

ACUTE UTERINE INVERSION-AN EFFECTIVE MODIFICATION OF HYDROSTATIC CORRECTION WITH CONDOM CATHETER

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ABSTRACT

BACKGROUND

Acute uterine inversion is a collapse of the uterine fundus into the cavity during the third stage of labour or immediately after delivery. It is a rare complication with an incidence of 1 in 2000 to 1 in 20000 deliveries. Shock is out of proportion to blood loss. WHO recommends hydrostatic correction if immediate manual repositioning fails. Hydrostatic method for reducing acute uterine inversion is a simple method with excellent outcome if advocated properly. The key to success of the hydrostatic correction is developing a good enough water seal to allow generation of adequate hydrostatic pressures for uterine replacement. A modification of hydrostatic method by using a condom catheter ensures an excellent water seal and helps to reduce failures during the procedure.

The aim of this study was to use a condom catheter as a modification of hydrostatic method to correct cases of acute puerperal inversion so as to reduce failures during the procedure.

MATERIALS AND METHODS

This study was conducted as a prospective case series at Govt. Medical College, Kozhikode over a 10-year period from 01/01/2008 to 31/12/2017. All cases of acute uterine inversion managed at the hospital during this period were included. Cases of chronic inversion of uterus were excluded from the study.

RESULTS

There were 8 cases of acute inversion of uterus out of a total 1,59,102 births. All of them were multiparas and 6 cases were referred. 5 of them belonged to 26-30 years age group. 6 patients were having third degree inversion and 2 had fourth degree inversion. 6 patients were stable at the time of diagnosis, but 2 of them were in shock at the time of presentation. A total of 4 patients received blood transfusion. 2 patients were diagnosed with acute uterine inversion within 30 minutes of delivery. The remaining 6 cases reached our hospital at 1.5 to 2 hours after delivery. Two patients underwent immediate manual repositioning and six had hydrostatic correction using a condom catheter which was filled from a urobag filled with 2-2.5 litres of normal saline. All six cases were successfully corrected but two patients underwent emergency obstetric hysterectomy for PPH.

CONCLUSION

This modification of hydrostatic correction with condom catheter and urosac filled with normal saline is simple and effective and will definitely reduce maternal morbidity and mortality in cases of acute uterine inversion.

KEYWORDS

Acute Puerperal Inversion, Manual Repositioning, Hydrostatic Correction.

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BACKGROUND

Uterine inversion is the folding of the fundus of uterus into the uterine cavity. It is a rare complication identified in the third stage of labour. If undiagnosed, it can lead to serious maternal morbidity and mortality. Four degrees of uterine

inversion have been identified. In first degree inversion, the fundus of uterus extends as far as the cervix, but not through it. In second degree inversion, the fundus prolapses through the cervix, but not out of the vaginal introitus. Prolapse of the fundus outside the vagina is called third degree inversion. Complete prolapse of both uterus and vagina is called as fourth degree inversion.

Inversion can also be classified based on the time of occurrence after delivery. If it occurs within 24 hours of delivery, it is called acute inversion. Inversion between 24 hours and 30 days of delivery is subacute inversion and chronic inversion occurs after 30 days.

Inversion occurs in approximately 1 in 3737 vaginal deliveries and 1 in 1860 caesarean sections.¹ However a range of 1 in 4000 to 1 in several hundred thousands can be

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found.^{2,3,4} Maternal mortality is as high as 15%.^{5,6,7} Active management of 3rd stage of labour has reduced the incidence of acute puerperal inversion.

The present study was undertaken in an effort to correct cases of acute puerperal inversion of uterus with manual reposition or modified hydrostatic method using condom catheter.

Aim of the Study

The aim of this study was to use a condom catheter as a modification of hydrostatic method to correct cases of acute puerperal inversion so as to reduce failures during the procedure.

MATERIALS AND METHODS

Study Design

Prospective Case series.

Study Period

01/01/2008 to 31/12/2017.

Setting

Dept. of Obstetrics and Gynaecology, IMCH, Govt. Medical College, Kozhikode.

Subjects

All cases of acute uterine inversion managed at Govt. Medical College, Kozhikode between 2008-2017. This included patients who delivered at Govt. Medical College, Kozhikode and patients who were referred after delivery from periphery with acute puerperal inversion.

Exclusion Criteria

Patients with chronic uterine inversion.

Methodology

Once the diagnosis of acute uterine inversion was made, immediate assistance was summoned, including senior obstetrician and anaesthesia personnel. Steps for resuscitation of the patient was started. This included insertion of 2 wide bore IV cannulae, crystalloid IV fluids administration, administration of O₂ by mask and close monitoring of patient. The blood bank was alerted and blood products if required were made available. Oxytocin infusion if continuing was stopped, immediate manual repositioning tried by simply pushing up on the inverted fundus with the palm of the hand and fingers in the direction of the long axis of the vagina. Care was taken to prevent uterine perforation during this procedure. If unsuccessful, proceeded with modified hydrostatic reduction using condom catheter connected to a urobag. Two condoms were used together to prevent rupture of condom. The urobag was filled using 2-2.5 litres of normal saline directly from IV bottle.

