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A study on maternal and fetal outcome in uterine rupture at a tertiary care hospital

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Abstract
Spontaneous rupture of uterine wall has been seen to follow previous perforation during a dilatation and curettage; also in cases of manual removal of placenta where excessive amount of myometrium is removed. Traumatic rupture during delivery was most often produced by internal podalic version and breech extraction. Other causes of traumatic rupture include difficult forceps delivery, breech extraction and unusual fetal enlargement such as hydrocephalus. Rupture uterus caused by fundal pressure to try to accomplish vaginal delivery is practically reprehensible. A total of 19,605 deliveries were conducted during the two year study period at a tertiary care hospital. There were total of 35 cases of uterine rupture managed in the hospital during this period. In the present study, out of 35 cases, 2 cases had VVF (5.7%) both of them were treated conservatively (catheterised for 21 days) one case had undergone re-laparotomy (2.9%) after subtotal hysterectomy. Out of 35 cases maternal mortality were 3 (8.6%). In the present study, out of 35 cases 24 babies were dead (68.6%), 9 (25.7%) babies were stillborn and 2 (5.7%) of babies were alive.

Keywords: Maternal outcome, fetal outcome, uterine rupture

Introduction
Dissolution in the continuity of the uterine wall any time beyond 28weeks of pregnancy is called rupture uterus [1].

In a complete rupture there is full thickness separation of the uterine wall with the expulsion of the fetus and/or placenta into the abdominal cavity where as the overlying serosa or peritoneum is spared in an incomplete rupture [2].

Rupture of an unscarred uterus may be spontaneous or traumatic. Spontaneous rupture is rare, it indicates the absence of an identifiable cause and most often associated with grand multiparity and obstructed labor, whereas traumatic rupture is often from external injury to the uterus like forceps delivery, internal podalic version and breech extraction. Both spontaneous and traumatic rupture of uterus may occur in intact or in surgically scarred uterus [3].

Spontaneous rupture of uterine wall has been seen to follow previous perforation during a dilatation and curettage; also in cases of manual removal of placenta where excessive amount of myometrium is removed. Traumatic rupture during delivery was most often produced by internal podalic version and breech extraction. Other causes of traumatic rupture include difficult forceps delivery, breech extraction and unusual fetal enlargement such as hydrocephalus. Rupture uterus caused by fundal pressure to try to accomplish vaginal delivery is practically reprehensible [4, 5].

In a study, the outcome of a trial of labor in women with mullerian duct anomalies was observed. The rate of rupture in this group was 8% compared with 0.6% for those women without anomalies. This catastrophe is more likely to occur in women of high parity. For this reason, oxytocin should rarely be given to undelivered women of high parity, similarly in women of high parity, a trial of labor in presence of cephalopelvic disproportion or abnormal presentation such as brow may prove dangerous not only to fetus but also to the mother [6].

Begum A, in their study of 32 cases quoted that ruptured uterus was mostly due to cephalopelvic disproportion.

The rupture of previously intact uterus at the time of labor most often involves the thinned out lower uterine segment. The rent when it is in the immediate vicinity of cervix frequently extends transversely or obliquely. Usually the tear is longitudinal when it occurs in the portion of uterus adjacent to broad ligament. Although rare, the laceration of the lower uterine segment can extend further upward into the body of the uterus or downward through the cervix into vagina [7].

At times bladder may also be lacerated when rent extends, if lateral extension occurs it involves the uterine artery resulting in both vaginal bleeding and a broad ligament hematoma.
In case of lateral wall rupture, left lateral wall is involved commonly than right. This may be due to dextro rotation of uterus exposing left lateral wall to greater force of uterus. The margins are usually irregular and ragged in such tears [8].

Methodology

This was a prospective study of all the pregnant patients are taken according to the inclusion criteria, detailed history including the name, age, address, contact number and history pertaining to the various factors associated with uterine rupture will be noted in the form of questionnaire. The presenting symptoms, signs, maternal outcome and fetal outcome and any associated complications will be duly noted.
Necessary investigations and resuscitation are carried out before the surgery.
A total of 19,605 deliveries were conducted during the two year study period at a tertiary care hospital. There were total of 35 cases of uterine rupture managed in the hospital during this period.

