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Case Report

Traumatic uterine rupture following instrumental delivery

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ABSTRACT

Uterine rupture is a very rare but critical obstetric complication that requires prompt diagnosis and treatment. An instrumental vaginal delivery refers to an obstetrical procedure in which active measures are taken to accomplish a normal delivery by applying traction on the foetal head by using forceps or vacuum. If all the prior pre requisitions required for an instrumental delivery are not met, it can lead to disastrous complications like a uterine rupture. Here's presenting a case of a 32-year-old female, para 2 living 2 with uterine rupture following instrumental vaginal delivery. This led to traumatic postpartum haemorrhage that required further surgical evaluation and management. There are potential risks associated with instrumental deliveries and there is a need for vigilance in managing and monitoring potential complications. If all the prior requisites are not met it can lead to uterine rupture which can be avoided. In this case the combined efforts of intensivists, obstetric and cardiovascular surgeons ensured the preservation of the uterus, which is notable given the extent of injury. The preservation of the uterus is noteworthy, as uterine rupture often necessitates hysterectomy to manage uncontrolled haemorrhage or severe damage. It also contributes to the medical literature by detailing an exceptional instance of uterine rupture due to vacuum assisted delivery, providing valuable insights for future clinical practice.

Keywords: Instrumental delivery, Uterine rupture, Vacuum assisted delivery, Postpartum haemorrhage

INTRODUCTION

Instrumental vaginal delivery is defined as vaginal delivery accomplished with the aid of instruments which can be vacuum or forceps.[1] Inappropriate use of vacuum can lead to uterine rupture. Application of the vacuum on an unengaged head, incompletely dilated cervix, prolonged traction without progress, lack of proper control and in cases of prolonged or obstructed labour have been associated with uterine rupture.

In the UK, operative vaginal delivery rates have remained stable at 12-13%; yielding safe and satisfying outcomes for the majority of the women and babies.[2]

Special care has to be taken in case of a scarred uterus. The rarity of case was the presence of uterine rupture in a multiparous woman with previous all vaginal births.

CASE REPORT

A 32-year-old female, para 2 living 2 with prior full term vaginal delivery came to the ER referred from a private clinic with complaints of breathlessness and abdominal distension a few hours following (ventouse assisted) vaginal delivery the same day.

The patient underwent full term vacuum assisted vaginal delivery at a private clinic and delivered a live female baby of 2.5 kg. Baby did not cry immediately after birth and was taken to NICU. The patient later complained of breathlessness and abdominal pain with visible abdominal distension hence was referred to a tertiary centre for further management.

On arrival, the patient was conscious and oriented. She presented with pallor, tachycardia of 160 bpm, tachypnoea

of 32 cpm, hypotension of 90/60 mmHg and saturation of 95% on room air.

Abdomen was grossly distended with guarding and rigidity on palpation. There was no active bleeding per vaginum however a cervical tear was noted at 2 o clock position extending upwards.

Patient's laboratory results revealed a haemoglobin of 5.1 g/dL from 10 g/dL fr and total white blood cell count of 17,360 cells/cumm, platelet 1.78 lakhs. Rest of the investigation were normal. Patient was put on 6L of O_2. Chest x-ray was normal

Blood transfusion was started in the ratio of 1:1:1. USG FAST was suggestive of moderate free fluid in perihepatic, perisplenic and interbowel pelvis region.

CECT A+P was done which was suggestive of blood attenuation in left paracolic gutter extending into the left iliac fossa, focal discontinuity left uterine wall. A provisional diagnosis of ruptured uterus with broad ligament hematoma was made.

Massive transfusion protocol started-patient was transfused 4-pint PCV, 4-pint RDP and 4-pint FFP. Patient and her relatives were counselled about her condition and consents were taken for exploratory laparotomy and SOS obstetric hysterectomy. Arrangements for surgery were made and adequate blood reserved.

Patient was also put on 6L of O_2 to maintain saturation of >95%.

A multidisciplinary team was formed including gynaecologists, anaesthesiologists, emergency medicine physicians, radiologists and cardiovascular surgeons to look after the patient. Haemodynamic stabilisation and stable haemoglobin were the priority. After the patient was stable, decision was taken to operate the patient i/v/o uterus preservation consideration.

Operative intervention

Exploratory laparotomy was done and left uterine wall rupture extending from vaginal fornix to left broad ligament confirmed. Left uterine wall repair with left internal iliac artery ligation was done by a team consisting of obstetricians, vascular surgeons, urologists and anaesthesiologists.

