Original Research Article

Uterine Invertion: An Acute Obstetric Emergency

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Abstract

Background: Uterine invertion is defined as the turning inside out of the fundus into the uterine cavity. It's a rare but serious obstetric emergency. Women can rapidly develop profound shock which can prove fatal. It is well established that mis-management of the third stage of labour (premature traction on umbilical cord and fundal pressure before separation of placenta) is the commonest cause of acute uterine invertion. **Method**: This is an observational study carried out at GGSMC Faridkot during period 2008-18. **Result**: In our study out of 17 patients of acute inversion uterus hydrostatic reduction was successful in 10 patients and manual reposition was successfully done in 6 patients. We lost 1 patient before any intervention. **Conclusion**: Non surgical technique like manual reposition and hydrostatic reduction can really save many lives. So it should be included in emergency obstetric drills and skills training.

Keywords: Uterine inversion, Shock, Bleeding, Third stage labor.

Introduction

Uterine invertion is defined as the turning inside out of the fundus into the uterine cavity. It's a rare but serious obstetric emergency. Women can rapidly develop profound shock which can prove fatal[1].The incidence of acute uterine invertion following vaginal delivery is 1 in 3737 and following caesarean section 1 in 1860[2].Following the institution of active management of the third stage of labour in 1988, the incidence of uterine invertion has fallen down 4.4 fold,[3] still it is three times higher in India then that of the USA[4].It is well established that mis-management of the third stage of labor (premature traction on umbilical cord and fundal pressure before separation of placenta) is the commonest cause of acute uterine invertion. This can happen when delivery is conducted by an untrained occoucheur, a situation more likely occur in developing countries, which explain why incidence in India is treble that of the UK. Many other risk factors have been cited, including uterine atony, fundal implantation of a morbidly adherent placenta, manual removal of placenta, precipitate labor, a short umbilical cord, placenta previa and connective tissue disorders like marfan and Ehlers-Danlos syndrome. It must be emphasized, however that in up to 50% of cases no risk factors are identified. This condition can therefore be unpredictable[5,6].Uterine invertion is a serious condition that could result in maternal death, if not treated urgently. Delay in identification and treatment lead to hypovolemic or neurogenic shock and maternal death in up to 15% cases[7].Early diagnosis and management are essential for the successful management of this condition, therefore awareness regarding puerperal uterine invertion is important in daily clinical practice. Against this background, we describe our experience with this acute obstetric emergency particularly relating to its clinical features and management protocols. so that this acute obstetric emergency can be handled without increasing mortality and morbidity.

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Aims and Objective

The aim of the article is to learn how to diagnose uterine invertion and provide a guidelines for the prevention and management of uterine invention and also to acknowledge uterine invention as a preventable cause of Post Partum Morbidity and Maternal Mortality.

Material and Methods

This study was carried at Guru Gobind Singh Medical College, Faridkot during year June 2008 to July 2018. this is an observational prospective study. All cases of acute and chronic uterine inversion were taken during this time period. Total of 17 cases of acute puerperal uterine invertion were studied. Detail analysis was done regarding the clinical presentation of disease, management protocol applied, surgical techniques used if any and maternal out comes. Being in medical college step wise protocol for reposition of inverted uterus followed

First step: Manual reposition without anaesthesia

If fail

Second step: Manual reposition under GA.

Johnson Technique for Manual Reposition Used

Under aseptic conditions uterus is grasped and pushed through the cervix towards the umbilicus to its normal position, while the other hand support the uterus, sustained pressure at the level of cervico-vaginal cul-de-sacs using fingers and on the base with the palm of the hand is applied. The part of the uterus that come out last was repose first. If fails 3rd method was O'Sullivan's Hydrostatic Maneuver under GA was used .

Technique - The women was positioned in deep trendelenburg position or in exaggerated lithotomy. Warm Saline water or isotonic sodium chloride was rapidly instilled into the vagina via a rubber tube while the operating person block the introitus with the hands to

maintain a tight seal. The bag of fluid was elevated approximately 4-5 feet above the ground.