Source of data

Data collected from all the pregnant women being admitted for delivery at tertiary care hospital.

Study subject

All the pregnant patients who fulfill the inclusion criteria.

Results

Table 1: Distribution of the patients based on Intraoperative details

Variable		Frequency	Percent
Type of anaesthesia			
	General anaesthesia	31	88.6
	Spinal anaesthesia	4	11.4
	Total	35	100
Surgical procedure			
	Not done	1	2.9
	Subtotal hysterectomy	6	17.1
	Subtotal hysterectomy with bladder repair	1	2.9
	Uterine repair	19	54.3
	Uterine repair with b/l tubal ligation	4	11.4
	Uterine repair with bladder repair	3	8.6
	Uterine repair with b/l internal iliac artery ligation	1	2.9
	Total	35	100

In the present study, rupture repair was done in majority of cases (54.3%) without tubal ligation, 11.4% cases repair with tubal ligation was done, uterine repair with bladder repair in 8.6% of cases, uterine repair with b/l internal iliac artery ligation in 2.9% of cases, subtotal hysterectomy in 17.1% of cases, subtotal hysterectomy with bladder repair in 2.9% of cases.
88.6% cases were done under GA, 11.4% cases were done under SA.

Table 2: Distribution of the patients based on uterine findings

Variable		Frequency	Percent
Site of rupture			
	Anterior lower segment	23	65.7
	Anterior with colporrhexis with broadligament haematoma+	2	5.7
	Anterior with right lateral wall	1	2.9
	Anterior extension to bladder	3	8.6
	Posterior	2	5.7
	Posterior with colporrhexis	1	2.9
	Fundal	1	2.9
	Right lateral wall	1	2.9
	Expired	1	2.9
	Total	35	100
Associated injuries			
	Bladder injury	3	8.6
	Colporrhexis	1	2.9
	Colporrhexis, broad ligament haematoma,	2	5.7
	No associated injuries	29	82.9
	Total	35	100

In the present study, most of the rupture uterus cases were seen among the patients with anterior wall lower uterine segment with previous uterine scar (65.7%), anterior wall rupture with extension to bladder is 8.6%, posterior wall rupture 5.7%, fundal rupture (2.9%).
In the present study, out of 35 cases 17.2% of them had associated injuries with rupture uterus, majority had associated bladder injury (8.6%), and (5.7%) had anterior colporrhexis with broad ligament haematoma and 2.9% had posterior colporrhexis.

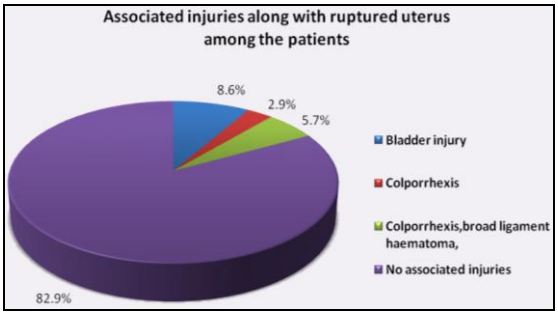

Fig 1: Showing associated injuries found at laparotomy

Table 3: Distribution of the patients based on management

Outcome		Frequency	Percent
Hemogram			
	Anaemia	7	20
	Anaemia+	28	80
	Total	35	100
No. of transfusions			
	≤ 2	21	60
	> 2	13	37.1
	Not done	1	2.9
	Total	35	100
Hospitalization			
	≤ 4 days	3	8.6
	5 - 10 days	25	71.4
	> 10 days	6	17.1
	Dead	1	2.9
	Total	35	100

In present study, out of 35 cases, 80% had anaemia after laparotomy and 37.1% had more than 2 transfusions, 60% had less than 2 transfusions.
71.4% of cases were hospitalised for 5-10 days and 17.1% were hospitalised for more than 10 days.

