ORIGINAL PROF-822

RUPTURE OF GRAVID UTERUS
A 3 YEARS REVIEW

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ABSTRACT... Objective: (1) To evaluate risk factors predisposing to this dreadful event.(2)The modification of treatment offered.(3)The maternal and perinatal outcome. **Setting**: Gynae unit I , Nishtar Hospital Multan. **Period:** From January 1997 to January 2000. **Material & Methods:** A total of 34 cases of uterine rupture were seen. Out of these 73.5% were complete ruptures, 26.4% were incomplete ruptures. Ruptures were most commonly seen in anterior lower uterine segment. Uterine rupture was most commonly seen in patients with scarred uterus, 32.3% had previous one or two lower uterine segment caesarean section, 5.8% has previous classical caesarean section and another 5.8% had previous dilatation and curettage. Injudicious of oxytocin, unskilled breech extraction and instrumental delivery, undiagnosed cephalopelvic disproportion, neglected transverse lie and hydrocephalic were the other causes seen. Highest number of ruptures were seen in 34-39 years of age group i.e 47.05% . Most of the rupture i.e. 79.4% were diagnosed during labour and 17.6% were diagnosed during postpartum period. Most of the patients with uterine rupture had labour pains for the last 9-16 hours. Regarding clinical features majority of patients had tachycardia, pain and tenderness, fetal heart rate abnormalities, shock, bleeding per vaginum and cessation of uterine contractions. Depending upon the condition, repair and tubal ligation was the surgical treatment most commonly given, others being subtotal hysterectomy (32.4%) total hysterectomy (17.6%) and repair without tubal ligation (18.8%) . Regarding complications, 32.5% had UTI 8.5% had wound infections, 3 patients had cardiac arrest, 2 were resuscitated and one expired. Among long term complications, vesicovaginal fistula was seen in one patient. Maternal mortality rate of 2.9% was seen and perinatal mortality rate of 79.4% seen. stillbirth rate was 70.5% and early neonatal deaths within a week of birth were seen in 8.8% of infants.

Key Words: Incomplete rupture, instrumental delivery, neglected transverse lie, hydrocephalic, hysterectomy, vesicovaginal fistula.

INTRODUCTION

Rupture of a gravid uterus is an obstetrical catastrophe. It is one of the major causes of maternal and fetal morbidity and mortality[1]. The incidence of rupture uterus in developing countries is quite high[2]. Uterine rupture is classified into complete and incomplete rupture. Complete rupture involves the entire thickness of the uterine wall and visceral peritoneum, while in incomplete uterine rupture visceral peritoneum is intact. The clinical

course of complete rupture is quite a dramatic one and endangering, as compared to incomplete rupture[3].

Spontaneous rupture of an intact uterus may be due to injudicious use of oxytocin, prostaglandins, mal-presentations, multiparity, difficult instrumental delivery, destructive operations and obstetrical manipulations[4]. In this era of an increased incidence of caesarean deliveries, dehiscence of previous caesarean section scar is another major predisposing factor[1]. The diagnosis of ruptured uterus is made mainly by clinical assessment. Ultrasonography can be a helpful diagnostic tool in a stable patient. Mode of treatment depends primarily on the type, site, extent of rupture and secondarily on the age and parity of the patient. Modalities of treatment include repair of ruptured uterus with or without tubal ligation and hysterectomy.

PURPOSE OF STUDY

The aims of study were to review:

- The incidence of ruptured uterus at Nishtar Hospital, Multan.
- The risk factors predisposing to this dreadful event.
- The modification of treatment offered.
- The maternal and perinatal outcome.

MATERIAL & METHODS

This study was conducted at Department of Gynaecology and Obstetrics, Unit-I, Nishtar Hospital, Multan during the period of 3 years from January 1997 to January 2000. During this period 4183 patients were booked in the antenatal clinic of Unit-I. Total number of deliveries in this period of study were 3219. The number of deliveries is small as compared to antenatal attendance in the outpatient department. This may be because there is great influence of traditional Dais and LHVs in this area, who manage to deliver the patients at home and also because of the twice weekly admission policy in each unit.

