

## RUPTURE OF UTERUS

(Review of 57 cases)

by

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The aetiology of rupture of the uterus is fast changing over from cephalopelvic disproportion and misused oxytocics to a previously damaged uterus. In western countries the commonest cause is a rupture of a previous caesarean section scar. In our country, however, we do see cases of ruptured uterus due to cephalopelvic disproportion and other complications.

In places where the surgical requirements for a caesarean section are not available easily the cause of rupture is a difficult vaginal manipulation, e.g. craniotomy, internal podalic version and so forth. In India this is by no means rare.

The present paper is based on the data of 57 cases of ruptured uterus at Nowrosjee Wadia Maternity Hospital from 1960 to 1966, both years in-

clusive. These cases are discussed on the basis of incidence, age and parity distribution, prenatal care, and possible aetiological factors.

### *Incidence*

During the study period of 7 years there were 57 cases of rupture of uterus and the total number of deliveries during the same period was 66,397, thus giving an incidence of 1:1165 deliveries. Incidence given by Parikh *et al* for previous 5 years from the same institute was 1:1257.

### *Age Distribution*

Of the 57 cases, 14 were under the age of 25 years and the rest were above the age of 25 years, thus giving a ratio of 1:3 between the younger and the relatively older patients. The ratio between identical age groups for the patients in general was 1:1. This means that there were more elderly patients in our group; the reason probably appears to be, that many grand multiparae who are particularly prone to a uterine rupture fall in the later age group.

### *Parity*

Analysis of cases in different parity

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groups showed that as many as 23 cases were para five and over, contributing to 40% of the total cases. In the total hospital admissions para V and above comprise about 30% of cases. A single primiparous patient with a ruptured uterus came under our care. This case proves that the oft repeated statement about a primiparous uterus never undergoing rupture can be misleading and may lead an unwary obstetrician astray.

#### *Prenatal Care*

Out of the 57 cases studied, 23 (40%) had been booked cases of the hospital and the rest were emergency admissions. The bulk of the emergency patients suffered from greater morbidity as compared to the booked cases. The incidence of anaemia, dehydration, shock, haemorrhage and sepsis was about 4 times higher in the emergency cases. Booked cases were in a better state of general health and better assessed prior to labour and, therefore, the morbidity was much lower.

#### *Aetiological Factors*

Table I shows that obstructed labour and misuse of oxytocics lead-

ing to a uterine rupture are common in emergency cases. The finer aspects of judging foetopelvic disproportion and proper decision prior to the administration of oxytocics requires great obstetric skill, hence such causes are of relatively infrequent occurrence in institutional practice, but are quite rampant in peripheral centres not manned by obstetric specialists.

The analysis of booked cases shows that in about two-thirds of cases the cause of ruptured uterus was a previously damaged uterus. Of the 14 cases in this group the nature of the previous trauma to uterus was a classical caesarean section scar in 6 cases, a lower segment caesarean scar in 6 others, manual removal of placenta and a previous Couvelaire uterus in one case each. The commonly quoted statement of the classical section scar being very susceptible to rupture is once again confirmed by the fact that 2 cases of classical scars had given way in the second trimester of pregnancy, while the other 4 scars gave way early in labour. It is a wise rule to submit patients with a previous classical scar to a repeat caesarean section rather than hope

TABLE I  
*Aetiological factors*

Aetiology	Total	Booked (23)		Emergency (34)	
		No.	%	No.	%
1. Obstructed labour, malpresentations, cephalopelvic disproportion	16	2	9	14	41
2. Misused oxytocics	7	..	..	7	20
3. Vaginal manipulations	4	3	13	1	3.5
4. Previously damaged uterus (caesarean scar, manual removal of placenta, etc.)	16	14	63	2	6
5. Multiparity	12	3	13	9	26
6. Unknown	2	1	2	1	3.5

for a vaginal delivery with a high attendant risk of an impending rupture.

All the 6 lower segment scars had given way during labour. Three of these patients had 2 or more previous sections and a contracted pelvis. These patients were admitted in labour but had ruptured before a caesarean section could be undertaken. A case of previous caesarean section wishing to avoid further surgery had continued in labour at home and had been admitted 'in extremis' with a rupture. The remaining 2 cases had previous section for a non-recurrent indication and both these patients were given a trial. The vital signs had remained satisfactory all throughout the period of observation in both these cases. The scars had given way 8 and 10 hours after admission, without the appearance of any warning signs. The lower segment scars do withstand subsequent labours better but are notorious for giving way without adequate warning, hence we feel that women with previous sections should be permitted to continue in labour as long as the progress is satisfactory and unduly long trial should be avoided to forestall the possibility of rupture.

Multiparous uterus is known to contract powerfully in the presence of obstruction. In cephalic presentations, if the progress is not satisfactory, an unsuspected obstruction in the lower pelvic strait is a serious possibility. Unduly long trials at this stage or difficult vaginal manipulations are likely to prove disastrous by causing a uterine rupture. The previous obstetric performance of these patients cloud obstetric judgement and vehement attempts at attaining a

vaginal delivery are the main factors in causing such ruptures. In the present study there were 12 such cases.