The inflow tube of another urobag was cut and connected to the outflow of the filled urobag and the other end of this tube was connected to a condom catheter and tied with catgut to prevent leakage of saline. The filled

urobag was kept on an IV stand for rapid filling of the condom. The condom was then inserted into the vagina and gradually filled. The excellent water seal provided by the condom helped to reduce the inverted uterus back into its position. After correction, oxytocics and uterine massage were given to make the uterus contract and to prevent further inversion. If required, an ultrasound examination was performed to ensure the completeness of correction. In case of failure or refractory post-partum haemorrhage, emergency obstetric hysterectomy was done.

RESULTS

From 2008-2017, there were 8 cases of acute uterine inversion. Of this, 2 cases were delivered at Govt. Medical College, Kozhikode, 6 were referred.

Total No. of deliveries during this period was 1,59,102.

Age

Age Group	No.	%
20-25 Yrs.	3	37.5
26-30 Yrs.	5	62.5
Table 1. Age		

More patients belonged to 26-30 yrs. age group.

Parity

Parity	No.	%
Primi	Nil	0
Multi	8	100
Table 2. Parity		

All were multiparas.

Nature of Admission

	No.	%
Booked	2	25
Referred	6	75
Table 3. Admission		

Most of them were referred cases.

All were following vaginal deliveries.

Risk Factors- No significant risk factor was noted. All were hospital deliveries.

Interventions Done for Management

	No.	%
Manual Reposition	2	25
Modified Hydrostatic	6	75
Reposition Followed by Hysterectomy	2	25
Table 4. Intervention		

Immediate manual reposition was successful in 2 patients who delivered at our institution. The rest 6 cases were managed by modified hydrostatic method. Inversion was corrected in all 6 patients. Out of this, 2 patients underwent emergency obstetric hysterectomy for post-partum haemorrhage and shock.

There were no cases of maternal mortality in our series.

Degree of Inversion at Diagnosis

Degree of Inversion	No. of pts	%
3 rd degree	6	75
4 th degree	2	25

Table 5. Degree of Inversion

Most of the patients were having third degree inversion.

Condition of Patient at Diagnosis

	No.	%
Stable	6	75
Shock	2	25
PPH and Blood Transfusion	4	50

Table 6. Haemodynamic Status at Diagnosis

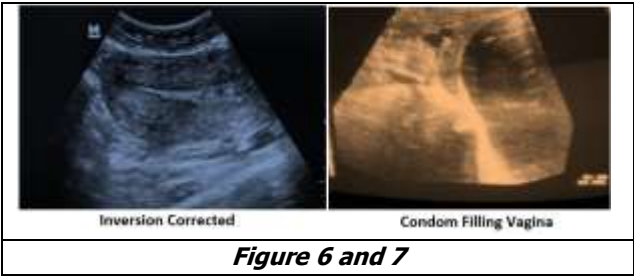
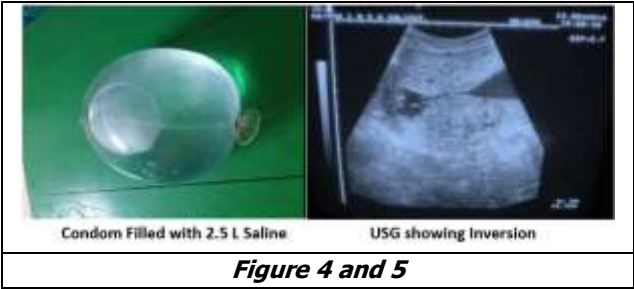
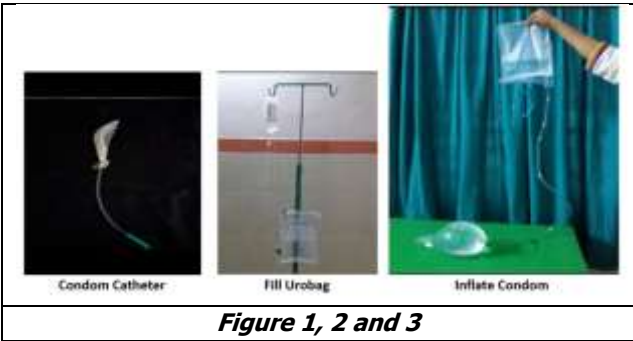
Most of the patients were stable at the time of presentation. However 4 patients required blood transfusion.

Time Since Delivery

	No.	%
<30 Mts.	2	25
1 ½ - 2 Hrs.	6	75

Table 7. Time Since Delivery

2 patients who delivered in our institution were diagnosed to be having inversion within 30 minutes of delivery. The referred cases took nearly 2 hours to reach our hospital which indirectly indicates the vast area covered by our hospital.