Under general anaesthesia, the abdomen was opened with a Pfannenstiel incision and the uterus was exteriorised. (Figure 2 and 3) Abdomen opened in layers up to parietal peritoneum. Hemoperitoneum was drained. Clots weighing 260 gm were removed.

Left uterine wall rupture noted extending from vaginal fornix up to broad ligament. Transected left uterine artery noted (Figure 1).

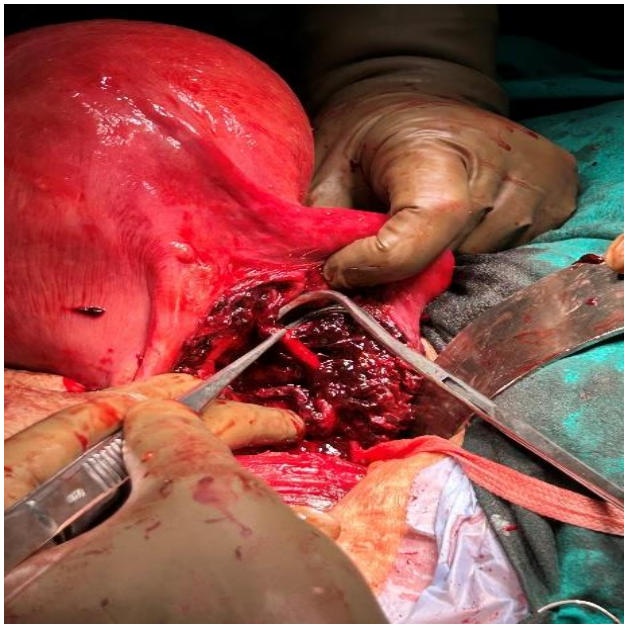

Figure 1: Transected uterine artery.

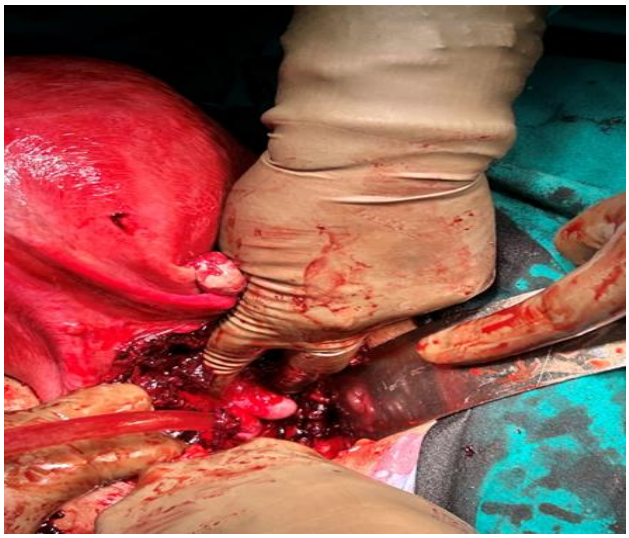

Figure 2: Lips of cervix.

Figure 3: Lateral wall rupture.

Figure 4: Repair of lateral wall of uterus.

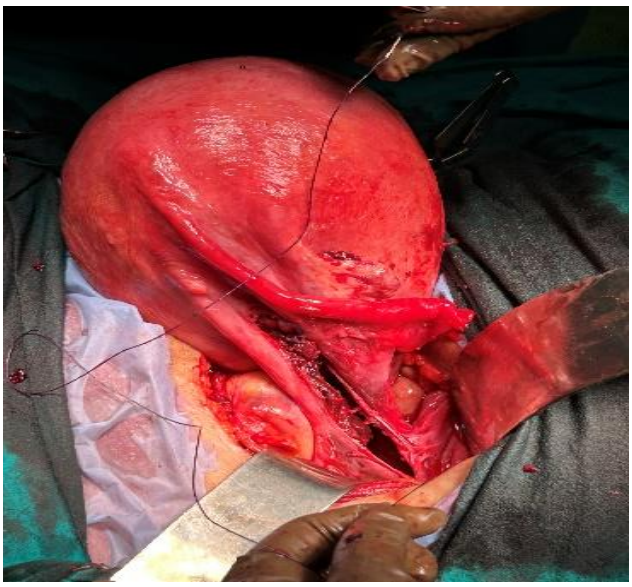

Figure 5: Repair of lateral wall of uterus.