If this fails - Laparotomy as the last resort

Results

Table 1 shows that inversion uterus was more common in multipara group (13 patients were para 3/ para4). All cases were of acute uterine invertionand mostly referred to us from periphery. Out of total 17 patients, 11 patients delivered at some hospital by doctors or staff. As most of patients were referred to us so exact etiology and factors responsible for invertion uterus could not be studied properly so they are not involved in the study. However from the narration of patients, the most common factor came out was delay in 2nd stage with difficulty encountered during the delivery of baby and placenta. History of manual removal of placenta was present in 2 cases ,premature attempt to deliver placenta resulting in invertion was the reason in others. Table 2 shows clinical features at the time of arrival to hospital. Reddish purple mass protruding out from vagina (17 cases) retention of urine (9 cases) lower abdominal pain, shock and bleeding per vaginum (10 cases) were the clinical Findings.Table 3 shows the management protocol followed after baseline resuscitation and optimizing the patient. The most common successful mode of management was by Hydrostatic reduction of inverted uterus done in 10 cases, manual reposition was successful in 6 case. Table 4 shows the complication and maternal out come. Blood transfusion was required in 12 patients and sepsis was well tackled by antibiotic in 4 cases. We were lucky to save 16 patients 1 was brought dead, so could not be saved. Table 5 shows the relationship of successful mode of management with time it was done. uterus was immediately reposed back after invertion in 3 cases without any anaesthesia . 3 cases who reported within 6 hours required anaesthesia for manual reposition .Hydrostatic reduction was the treatment modality who reported late [6 – 13 hours]

Table 1: Showing puerperal inversion cases with parity, place of delivery and type of inversion

Parity				Place of delivery		Type of Invertion	
I	II	III	IV	Home	Hospital	Acute	Sub Acute
1	2	8	5	4	13	17	0

Table 2: **Showing clinical features**

	Features	No. of Patients
1	Shock (SP <90mm of Hg) (P.R. >120/min.)	10
2	Lower abdominal pain and bearing down sensation	9
3	Retention of urine	9
4	Reddish purple mass protruding out through vulva	16
5	Bleeding per vagina	10

Table 3: **Management done [n =17]**

Serial Number	Procedure	No. of Patients
1	manual reposition without anesthesia	3
2	manual reposition under anesthesia	3
3	hydrostatic reduction under anesthesia	10

Table 4: **Complications and maternal outcome**

	Complication	No. of Patients
1	Blood Transfusion	12
2	Sepsis	4
3	DIC	1
4	Acute renal failure	1
5	Embolism	Nil
6	Maternal Death	1

Table 5: Relationship of time of procedure done with successful treatment modalityStepwise protocol used first step ,second step and third step

Time of Procedure	Manual removal Under no anaesthesia	Manual removal Under anaesthesia	Hydrostatic reduction Under anaesthesia
< 1 hr/immediately	2	1	-
1 – 3 hr	1	2	-
3-6 hr	-	-	6
6-9 hr	-	-	2
9-13 hr	-	-	2

Discussion

Acute, subacute and chronic varieties have been described in literature depending upon their occurrence and presentation after delivery. Acute inversion develops within 24 hours of birth, subacute after 24 hours but within 4 weeks and chronic presents after 4 weeks of birth[8].The prevalence of each class is 88.8%, 11.12% and 0% respectively[9].In our set up all cases were of acute type, reported to us within 24 hours. The presentation of the uterine inversion will vary depending on the severity of the invertion. The haemorrhage strength is directly related to the duration of invertion .Bleeding and shock is the most common presenting feature, resulting from hypovolaemia due to bleeding and vagal reaction associated with stretching of the nervous fibres contained in uterine ligament[9]. In our study, puerperal invertion presented with reddish purple mass protruding through introitus, retention of urine, shock and bleeding were also common features. Diagnosis of uterine invertion is usually based on clinical signs and symptoms, when there is complete invertion the diagnosis is most easily made by palpating the inverted fundus at the vaginal introitus, profuse bleeding, absence of uterine fundus or an obvious defect of the fundus on abdominal examination, as well as evidence of shock provide the clinician with diagnostic clues. Occasionally when time permits sonography may show a hyper echoic mass in the vagina[10]. high index of suspicion is required when shock is out of proportion to the visible blood loss and there is absence of uterine fundus. The key strategy for a successful management outcome is prompt obstetrical and anaesthetic assistance with simultaneous effective resuscitation and repositioning of the uterus by any method before formation of constriction ring.

