	17.6%(13)
	>21 days	1.35%(1)

[Table/Fig-4]: Complications

cases. Eight patients had colporrhexis. Repair was possible only in 39.2% (29 cases). Subtotal hysterectomy was done in 27 cases whereas total hysterectomy was done in 18 cases.

[Table/Fig-4] focuses on the major complications including postoperative morbidity. Maternal death occurred in 10 cases. Fifteen cases required post operative ICU admission with ventilator support out of which eight cases developed ARDS (Acute Respiratory Distress Syndrome) leading to maternal death. In 2 other cases death was attributed to septicemia resulting from prolonged and obstructed labour. Fetal death occurred in 65 out of 74 cases and was the most common complication. In two cases of incomplete rupture baby still birth was reported. In the other nine cases of incomplete rupture, babies were born with APGAR score above 5 and did well subsequently. NICU admission was required in 9.5% of cases.

Maternal blood transfusion ≥2 units were required in 87.8% (65) cases. Anaemia due to haemorrhagic shock was the most common cause of maternal morbidity. The other complications include pyrexia (20), wound infection (16), urinary tract infection (15), septicemia (4) and paralytic ileus (3). One patient developed VVF. Majority (60) of the patients were discharged from hospital within two weeks, 13 cases required hospital stay upto three weeks. The patient diagnosed with VVF postoperatively stayed in hospital for over three weeks.

DISCUSSION

Rupture uterus still remains one of the dreaded obstetric complications which require prompt diagnosis and treatment. The incidence of rupture uterus in this study is 0.28%. However the incidence is higher in the studies by Mahabuba et al., (0.83%) and Alam et al., (1.14%) [7,8]. In developing countries like Nigeria it is 0.83% [9]. Previous caesarean contributed to about 48.6% of cases. This is comparable to the study by Sahu L in which 50% of ruptures involved a previous scar [10]. Our hospital is a tertiary referral centre covering other districts in and around Cuttack, with most of the cases being referred in an already moribund state. Studies conducted in developing countries also showed that in rural areas, low socioeconomic condition of the people and poor health facility were the major contributing factors in determining the incidence of rupture uterus [11].

In our study rupture uterus was most commonly seen the 26-30 year age group which was similar to the study by Mahabuba et al., [7]. Thirty five percent of rupture uterus occurred in multipara (para 2 and above) whereas in the study by Malik HS, it was found to be 42.7% [12]. Majority of patients were unbooked and with irregular antenatal check ups which was similar to other studies. In multigravidas violent uterine contractions against obstruction led to rupture. Poor built and nutritional status led to increased risk of morbidity and mortality. Injudicious use of oxytocin and preference for trial of labour also contributed to increased risk of rupture uterus. In our study only 2.7% cases were grandmultiparas and 95.8% were para 1-4. Dare and Oboro reported rupture in grandmultiparas in 12.7/1000 deliveries, and rupture in paras 1-4 in 3.1/1000 deliveries [13].

In this study repair was possible in only 39.2% cases of rupture. This was because many were referred cases coming from remote areas. The decision for hysterectomy was determined on the basis of the general condition of the patient, parity, number of living children and the extent of rupture [4]. Fetal death was seen in 90.5% cases whereas maternal death was seen in 13.5% cases. However in the study by Sahu L there were 2.76% maternal deaths whereas perinatal mortality was around 94.07% [10]. Good prognosis was only possible for those cases who were admitted to hospital on time and those with incomplete rupture or rupture during their hospital stay. The very high maternal mortality in our study necessitates the need for patient education, increase in infrastructure in terms of more health care centers catering to each area which reduces time of travel and increase in the High Dependency Unit (HDU's) and maternal ICU beds at tertiary care level.

LIMITATION

The limitation of this study is that it shows details of rupture uterus pertaining to a specific geographic area in Odisha and cannot be extrapolated to the Indian population as a whole. Also our hospital being a tertiary centre, receives many referral cases from adjacent areas so the incidence of rupture is likely to be higher

CONCLUSION

Rupture uterus is a serious and life threatening complication for both mother and the baby. Limited resources and health care centers in remote areas, lack of awareness and education regarding regular antenatal checkups, delay in diagnosing cases (prolonged and obstructed labour) and referring to higher centers, time lost in travel were the major hurdles that we identified in our study. Education and proper care especially of high risk patients like previous caesarean by competent personnel, proper use of oxytocin and early referral may help to reduce the incidence of "rupture uterus".

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