In all analytical studies of this subject there always remain a small residue of cases where scrupulous analysis fails to reveal any cause. We had 2 such cases in this study.

#### *Site and type of rupture*

Forty-five patients in the present series had a lower segment rupture. The rupture was transverse and extended into the broad ligament on one side in 22 cases and on both sides in 2 cases. Extensive broad ligament haematomas were present in all these cases. In 10 cases the rupture was present in the upper uterine segment, 8 of which resulted from dehiscence of previous classical section scar, one followed an internal podalic version and one during a manual removal of placenta.

In 2 cases the rupture extended from lower uterine segment into the upper segment following a difficult forceps and a craniotomy after a prolonged labour.

The rupture was complete in 52 cases and incomplete in 5 cases. The foetal salvage was 4 times higher in cases with incomplete rupture whereas the maternal mortality was one-fifth that of complete rupture.

Rupture of the uterus still remains an obstetric emergency which taxes the obstetric judgement to the maximum. This condition often presents problems regarding diagnosis and management in clinical practice. In India, this condition is by no means rare, and most general hospitals are called upon to manage these cases from time to time.

Most women suffering from this calamity have been through a prolonged labour; electrolyte disturbances are frequent and obstetric manipulations common. Superimposed sepsis, haemorrhage and shock are the added features of these cases. The clinician in charge of such cases is faced with many problems simultaneously, the proper handling of each one of them can make all the difference between success and failure.

#### *Clinical Features*

(1) *Absent foetal heart sounds:* This was the commonest feature observed and was noted in 50 cases out of 57. The 7 patients with present foetal heart sounds had live babies and were the cases where a caesarean section was decided upon and a commencing and partial rupture of uterus was found at operation.

(2) *Vaginal bleeding:* This was a feature in 42 cases in the present series and was not seen when the presenting part was impacted.

This bleeding, was slight to moderate in quantity, often containing clots, and was mixed with thick liquor amnii containing meconium as was evident in 28 cases in the present series.

(3) *Palpation of superficial foetal parts:* This often clinches the diagnosis of a rupture. Under observation, if there is sudden cessation of pains and the foetal parts become superficial, then a uterine rupture is evident. Such an observation led to a diagnosis in 4 cases. When superficial foetal parts are felt on examination, and no uterine outline can be determined with absence of uterine contractions, a uterine rupture is

suspected. In six cases in the present series the diagnosis was thus established. In the other 26 cases the palpation of superficial foetal parts in conjunction with absent foetal heart sounds, bleeding, recession of presenting part and reformation of the cervix, helped in clinical diagnosis of the case.

(4) *Abdominal tenderness:* This was observed in 34 cases. An intestinal ileus is often an associated feature and was noticed as increasing abdominal distension in 13 cases.

(5) *Reformation of the cervix* was noted in 28 cases. In 7 of these the cervix which was thin, effaced, dilated and well applied to the presenting part was felt to become thick, and hanging like a curtain. But in 21 cases admitted as emergencies, the palpation of a thick loose cervix together with a presenting part which was high and showed evidences of mechanical dystocia in the form of caput and moulding led us to conclude that there had been a mechanical dystocia and the thick cervix was the reformed cervix.

(6) *The loss of uterine contour:* This was a sign observed in 20 cases. Tenderness, guarding and intestinal distension may interfere with satisfactory attempts at eliciting uterine outline.

(7) *Signs of collapse:* Most cases of ruptured uterus present in a poor clinical state because prolonged labour, dehydration, haemorrhage and shock often precede its onset. Of the 57 cases analysed, 17 patients had been admitted in a state of collapse with a pulse rate of more than 160 per minute and blood pressure less than 70 mm. of mercury, systolic.

**(8) Cessation of pains:**

In seven patients, who had a rupture under observation, the strong contractions following rhythmically each other stopped suddenly and the patient complained of a constant dull pain replacing the original pattern.

Whenever a patient has dystocia with failure of progress and absent foetal heart sounds the possibility of a ruptured uterus has to be kept in mind. Sometimes, vaginal bleeding is observed and clinically the possibility of accidental haemorrhage is thought of. However, absence of albuminuria, regression of the presenting part, reformation of the cervix and difficulty in outlining the uterus help in arriving at a proper diagnosis.

Routine exploration of the uterus

and exploration followed by minimum surgery consistent with the extent and type of tear. In the present series blood transfusions were given to all the cases; the amount varied from one to four litres, the average transfusion required being 1.5 litres.

In the present series 26 patients were in a poor clinical state and had to be given blood and once their general condition improved they were taken up for exploration. Ten of these patients had to be given three or more litres of blood.

Fifteen patients whose condition was fair were given 1.5 to 2 litres of blood and the other 15 patients whose condition was comparatively good were given 0.5 to 1 litre of blood.