Johnson's manoeuvre, include cupping tip of the fingers directed towards the utero sacral ligaments, while forcefully pushing the uterus beyond cervical ring into the abdominal cavity above the level of umbilicus and is held there for 3-5 minutes until the passive action of uterine ligaments correct the inversion[11]. Oxytocin should be withheld till complete correction of uterine invertion. Tocolysis has been used in the past to facilitate replacement with varying level of success[12,13].Some authors advocate active resuscitation and stabilization of the patient followed by manual correction under general anaesthesia, without the use of tocolytic agents[9] as we did in our 3 case, where manual replacement was done successfully by Johnson's maneuver . Uterus was immediately reposed back without any anaesthesia in our 3 cases ,atonicity of uterus which has caused invertion should be used for immediate correction of displacement

If manual reduction fails, other non surgical approach can be tried like O Sullivan Technique (1945)[14].It is also recommended by World Health Organization (WHO)[15] which include Pushing the uterine fundus up by using hydrostatic pressure created by infusing warm saline into the vagina. Before attempting this method, uterine rupture must be excluded. If there is any problem in maintaining tight seal at introitus, silasticventouse cup can be used[16], although hand may still be necessary to ensure a tight seal. we have successfully reposited 10 cases[58.82/] of invertion uterus by hydrostatic method .similar facts are observed by other authors also[17].The possible complication associated with hydrostatic method are infection, embolus. Although as much as 5 litres has been recommended as the infusion volume, there has been no reported cases of saline embolus or pulmonary oedema. Delay in treatment of acute invertion causes dense cervical constriction ring formation, progressive oedema of the inverted part, haemorrhage and tissue necrosis subsequently requiring surgery. The two most commonly employed abdominal surgical techniques are Huntington and Haultain procedure.In Huntington procedure,[18]repetitive advancing clamps are placed in the cup of uterine invertion below cervical ring and on the round ligaments then a gentle upward traction is applied while an assistant gently pushes funds upwards vaginally. In the more popular Haultaim's procedure a longitudinal incision is made in the posterior portion of the cervical constriction ring to increase the size of ring and allow reposition of uterus.[19]The incision site is repaired with interrupted sutures after correction of inversion. Tews et al in 2001 describe putting one more incision anteriorly after pushing the bladder down, whenever there is difficulty in reposting the uterus[20].After reposition, reinvertion has been reported in some cases. To prevent this soleymanmajd. et al has advocated the use of a SOS Bakri balloon to maintain the structural integrity of the uterus and specially to prevent uterine re-invertion as it conforms to the contours of the uterine cavity following manual correction[21]. We are fortunate enough to manage all cases successfully without the need of laparotomy,it just need right diagnosis and patience while performing these procedure. Vijayaraghvan et al, reported a case where acute invertion of the uterus was managed under laparoscopic guidance citing the advantages of laparoscopic surgery[22]. Consideration however needs to be given to the woman's hemodynamic status and possible effects of pneumoperitoneum. .

Conclusion

Proper training of traditional birth attendant regarding management of third stage of labour, recognition of uterine invertion and judicious referral to higher centre is of atmost importance. Regardless of the treatment approach non surgical or surgical best results occur when treatment is done earliest. Atonicity of uterus which has caused invertion should be used immediately to repose back uterus. Therefore it is important that professional providing obstetric care must be trained and updated of techniques to resolve this complication. At least manual reposition and hydrostatic reduction technique should be included into the obstetric drills and skills training programs.

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