All pregnant females admitted through the emergency of Nishtar Hospital, Multan with ruptured uterus or those who developed this complication in hospital were studied during a period of three years. Detailed history including obstetrical details of present pregnancy, labour, medication, obstetrical examination and treatment given was recorded on a especially designed proforma. Patients having no clinical signs of uterine ruptures at the time of admission and rupture appearing first on laparotomy were taken as those occurring within the hospital. Total number of 34 patients was seen in this 3 years period.

RESULTS

Table-I shows that total number of deliveries during the study period was 3219. Of which 1014 (31.5%) were booked cases and 2205 (68.5%) cases were non-booked. Out of 3219, 34 patients developed ruptures uterus (4 from booked cases and 34 from non-booked cases) .

Table-I. Number of Deliveries, Percentage of Booked and Non-Booked Cases Total deliveries-3219

Type of patients	No of pts	%Age
No. of booked cases	1014	31.5
No. of non-booked cases	2205	68.0
No. of cases with ruptured uterus	34	1.05
No. of booked cases with ruptured uterus	4	0.39
No. of non-booked cases with ruptured uterus	30	1.36

Regarding age, the highest number of ruptures were seen in the 34-39 years of age group i.e. 16 cases 47.5%. 17 ruptures occurred in paras 2-4 i.e. 50%. No prior surgery was performed in 20 cases i.e. 58.8% while 12 gave history of previous caesarean section and 2 gave history of previous D & Cs, one for incomplete abortion and other for lost IUCD (Table-II).

Twelve of the patients had lower segment caesarean section previously, 2 had classical caesarean section and 2 had previous dilatation and curettage. Amongst

caesarean group 5 had previous caesarean section due to placenta previa, primi breech, transverse lie and failed progress of labour. Six patients were trapped by the Dais and LHVs and had a full fledged unsupervised trial by them, 2 patients were operated due to scar tenderness and one was admitted in ward who had rupture before start of labour (discussed in detail in table-IV). Injudicious use of oxytocin caused uterine rupture in 7 patients, 3 patients had trauma due to breech extraction, one of patient was received in labour room in state of shock and she died within minutes of her arrival before any surgery could be done. Ruptures due to undiagnosed transverse lie, CPD & hydrocephalous were seen in 2, 4 and 1 patient respectively (Table-III).

Table-II. Selected characteristics of cases of ruptured uterus n-34		
AGE		
10-14 years	3	8.80
15-19 years	1	2.90
25-29 years	5	14.70
30-34 years	8	23.50
35-39 years	16	47.05
>40 years	1	2.9
PARITY		
1-2	4	11.70
3-4	17	50.0
5 and above	13	38.20
Past obstetrical history		
Previous dilatation	2	5.80
Previous caesareans deliveries	12	32.30
No prior surgery	20	58.80

One rupture occurred during pregnancy before the onset of labour. The patient had history of previous 3 caesarean section and last time 2 years back she had uterine rupture followed by repair. She has only one alive baby girl. She was admitted in the ward at 36 weeks gestation from antenatal outdoor because of burning micturition and suprapubic pain. On the day of her admission, she had uterine rupture. Amongst other, 27 were diagnosed during labour and 6 postpartum (Table-IV).

Table-III. Aetiological factors (n=34)		
Aetiology	No of pts	%age
Scarred Uterus (previous C/S)		
Rupture after lower uterine segment S/C	11	32.3
Rupture after classical C/section	2	5.8
Dilatation and curettage	2	95.8
Traumatic rupture		
Injudicious use of oxytocin	07	26.4
Trauma associated with breech extraction	03	08.08
Instrumental delivery	02	05.08
Spontaneous rupture		
Undiagnosed transverse lie	02	05.8
Cephalopelvic disproportion due to inadequate maternal pelvis	04	11.7
Hydrocephalus	01	02.9
Total	34	100

Table-IV. Time of rupture		
Time	**No. of patients**	**% Age**
During pregnancy		
Before onset of labour	01	02.9
During Labour		
Intrapartum	27	79.4
Diagnosed postpartum	06	17.6

Table-V. Duration of labour		
Duration (in hours)	No. of patients	% Age
01-08	09	26.4
09-16	13	38.4
17-24	10	29.4
> 24	01	02.9
Not in labour	01	02.9
Total	34	100.0

