

STUDY OF INVERSION OF UTERUS IN TERTIARY CARE HOSPITAL

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ABSTRACT

Introflexion of Parietis Uteri or Uterine inversion is the turning inside out of the fundus into the uterine cavity with incidence ranging from 1:2500.^[1,2] to 1:20000.^[2,3] Various aetiological factors have been linked to uterine inversion, though no obvious causes are found. Mismanagement of third stage of labour has been found to be the leading cause.

OBJECTIVE

To study the incidence, clinical presentation, management protocols used including surgical techniques in cases of uterine inversion and its outcome.

METHOD

This is an observational study carried out at GMCH Aurangabad during the years 2000 to 2014.

CONCLUSION

Uterine inversion is a life threatening and unpredictable obstetric emergency, which if ignored can lead to severe haemorrhage and shock. When managed promptly and aggressively, uterine inversion can result in minimal maternal morbidity and mortality.

KEYWORDS

Uterine inversion, Obstetric emergency, Shock, Postpartum haemorrhage, Introflexion, postpartum collapse

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INTRODUCTION

Hippocrates (c. 460–377 B.C.).¹ mentioned uterine inversion, as did Soranus of Ephesus in 110 A.D.,^{2,3,4} but it was not until the 16th century during the time of Ambroise-Paré, that it was understood.^{5,6} Uterine inversion can be either puerperal (Obstetric) or non-puerperal (Gynaecological). Puerperal uterine inversion is a rare, but potentially life threatening obstetric emergency. Patients may be present with sudden postpartum collapse. It is imperative that the condition be recognized quickly and promptly managed in order to minimize the potential for maternal morbidity and mortality. The incidence of uterine inversion varies and ranges from 1:2500.^[1,2] to 1:20000.^[2,3] Being a tertiary referral centre, there is a high incidence of uterine inversion observed with different clinical presentations.

Various aetiological factors have been linked to uterine inversion, though no obvious causes are found. Attributable factors include short umbilical cord, fundal implantation of placenta, excessive traction on umbilical cord, fundal pressure, adherent of placenta, uterine atony, and rarely connective tissue disorders (Marfan syndrome, Ehlers-Danlos syndrome).

It is well established that mismanagement of the third stage of labour is the commonest cause of acute uterine inversion.

Uterine inversion can be of various degrees, from partial to complete. According to the delay between the delivery and the diagnosis, uterine inversion can be classified as:

1. Acute - Immediately or within 24 hours after delivery.
2. Subacute- Occurring after 24 hours to upto 4 weeks after delivery.
3. Chronic- Arising after 4 weeks of delivery.¹

Once the diagnosis is established, immediate management of uterine inversion includes resuscitation and stabilization of patient with simultaneous attempts to reposit the uterus. Uterus should be replaced manually through the vagina past the cervical ring with pressure directed upwards towards the umbilicus.

This is commonly referred to as Johnson's method. If this fail, hydrostatic replacement is the next step. This technique was initially described by O'Sullivan in 1945. Use of an intrauterine balloon catheter (Modified hydrostatic method) has also been reported. Hydrostatic intrauterine balloon tamponade, "This is a 'balloon' usually made of synthetic rubber balloon catheters such as Foley catheters, Rusch catheters, SOS Bakri catheters, Sengstaken-Blakemore and even using sterile rubber glove condom.

Surgical procedures are indicated when manual reduction fails. Huntington procedure involves a laparotomy to locate the cup of the uterus. Allis forceps are applied to the round ligaments and upward traction given until the inversion is corrected. Hualtain's technique involves division of cervical ring posteriorly prior to applying traction as in Huntington's procedure.^{1,3}

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MATERIAL AND METHODS

This study was carried out in Government Medical College, Aurangabad, during years 2000 to 2014.

All cases of uterine inversions have been included in study. Total 25 cases were of uterine inversion, 18 were puerperal and 7 were non-puerperal.

Detail analysis was done regarding the presentation of disease, management protocol applied, surgical technique used if any and maternal outcome.

OBSERVATION Incidence

- Total No. of deliveries in 2000 to 2014 = 1,78,850.
- Prev. incidence varies from 1:15,000 to 1:22,000.
- We have studied 18 puerperal cases of inversion of uterus.