Table 4: Distribution of the patients based on maternal outcome

Outcome		Frequency	Percent
Vesico-vaginal fistula			
	Yes	2	5.7
	Nil	33	94.3
	Total	35	100
Re-laparotomy			
	Yes	1	2.9
	Nil	34	97.1
	Total	35	100
Maternal mortality			
	Yes	3	8.6
	Nil	32	91.4
	Total	35	100

In the present study, out of 35 cases, 2 cases had VVF (5.7%) both of them were treated conservatively (catheterised for 21 days) one case had undergone re-laparotomy (2.9%) after subtotal hysterectomy. Out of 35 cases maternal mortality were 3(8.6%).

Table 5: Distribution of the patients based on fetal outcome

Fetal outcome	Frequency	Percent
Alive baby	2	5.7
Dead	24	68.6
Still born	9	25.7
Total	35	100

In the present study, out of 35 cases 24 babies were dead (68.6%), 9 (25.7%) babies were stillborn and 2 (5.7%) of babies were alive.

Discussion

Maternal outcome: 91.5% of the patients survived and 3 maternal death (8.5%) were seen in this study, among one, patient was in shock from the time of admission due to extensive haemorrhage, after laparotomy patient shifted to RICU for ventilatory support. This woman could not be managed as she collapsed due to profuse bleeding. Another case also collapsed postoperatively in RICU due to severe annaemia with DIC. Another women brought dead to the labour room with rupture uterus.
Majority of the patients received blood transfusions intraoperatively and post operatively, 37.1% had received more than 2 transfusions. 71.4% had prolonged hospitalization, 2 cases (5.7%) had vesico-vaginal fistula, they were managed conservatively by prolonged catheterization for 21 days. 1 case (2.9%) had undergone re-laparotomy, there was a oozing from the hysterectomy stumps, immediately within half an hour after the hysterectomy re-laparotomy was done.
Fetal loss in rupture uterus varies from 0 to 96%. Peritoneal cavity not conductive to fetal survival. None of the fetus lying in peritoneal cavity following uterine rupture could be salvaged in the present study, 5.7% extracted a live babies, 94.3% were dead babies.
Eze JN *et al*., in their study showed, a total of 51 ruptured uteri out of 4361 deliveries, yielding a ratio of 1 in 86. A total of 19 (37.3%) patients had scarred uterus, while 32 (62.7%) had an intact uterus; yielding a scarred to unscarred uterus ratio of 1 in 1.7. Rupture of an unscarred uterus may be spontaneous or traumatic [9].
It is important to differentiate between rupture of a cesarean section scar and dehiscence of a cesarean section scar. Rupture refers at the minimum, to the separation of the old uterine incision throughout most of its length, with rupture of fetal membranes so that uterine cavity and peritoneal cavity communicate. In these circumstances all or part of the fetus is usually extruded into the peritoneal cavity. In addition there is usually bleeding, often massive, from the edges of the scar or from an extension of the rent into previously uninvolved uterus. By contrast, with dehiscence of a cesarean section scar, the fetal membranes are not ruptured and the fetus is not extruded into the peritoneal cavity. Typically, with dehiscence, the separation does not involve all of the previous uterine scar, the peritoneum overlying the defect is intact and bleeding is absent or minimal.
Dehiscence occurs gradually, whereas ruptures are very likely to be symptomatic and at times, fatal. If there is gradual, relatively asymptomatic separation of a previous cesarean section scar, the term, silent dehiscence or incidental rupture may be applied. If there is gradual, relatively asymptomatic separation of previous cesarean section scar, the term, silent dehiscence or incidental rupture may be applied [10].

Conclusion

Early diagnosis and active surgical management would be the key point in reducing maternal and fetal mortality rates. Preventive strategies include limiting family size, good antenatal care, identification of high risk cases and early referral to tertiary centers and finally vigilant supervision of labor, reducing primary caesarean section will reduce the occurrence of uterine rupture.

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