Table-VI. Clinical features of ruptured uterus		
Clinical features	**No. of pts**	**%age**
Signs and symptoms pain		
Tachycardia	29	85.2
Cessation of uterine contraction	17	50.0
Scar tenderness	18	52.9
Shock	19	55.8
Fetal distress	11	32.3
Absent fetal heart sound	24	70.5
Palpable fetal parts	09	26.4
Bleeding per vaginal	23	67.6
Edematous External genitalia	06	17.6
Vaginal tears	03	08.8
Cervical tear and lacerations	03	08.8
Presentation (Cephalic)		
Breech	03	08.8
Face	01	02.9
Shoulder	02	05.8
Not in labour	01	02.9
Diagnosed postpartum	06	17.6

The highest percentage of ruptures was seen in patients who had labour pains for the last 9-16 hours. 29.4% had labour pains for the last 17-24 hours, 9 patients had labour pains for the last 1-8 hours and one for more than 24 hours. One patient was not in labour (Table-V).

Table-VI shows that in majority of cases tachycardia, pain and tenderness, absent fetal heart sounds, shock, bleeding per vaginum and cessation of uterine contractions were the main sings and symptoms.

Lower segment was most commonly involved, anterior lower ruptures were the commonest as shown in Table-VII.

Table-VII. Types / site of rupture			
Site	**Fundal**	**Lower segment**	**Combined**
Anterior	02	12	7
Posterior	-	01	-
Right lateral	-	02	-
Left lateral	-	10	-
Type		**No. of pts**	**%age**
Complete		25	73.5
Incomplete		09	26.4
Total		34	100.0

Table-VIII. Treatment (surgical) in rupture uterus		
Type of surgery	**No. of pts**	**%age**
Total hysterectomy	05	17.6
Subtotal hysterectomy	11	32.4
Repair and tubal ligation	14	41.0
Repair done without tubal ligation	03	08.8
Died before surgery	01	02.9

In most of the patients as indicated by their situation repair and tubal ligation was done, subtotal hysterectomy was done in 11 patients and total hysterectomy in 5

patients. One patient died before undergoing surgery i.e. within 20-30 minutes of her arrival in emergency.

She was badly manipulated by some dai in the peripheral area of Multan for breech extraction. She died because of excessive bleeding and shock(Table-VIII).

On an average 3 pints were transfused, antibiotics in combination were given, with an average hospital stay of 10 days as indicated in table-IX.

Table-IX. Resuscitation of patients with ruptured uterus

Treatment / stay	Maximum	Minimum	Average
Blood transfusion	6	2	3
Antibiotics	14	7	9
Hospital stay	22	7	10

Table-X shows that 11 patients had UTI, might be because of prolonged catheterization or because of manipulation by dais. Seven patients had fever, 5 had blood reactions because in hurry the attendants arranged blood from where so ever possible.

Table-X. Complication in the postoperative period

Complication	No. of patients	% Age
Febrile illness	07	20.5
UTI	11	32.5
Cardiac arrest	03	08.5
Blood transfusion reaction	05	14.7
Wound infection	03	08.5
Respiratory disease	03	11.7
Vesico vaginal fistula	01	02.9

Three patients had cardiac arrest, 2 during surgery and both of them were resuscitated and shifted to ICU where they survived. One had cardiac arrest before surgery and could not survive, in spite of all measures done. Among long term complications vesicovaginal fistula was seen in one patient.

Table-XI shows a maternal mortality rate of 2.9%, patient had forceful breech extraction by some dai, she was in hypovolaemic shock. She went into cardiac arrest and in spite of all resuscitative measures she expired in minutes after her arrival in the emergency ward. Perinatal mortality rate is 79%, 70.5% was the still birth rate and 8.8% had early neonatal deaths i.e. within a week of birth.