DISCUSSION

Acute uterine inversion is a life threatening complication of third stage of labour. The predisposing factors for puerperal inversion are flaccidity of the myometrium around the implantation site, fundally implanted placenta, and a dilated cervix. Other associated factors are intrapartum fundal pressure, morbidly adherent placenta, fetal macrosomia, vaginal birth after caesarean, intrinsic myometrial weakness, uterine sacculation and use of tocolytics.^{8,9} Some reports suggest precipitate labour as a cause of inversion.^{10,11}

The diagnosis of uterine inversion is usually established clinically. Early onset postpartum haemorrhage and appearance of a vaginal mass followed by maternal cardiovascular collapse is seen in complete inversion. In 60-70% cases, placenta is still attached to the uterus at the time of inversion. The degree of shock appears out of proportion to the blood loss. The physical examination in first degree inversion can be very misleading, hence diagnosis is made with ultrasound. Second degree inversion is diagnosed when the uterine fundus cannot be palpated on abdominal examination and cervix cannot be felt on pelvic examination. Ultrasound is helpful in doubtful cases and MRI findings are very conspicuous.¹²

Management involves treating the sequelae of inversion, i.e. haemorrhage and cardiovascular collapse, along with prompt uterine replacement followed by administration of uterotonics to maintain contraction. The placenta should not be removed before uterine replacement to minimize blood loss.¹³ During manual replacement, the last region of the uterus that inverted should be the first to be replaced. Uterine relaxants or in some cases, general anaesthesia with halothane may be needed.¹⁴

Hydrostatic pressure is another method used to reposition the uterus. This was first described by O'Sullivan in British Medical Journal in 1945. Ogueh and Ayida described a modification of this method by using silicone vacuum cup within the vagina to create a water seal.¹⁵ Condom catheter can also be used to create an excellent water seal, which is usually attached to a urobag filled with

2-2.5 litres of saline. When all attempts at reposition fails, surgical methods like Huntington's or Haultain's procedures or using a silastic cup at laparotomy may be tried.¹⁶ After uterine replacement, tocolytics are stopped, oxytocin and other uterotonics are given and uterine incision repaired.

CONCLUSION

Acute puerperal inversion is a life-threatening obstetric emergency, occurring in the third stage of labour. If undiagnosed, it can lead to severe postpartum haemorrhage, neurogenic shock and maternal mortality. Immediate resuscitation and repositioning of uterus is the best treatment to reduce maternal morbidity. Active management of the third stage of labour has drastically reduced the incidence of inversion. Modified hydrostatic method using a condom catheter ensures an excellent water seal and hence it is ideal for repositioning of uterus in a low resource setting. The use of ultrasound during repositioning ensures the completeness of correction and it is a very useful method which can be employed in cases of hydrostatic correction before decompressing the distended condom.

REFERENCES

- [1] Baskett TF. Acute uterine inversion: a review of 40 cases. *J Obstet Gynaecol Can* 2002;24(12):953-956.
- [2] Catanzarite VA, Moffitt KD, Baker ML, et al. New approaches to the management of acute puerperal uterine inversion. *Obstet Gynecol* 1986;68(3 Suppl):7S-10S.
- [3] Momani AW, Hassan A. Treatment of puerperal uterine inversion by the hydrostatic method: reports of five cases. *Eur J Obstet Gynaecol Reprod Biol* 1989;32(3):281-285.
- [4] Davis ME. Postpartum haemorrhage. *Am J Surg* 1940;48:154-163.
- [5] Hostetler DR, Bosworth MF. Uterine inversion: a life threatening obstetric emergency. *J Am Board Fam Pract* 2000;13(2):120-123.
- [6] Calder AA. Emergencies in operative obstetrics. *Baillieres Best Pract Res Clin Obstet Gynaecol* 2000;14(1):43-55.
- [7] Thomson AJ, Greer IA. Non-haemorrhagic obstetric shock. *Baillieres Best Pract Res Clin Obstet Gynaecol* 2000;14(1):19-41.
- [8] Shah-Hosseini R, Evrard JR. Puerperal uterine inversion. *Obstet Gynaecol* 1989;73(4):567-570.
- [9] Kochenour NK. Intrapartum obstetric emergencies. *Crit Car Clin* 1991;7(4):851-864.
- [10] Salomon CG, Patel SK. Computed tomography of chronic non-puerperal uterine inversion. *J Comput Assist Tomogr* 1990;14(6):1024-1026.
- [11] Zahn CM, Yeomans ER. Postpartum hemorrhage: placenta accrete, uterine inversion and puerperal hematomas. *Clin Obstet Gynecol* 1990;33(3):422-431.
- [12] Lewin JS, Bryan PJ. MR Imaging of uterine inversion. *J Comput Assist Tomogr* 1989;13(2):357-359.
- [13] Brar HS, Greenspoon JS, Platt LD, et al. Acute puerperal uterine inversion: new approaches to management. *J. Reprod Med* 1989;34(2):173-177.
- [14] Varner M. Postpartum hemorrhage. *Crit Car Clin* 1991;7(4):883-897.
- [15] Ogueh O, Ayida G. Acute uterine inversion: a new technique of hydrostatic replacement. *Br J Obstet Gynaecol* 1997;104(8):951-952.
- [16] Antonelli E, Irion O, Tolck P, et al. Subacute uterine inversion: description of a novel replacement technique using the obstetric ventouse. *Br J Obstet Gynaecol* 2006;113(7):846-847.