Proximal and distal ends of left uterine artery ligated using silk 1-0 sutures. Broad ligament hematoma noted. Anterior division of left internal iliac artery ligated. Left lateral wall of vagina sutured with lateral wall of cervix. Left lateral uterine wall repaired with vicryl no 1. Figure 4 and 5). Saline wash given. UV fold separated. Multiple haemostatic sutures taken. Intra op retrograde pyelography done. Both ureters patent. P/V examination done. No active bleeding present. Haemostasis checked and achieved. Drain placed in situ. Abdomen closed in layers with vicryl no 1. Skin closed with vertical mattress sutures using ethilon 2-0. Postoperative period was uneventful. Drain and Foleys removed after 4 days. Patient's condition was satisfactory on follow up.

DISCUSSION

An instrumental vaginal delivery refers to an obstetrical procedure in which active measures are taken to accomplish a normal delivery by applying traction on the foetal head by using forceps or vacuum.

The pre requisites for an instrumental vaginal delivery include a fully dilated cervix, station of foetal head at least at the level of ischial spines, ruptured membranes, presence of adequate contractions, empty bladder and a known presentation and position. Globally, around 10-20% of all deliveries need some form of assistance or intervention at delivery and 6-12% of these interventions are by instrumental vaginal deliveries.[3,4]

It is observed that women delivered by vacuum delivery have lesser chances of complications as compared to women delivered by forceps. Maternal complications developed by forceps identified by a study include 3° and 4° perineal tear (22.6%), traumatic post-partum haemorrhage (7.2%) and 7% cases of uterine rupture. These findings are in accordance with the Cochrane database review study that maternal morbidity was less in vacuum delivery compared to forceps delivery.[5,6]

Uterine rupture due to instrumental delivery is a rare occurrence 12 in 36,000 births. Scarred uteri are usually dealt with precaution, as rupture of the uterus is a known and anticipated complication. An unscarred uterus with a history of prior normal deliveries sometimes may be elusive. The rarity of case was the presence of uterine rupture in a multiparous woman with previous all vaginal births. The incidence of uterine rupture in this type of patient is even less, it is estimated to be around 1 in 8000 to 1 in 15000 deliveries.

Inappropriate use of vacuum can lead to uterine rupture. Application of the vacuum on an unengaged head, incompletely dilated cervix, prolonged traction without progress, lack of proper control and in cases of prolonged or obstructed labour have been associated with uterine rupture.

Many women with ruptured uterus present with hypovolemic shock and maternal and perinatal mortality occur very commonly.[7,8] Presence of haematuria after vaginal delivery should raise concerns of bladder rupture.[9] The uterus can be managed conservatively or by hysterectomy. Scarred uteri are usually dealt with precaution, as rupture of the uterus is a known and anticipated complication. As seen in the studies conducted by Revicky et al and Kumba et al.[10,11]

Unfortunately, an unscarred uterus with a history of prior normal deliveries may sometimes be elusive.[12] The rarity of index case was the presence of uterine rupture in a multiparous woman with previously all vaginal births. The incidence of uterine rupture in this type of patient is even

less, it is estimated to be around 1 in 8000 to 1 in 15000 deliveries.[13]

In a study conducted in Ethiopia, 17.3% of the uterine ruptures were associated with assisted instrumental deliveries, 77.1% were associated with vacuum and 22.9% associated with forceps delivery.[14] Application of the vacuum on an unengaged head, in an incompletely dilated cervix, prolonged traction without progress, lack of proper control and in cases of prolonged or obstructed labour have been associated with uterine rupture.[15]

There is also substantial evidence that instrumental deliveries increase maternal morbidity as a result of other complications such as perineal pain at delivery, perineal lacerations, formation of haematomas and long-term problems such as urinary and faecal incontinence.[16] Therefore it is important that obstetricians who are well trained in instrumental delivery are present during the progress of labour, especially the second stage of labour.

CONCLUSION

Uterine rupture necessitates urgent intervention. In this case the combined efforts of intensivists, obstetric and cardiovascular surgeons ensured the preservation of the uterus, which is notable given the extent of injury. The preservation of the uterus is noteworthy, as uterine rupture often necessitates hysterectomy to manage uncontrolled haemorrhage or severe damage. This case serves as an important reminder of the potential risks associated with instrumental deliveries and the need for vigilance in managing and monitoring potential complications. It also contributes to the medical literature by detailing an exceptional instance of uterine rupture due to vacuum assisted delivery, providing valuable insights for future clinical practice.

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