Table-XI. Maternal and fetal mortality

Maternal mortality	No. of pts	%age
Cardiac arrest	01	02.9
Fetal outcome		
Perinatal heart rate Still born	27 24	79.0 70.5
Early neonatal deaths	03	08.5
Alive	7	20.5

DISCUSSION

This study showed an incidence of 1.02% of uterine rupture at Nishtar Hospital, Multan during the period from January 1997 to January 2000, which is comparable with other developing countries. Amata et al[5] reported an incidence 1:399 deliveries from Usmano Danfodiye Hospital, Sokoto Nigeria. Lankoande and Ovedroage[6] from National Hospital Centre of Ovagadovger, West Africa reported an incidence of 1:44 deliveries. Developed nations have low incidence of uterine rupture. Reported incidence from hospital discharge data at Massachusetts USA 1990-97 was <0.1% of all pregnant women. Lynch reported an incidence of 0.085% from Australia[7]. Al-Hassani et al from Qatar reported an incidence of 0.012%[8]. Gregory et al from California reported an incidence of 0.07%[9]. Zaideh and Jallad from Jordan reported an incidence of 1:422 deliveries[10].

It is obvious that incidence of uterine rupture is still very high in developing countries and low in developed, well educated and financially sound countries.

In this study the highest incidence of uterine rupture was seen in the age group of 34-39 years. Lankoande[6] reported maximum cases of uterine rupture in women in their 3rd decade of life. Miller et al[11] reported maximum number of uterine ruptures in ages 35-45 years.

Regarding parity, maximum number of uterine ruptures were seen in multiple with 2-4 number of issues. Ziadeh & Jallad[10] reported maximum ruptures in women who were para 4 and above. Caughey[12] reported maximum ruptures in para-2-4.

In present study the uterine ruptures were mostly seen in patients with scarred uterus, 12 had low transverse uterine incision in lower uterine segment and two have classical caesarean sections done, five out of these patients have previous one caesarean sections due to antepartum haemorrhage, primi breech, transverse lie, failed progress of labour and cephalopelvic disproportions, seven patients have previous two caesarean sections and three have previous three caesarean sections. Two patients have previous dilatation and curettage, one for an incomplete abortion and second for misplaced IUCD. Caughey[12] concluded that women with a history of two prior caesarean deliveries have an about 5-fold greater risk of uterine rupture than those with only one prior caesarean delivery.

In this study injudicious use of oxytocin, trauma with breech extraction, forced instrumental delivery, transverse lie, cephaloplevic disproportion and hydrocephalic were the other etiological factors seen.

Ziadeh, Jallad[10] noticed that obstructed labour caused by mal-presentation and disproportion was the main cause. Miller et al[11] identified 13 uterine ruptures in women with unscarred uterus, etiological factors included oxytocin (4 cases), prostglandins use (3 cases), use of vacuum and forceps (3 cases), grand multiparity (2 cases) and mal-presentation (2 cases).

Regarding clinical features of ruptured uterus our study suggests that in majority of cases, maternal tachycardia, pain and tenderness, fetal heart rate abnormalities, shock, vaginal bleeding and cessation of uterine contractions were the main features. We diagnosed rupture of uterus with the help of transabdominal ultrasonography in three patients with suggestive symptoms, in rest of the patients their condition did not allow to shift them to ward for doing ultrasonography.

Miller et al[11] studied 13 cases of rupture and found fetal heart rate decelerations in 7 cases, severe haemorrhage in 3, acute abdominal pain in 6, maternal tachycardia in 5 and severe hypertension in 2 cases.

Soltan et al[13] concluded that uterine rupture should be suspected when there are sudden fetal heart rate abnormalities during labour or unexplained postpartum shock.

Imseis et al[14] noticed acute onset abdominal pain, severe hypotension, tachycardia and fetal heart rate deceleration in majority of cases.

In this study regarding site of rupture, anterior lower segment uterine rupture was the commonest occurrence, combined upper and lower uterine segment rupture was seen in 7 cases. In majority of cases i.e. 73.5%, the rupture was complete and rest of patients i.e. 26.4% it was incomplete rupture.

Cunningham et al[2] noticed that anterior lower ruptures were commonest. Miller et al[11] reported that out of 44 cases studied, vagina was involved in 3 cases, cervix in 8 and in 2 cases bladder was also involved.

Al-Sakka et al[15] studied 17 cases of ruptured uterus. The ruptures occurred in the posterior uterine walls in one patient, the scar of a classical caesarean section in another and in the lower segment in the remainder.

