Uterine Rupture: Maternal and Perinatal Outcome

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ABSTRACT

Objective To evaluate maternal and perinatal outcome in patients with uterine rupture.

Study design Cross-sectional study.

Place & Duration of study Department of Obstetrics and Gynecology, Jinnah Postgraduate Medical Center (JPMC) Karachi, from January 2018 to December 2018.

Methodology All cases of ruptured uterus that occurred during pregnancy in patients admitted either through emergency or developed this complication at hospital, were enrolled in the study after informed consent. History and physical examination findings were noted and maternal and perinatal outcome was analyzed. Patients were followed up to one month after surgery for the development of complications. Data compilation and analysis were done by using SPSS version 25.

Results A total of 63 patients were managed. Mean age of study subjects was 30.78±4.75 year. Forty-eight (76.1%) women were between 26 – 35 years of age and 49 (77.7%) were mothers of 2 -4 children. Forty-three (68.3%) had gestational age more than 35 weeks. Majority (n=56 - 88.9%) were un-booked cases. Forty-eight (76.2%) patients had rupture in previously scarred uterus; however 15 (23.8%) patients had uterine rupture in previously un scarred uterus. Eleven (17.5%) patients underwent obstetrical hysterectomy, four (6.3%) had uterine and bladder repair, while 48 (76%) had only uterine repair. Bladder injury found in 3 (4.8%) and disseminated intravascular coagulation observed in 7 (11.1%) patients. Fifty-four (85.7%) patients had fresh still birth and 7 (11.1%) babies were delivered alive.

Conclusion High maternal morbidity and perinatal mortality is attributed to uterine rupture as noted in this study.

Key words Uterine rupture, Maternal morbidity, Perinatal mortality, Obstetrical hysterectomy, Uterine repair.

INTRODUCTION:
Rupture of gravid uterus is predominant cause of massive obstetric hemorrhage resulting in high maternal morbidity, mortality as well as significant perinatal mortality.1 This obstetric catastrophe is more prevalent in developing countries.2 The incidence of this condition varies from 1:200 to 1:3000 deliveries.3,4 In Pakistan about 7.76% maternal deaths are attributed to the uterine rupture.5 Cesarean section, myomectomy, hysteroscopy, previous difficult uterine curettage that led to uterine perforation, grand-multiparity, obstructed labor, injudicious use of oxytocin and instrumental delivery are enlisted as risk factors for uterine rupture.6-10

Uterine rupture results in complications like hypovolemic shock, acute renal failure, disseminated intravascular coagulation, obstetrical hysterectomy, urinary bladder injury, even maternal and perinatal deaths.11 Poverty, illiteracy, lack of medical facilities and aversion from cesarean section after previous cesarean delivery are the predominant reasons resulting in the high prevalence of this condition in developing countries.12-14 This study aimed to evaluate
the maternal and perinatal outcome associated with ruptured uterus at the study centre.

**METHODOLOGY:**
This cross sectional study was conducted at Department of Obstetrics & Gynecology, Jinnah Postgraduate Medical Center Karachi. Consecutive cases with suspected uterine rupture during pregnancy admitted through emergency or already in hospital were enrolled. Data spanned over one year from January 2018 to December, 2018. Institutional review board permission was taken and informed consent obtained.

Patients with singleton pregnancy, cephalic presentation and age 20 to 45 years were included. Cases of preeclampsia, HELLP syndrome, diabetes mellitus, history of recent infection and platelet disorders were excluded. Brief history was taken, and examination performed. Uterine rupture was diagnosed/suspected on the basis of history and clinical examination. Emergency management done, and operative findings noted. Patients were followed for one month after surgery. Data compilation and analysis was done using SPSS (statistical packages of social sciences) version 25. Quantitative variables were presented as mean± SD. Qualitative variables were presented with frequencies and percentages.

**RESULTS:**
Total of 63 patients were enrolled in this study. The mean age of patients was $30.78\pm4.75$ year (from 22 to 45 years). Most (n=28 – 44.4%) of the patients were between 26-30 years. Forty-nine (77.7%) patients were mothers of 2-4 children. Fifteen (23.8%) patients had spontaneous vertex deliveries previously and 19 (30.2%) had cesarean section. Most (n=56 – 88.9%) of the cases were un-booked. Thirty-nine patients (61.9%) had scar dehiscence. Still birth occurred in 54 (85.7%) patients. Mean blood loss was $1003.17\pm471.77$ ml. Mean transfusions of packed cells, fresh frozen plasma and platelet were $2.95 \pm 1.00$, $2.65 \pm 1.75$ and $29 \pm 1.06$ respectively. Mean duration of hospital stay was 6.75±2.70 days. Eleven (17.5%) patients had obstetrical hysterectomy, 4 (6.3%) underwent uterine with bladder repair and 48 (76%) had uterine repair. The details of frequency distribution of patients’ characteristics and management outcome are presented in table I.