So far as the surgical treatment is concerned, (Table II), in the present

TABLE II  
*Surgical treatment*

Type of Surgery	No. of cases	Maternal deaths	Mortality
1. Suturing of rent alone	20	6	} 20.0%
2. Suturing of rent with sterilisation	16	1	
3. Hysterectomy			
Subtotal	17	4	} 25.0%
Total	4	1	

following vaginal delivery after a previous caesarean section is advocated by some obstetricians, and we feel that this practice is essential, at least in women who have had a previous classical section. Out of the 8 cases of classical scar rupture, 7 had an antepartum rupture, whereas one had a rupture which was detected on routine exploration of uterus.

**Management**

The management of a case of ruptured uterus consists of resuscitation

series, in 21 cases a hysterectomy, total or subtotal, was carried out. These were the cases where the suturing of the rent was impossible, because in 13 cases the tears were circumferential, involving not only the anterior and lateral walls but also extending on to the posterior wall; in 5 cases the tears were extensively ragged and stellate-shaped where conservation of uterus was a surgical impossibility; in the other 3 patients the rent in the uterus was too large to be sutured and extended into the

broad ligament. In all these cases hysterectomy was resorted to because it entailed less surgical manipulation, it took lesser time and was on the whole a less hazardous procedure considering the low general condition of the patient.

In 36 patients where suturing of the rupture was done, only 16 were sterilised. No doubt that a patient whose uterus has ruptured must be sterilised in view of her future obstetric hazards. It was by keeping in mind the parity of the patient, the past bad obstetric history and absence of any living children that compelled the surgeon not to ligate the tubes in 20 cases. The patients on discharge from the hospital were asked to report immediately on missing a period.

General anaesthesia was the choice in most of the cases; whereas spinal anaesthesia was employed successfully in 6 cases where the blood pressure was well maintained. Of the 7 cases managed under local anaesthesia there were 3 deaths, these were the poor risk cases where any anaesthesia could not be given satisfactorily; it is not surprising, therefore, that the maternal mortality in this group was high.

#### *Maternal morbidity and mortality*

Table IV amply proves that ruptured uterus is attended with a high morbidity rate. It can be seen that 40% patients suffered from ill-effects of haemorrhage, 25% manifested sepsis in spite of routine antibiotic cover. Practice of putting in an in-

TABLE III  
*Type of Anaesthesia and outcome*

Operative risk	No.	General		Spinal		Local	
		R.	D.	R.	D.	R.	D.
Good	16	13	..	3	..	..	..
Fair	15	10	..	3	..	2	..
Poor	26	12	9	..	..	2	3

#### *Anaesthesia*

The type of anaesthesia employed is discussed in the light of operative risks involved and the maternal outcome in Table III. It will be seen that in the good and fair risk patients general and spinal anaesthesia are both suitable, 16 and 15 cases respectively; in these groups there were no maternal deaths. In the group of poor risk patients there were 12 deaths out of 26 cases, i.e. 46% mortality. The mortality naturally rises with increasing operative risk.

TABLE IV  
*Maternal morbidity*

Maternal complications	Number of cases
Haemorrhage and shock	22
Broad ligament haematoma	22
<b>Sepsis</b>	
Parotitis	1
Thrombophlebitis	8
Peritonitis with ileus	4
Urinary infection	12
Pulmonary infection	3
Wound sepsis	8
Anaesthetic complication	3
<b>Traumatic complications :</b>	
Perineal tear	1
Vaginal laceration	2
Vesico-vaginal fistula	3

dwelling catheter for prolonged periods of time is responsible for high urinary infection.

Attempts at traumatic vaginal delivery were responsible for vaginal and soft tissue perineal injuries. In 3 cases, a vesico-vaginal fistula was noticed on the third postpartum day; these patients had prolonged labour but in no case was instrumentation employed. Unduly prolonged trials are no longer justifiable and timely interference can save a lot of maternal morbidity. Incidence of complications was about 4 times higher in emergency admissions as compared to booked cases.

There were 12 maternal deaths i.e. 21% in the present series, 2 of which were amongst booked cases. The death was attributed to shock in 10 cases, peritonitis and renal failure in 1 case each.

Perinatal loss is bound to be high in ruptured uterus. In the present study 7 babies were saved.

#### *Summary*

(1) Fifty-seven cases of rupture of uterus were studied over a period of 7 years. The total number of deliveries during the period was 66,397, thus giving an incidence of 1:1165 deliveries.

(2) The ratio between younger and older patients in the study group was 1:3.

(3) There was only one primigravida in the present series.

(4) Out of 57 cases, 23 (40%) were booked cases of the hospital.

(5) The common aetiological factor was obstructed labour and misused oxytocics amongst emergency admissions, whereas majority of booked cases had a previously damaged uterus.

(6) Seventeen out of 57 cases were admitted in a collapsed condition; 10 were in a moderately morbid state, the rest were in fair condition.

(7) Hysterectomy was performed in 21 cases, suturing with sterilisation was done in 16 cases and simple suturing in 20 cases.

(8) Blood transfusions were given to all patients, average amount being 1.5 litres.

(9) General anaesthesia was the one of choice in majority of cases, i.e. 44 cases.

(10) Twelve maternal deaths occurred in this group. Maternal mortality was 21%. One-sixth of all deaths were amongst booked cases.

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