In present study the treatment given to the patients was according to their clinical status, age, parity etc. the study shows that repair and tubal ligation was done in majority of patients, subtotal hysterectomy in 32.2%, repair done in 3 i.e. 8.8% of patients, total hysterectomy

in 6 patients, one died before any surgical intervention could be done. In all the cases presented, our management plan was early diagnosis, appropriate resuscitation when needed, arrangement and replacement of lost blood. Relevant investigation and immediate arrangement for surgery by some senior and skilled personnel of the ward.

Al-Sakka et al[15] studied 17 cases of ruptured uterus, abdominal hysterectomy was performed in 8 cases (49%), 9 patients had suture repair, 2 with sterilization and seven without sterilization.

Soltan et al[12] noticed 11 cases of uterine ruptures in 10 years of study. Abdominal hysterectomy was performed in 3 cases, 2 of which were total and the 3rd subtotal. The remaining 8 patients had suture repair.

Regarding fetal and maternal outcome, fetal mortality rate in present study was 79.4% and maternal mortality rate 2.9%. The rate is high indeed and is near to other developing countries. Maternal and fetal mortality rate is low in developed countries.

Lankaande et al[6] at National Health Centre of West Africa noticed maternal mortality in 14% of cases and still birth rate was 95%.

Miller et al[11] from USA reported no maternal and fetal death in their study. Lynch et al[7] from King George Hospital, Australia reported no maternal mortality and fetal mortality rate of 5 out of 27 cases in his study.

Rupture of a gravid uterus is an avoidable obstetrical catastrophe. In this study the incidence, causative factors, management options and both the maternal and fetal outcome were studied. The incidence all over the world varies depending upon the obstetrical practices, antenatal care available, health education and modes of management of labour. Although the frequency of uterine rupture from all causes have probably not decreased remarkably during the past several decades, the etiology of rupture has changed appreciably and the outcome has been improved, especially in developed countries.

In developed countries the incidence is comparatively low. However, some authors suggest that frequency of uterine rupture may be rising due to changing obstetrical practices like liberal use of caesarean section[12]. On the other hand avoiding traumatic deliveries and increased rate of caesarean section is a cause of decrease in unscarred rupture.

This study shows an incidence of 1 in 100 which is high indeed. These areas are greatly under the influence of traditional birth attendants and local dais, who are not trained enough to screen the high risk patients thus referring them late to hospitals in very moribund conditions.

There was total 34 number of cases seen during this study, maximum number of ruptures occurred in scarred uterus, 9 cases were due to injudicious use of uterine stimulants like syntocinon, three due to unskilled breech extraction, two due to misused forceps, spontaneous ruptures were seen in seven patients.

In many developing countries like Pakistan, low economy, poor literacy rate, and lack of standard obstetrical care are the major problems. Many women who undergo caesarean sections are being blamed by the illiterate relatives that they cannot reproduce naturally. Even the doctors are being blamed as being fond of doing caesarean sections. lack of low economy also matters a lot, so the patients once undergoing caesarean section for some reason, get trapped by the illiterate and unskilled Dais and LHVs. They give them a full fledged trial and bring them to grave's edge.

In our peripheral areas, the antenatal care is commonly inadequate or inaccessible with consequent failure to detect many high risk pregnancies, especially those of grand multiparas. In this study main victims of uterine rupture i.e. 16 out of 34 patients making 47.05% of patients were multiparas in the 3rd decade of life.

They probably have the false sense of security about ease of deliveries and avoid hospital facilities for antenatal and intranatal care. Unawareness on both the

part of patients and traditional birth attendants are the basic problems. Rupture of a gravid uterus is the condition in which both the lives of mother and the fetus are greatly endangered "Prevention is always better than cure".

RECOMMENDATION

Screening of the high risk patients.

Proper counseling of the high risk patients about their next mode of delivery. The patient undergoing uterine surgeries should be very well told about the present condition and future consequences before discharging from hospital.

Adequate birth spacing method should be given to them especially those undergoing repeat caesarean sections.

Our women should be nutritionally sound.

Traditional birth attendants and LHVs should be well trained.

There should be a strict check over the unaware non-technical people to play with the lives of innocent patients, especially in the remote areas.

Fully equipped 24 hours serving hospitals should be provided by the Government in remote areas. Under equipped hospitals with less trained staff should be checked.

Early diagnosis and appropriate surgical intervention should be the aim.

Given points must be considered if we have to change our present statistical figures.

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