**DISCUSSION:**
Rupture of gravid uterus commonly occurs in developing countries and is still a major cause of maternal and perinatal morbidity and mortality.15,16 Majority of uterine ruptures occur in patients of very

### Table I: Patients’ Characteristics

<table>
<thead>
<tr>
<th>Characteristics (n=63)</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
</tr>
<tr>
<td>Up to 25</td>
<td>6 (9.5)</td>
</tr>
<tr>
<td>26-30</td>
<td>20 (31.7)</td>
</tr>
<tr>
<td>31-35</td>
<td>28 (44.4)</td>
</tr>
<tr>
<td>&gt;35</td>
<td>9 (14.3)</td>
</tr>
<tr>
<td><strong>Gravidity (n)</strong></td>
<td></td>
</tr>
<tr>
<td>2-4’</td>
<td>34 (54)</td>
</tr>
<tr>
<td>&gt; 4</td>
<td>29 (46)</td>
</tr>
<tr>
<td><strong>Parity (n)</strong></td>
<td></td>
</tr>
<tr>
<td>2-4’</td>
<td>49 (77.7)</td>
</tr>
<tr>
<td>&gt; 4</td>
<td>14 (22.2)</td>
</tr>
<tr>
<td><strong>Gestational Age (weeks)</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;35</td>
<td>20 (31.7)</td>
</tr>
<tr>
<td>&gt;35</td>
<td>43 (68.3)</td>
</tr>
<tr>
<td><strong>Previous Mode of Delivery</strong></td>
<td></td>
</tr>
<tr>
<td>SVD</td>
<td>15 (23.8)</td>
</tr>
<tr>
<td>C/Section</td>
<td>19 (30.2)</td>
</tr>
<tr>
<td>SVD+C/Section</td>
<td>29 (46)</td>
</tr>
<tr>
<td><strong>Booked Patients</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7 (11.1)</td>
</tr>
<tr>
<td>No</td>
<td>56 (88.9)</td>
</tr>
<tr>
<td><strong>Urea / Creatinine</strong></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>62 (98.4)</td>
</tr>
<tr>
<td>Raised</td>
<td>1 (1.6)</td>
</tr>
<tr>
<td><strong>Fetal Outcome</strong></td>
<td></td>
</tr>
<tr>
<td>Alive</td>
<td>7 (11.1)</td>
</tr>
<tr>
<td>FSB</td>
<td>54 (85.7)</td>
</tr>
<tr>
<td>Others</td>
<td>2 (3.2)</td>
</tr>
<tr>
<td><strong>Sepsis</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8 (12.7)</td>
</tr>
<tr>
<td>No</td>
<td>55 (87.3)</td>
</tr>
<tr>
<td><strong>Wound Infection</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8 (12.7)</td>
</tr>
<tr>
<td>No</td>
<td>55 (87.3)</td>
</tr>
<tr>
<td><strong>Anemia</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14 (22.2)</td>
</tr>
<tr>
<td>No</td>
<td>49 (77.8)</td>
</tr>
<tr>
<td><strong>Bladder Injury</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3 (4.8)</td>
</tr>
<tr>
<td>No</td>
<td>60 (95.2)</td>
</tr>
<tr>
<td><strong>DIC</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7 (11.1)</td>
</tr>
<tr>
<td>No</td>
<td>56 (88.9)</td>
</tr>
</tbody>
</table>
young age group (26-35 years), and same age
distribution was observed in another study.[17] In our
study 49 (77.7%) patients had parity of 2-4 whereas
only 14 (22.2%) patients were grandmultipara which
is comparable to that reported in literature.[2] Scarred
uterus was the major risk factor for uterine rupture
as documented in the index study. Same is observed
in other studies.[2,18,19]

Rising cesarean section rate worldwide, inadequate
monitoring during labor, missed diagnosis, lack of
medical facilities and injudicious use of oxytocin are
mainly responsible for uterine rupture during
pregnancy. In our study 15 (23.8%) patients had
uterine rupture in previously unscarred uterus mainly
because of neglected obstructed labor, grandmultiparty and injudicious use of oxytocin which is also reported by others.[2] Majority of the patients
in our study were unbooked. They did not receive
antenatal care as reported in other series.[20-22]

In 48 (76%) patients we performed uterine repair
successfully. However obstetrical hysterectomy was
performed in 11 patients while 4 had uterine and
bladder repair which is in contrast to the study in
which 63.5% patients had hysterectomy as most of
the patients in that study had ruptured unscarred
uterus and was found irreparable.[1] Rupture in
previously scarred uterus has got more favorable
outcome than unscarred uterus in terms of less
blood loss, easy repair and eventually less
postoperative complications.

Uterine rupture is associated with very high perinatal
mortality as only 7 (11.1%) babies were delivered
alive and 54 (85.7%) were fresh still births as seen
in index study. Anemia, sepsis and wound infections
were the commonest complications noted in our
patients and same findings observed in another
study.[3] Only 1(1.6%) patient had acute renal failure
in index study. This obstetric catastrophe is
associated with heavy blood loss requiring multiple
transfusion. The mean pack cell volume, fresh frozen
plasma and platelet transfusion used in our study
was 2.95 ± 1.00, 2.65 ± 1.75 and 0.29 ± 1.96
respectively. Total hospital stay was 6.75 ± 2.70
days. Patients who had uterine and bladder repair
needed prolonged hospitalization than those who
underwent obstetrical hysterectomy and uterine
repair. Fortunately no maternal death was observed
in our study mainly because of timely diagnosis as
well as appropriate management, with availability
of blood and blood products.

CONCLUSION:
Ruptured uterus is an important obstetric
complication which is associated with high perinatal
mortality and maternal morbidity and mortality.

REFERENCES:

1. Neena C. Analysis of uterine rupture in tertiary


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Nasreen Fatima: Manuscript writing, final approval of draft
Yusra Ali: Data Collection and analysis, final approval of draft

Conflict of Interest:
The authors declare that they have no conflict of interest.

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