	Parity				Place of Delivery		Type of Inversion		
	I	II	III	IV	Home	Hospital	Acute	Subacute	Chronic
Puerperal 18	12	2	0	4	14	4	16	2	0

Table 1: Table showing Puerperal Inversion Cases with Parity and Type of Inversion

Symptoms	Puerperal (%)	Non-Puerperal (%)
Shock	15 (83%)	0
Altered discharge	3 (16%)	4 (57%)
Constant lower abdominal pain and bearing down sensation	10 (55.5%)	4 (57%)
Retention of urine	4 (22.2%)	1 (5%)
Reddish purple foul smelling mass protruding out through vulva	10 (55.5%)	3 (16%)
Diagnosed on laparotomy	0	1 (5%)

Table 2: Table showing Clinical Features

Cases	Vitals				Blood Transfusions					Complications					Treatment	
	Pulse rate	BP	SPO2%	Hb	Whole blood	PCV	Platelets	FFP	Cryo precipitate	Shock	ARF	DIC	Sepsis	ARDS		Any other
1	120	90/60	90	9	2	2	1	4	2	+						A
2	112	86/50	94	7	3	3	2	6	2	+	+					A
3	132	100/60	92	7	2	2	0	4	2	+		+				B
4	120	86/56	96	8	2	2	0	4	2	+	+		+			A
5	150	84/40	84	8	1	3	0	2	0							A
6	124	88/40	88	6	4	0	1	4	0	+		+				B
7	140	90/40	82	8	2	3	2	4	0	+		+				A
8	110	100/60	80	7	2	3	2	2	2	+						C
9	126	90/60	94	8	2	2	1	4	2							B
10	124	84/50	92	7	2	2	2	2	2	+		+	+			C
11	130	100/60	90	7	2	3	2	4	0	+						D
12	128	80/60	90	8	4	0	4	2	0	+			+	+		B
13	132	90/50	94	8	1	3	1	2	0	+	+					B
14	112	86/56	92	9	1	3	2	2	2	+						D
15	126	90/40	90	7	2	2	2	2	2	+		+				E
16	140	98/60/	94	7	1	3	2	2	0	+						A
17	124	100/60	92	9	1	2	2	4	0	+				+		A
18	100	80/60	90	9	2	2	2	4	2	+						A

Table 3: Showing Clinical Picture and Management

A. Immediate reposition on table; B. Reposition under anesthesia; C. Rubber glove tamponade; D. Haultain’s repair; E. Hysterectomy;

BP–Blood pressure, SPO2–oxygen saturation, PCV–packed cell volume, FFP–Fresh frozen plasma, ARF–Acute renal failure, DIC- Disseminated intravascular coagulation, ARDS- Acute respiratory distress syndrome.

DISCUSSION

In several series of cases and literature reviews, no obvious cause has been found to account for 40% of cases of acute puerperal inversion; hence in these cases the condition has been referred to as spontaneous.

There has been remarkable consistency in the reported frequency of spontaneous inversion and what is of greater importance is the occurrence of 8 cases that can be directly attributed to improper management of the third stage of labour.

Undoubtedly, active management of the third stage of labour has decreased the frequency of postpartum hemorrhage without increasing the occurrence of retention of the placenta. Timing of the inversion may be acute (Within 24 hours of delivery), subacute (More than 24 hours postpartum) or it may be chronic (More than 4 weeks postpartum); the prevalence of each class is 83.4%, 2.6% and 13.9% respectively.^[4] In our set up prevalence of each class is 88.8%, 11.12% and 0% respectively.

Non-puerperal uterine inversion is usually precipitated by tumours sited at the fundus of the uterus, which exert traction force to cause the inversion, although some cases have been reported with no association with tumours

The presentation of the uterine inversion will vary depending on the severity of the inversion. The haemorrhage strength is directly related to the duration of inversion. The bleeding is massive in more than 70% of cases and shock is the most constant sign.^[7,8,9,10,11,12] It results from hypovolaemia which is secondary to bleeding and vagal reaction associated with stretching of the nervous fibres contained in uterine ligaments.^[10,11,12,13,14,15] The sudden severe pain is less frequent and is present in 7% to 10% of cases.

In our study, 83% puerperal inversion presented with bleeding and shock and followed by lower abdominal severe pain in 55.5% of cases.

The key approach which is usually successful if done immediately is a non-surgical technique referred to as Johnson's method. Out of 18 cases, we have repositioned 6 cases on table (33.3%) and in 5 cases reposition of uterus under anesthesia (27%) were done successfully.

If manual reposition fails to achieve uterine repositioning, then employing the use of hydrostatic method would be the next approach. We did 2 cases successfully with a rubber glove tamponade with 100% result in arrest of bleeding. In another study, a rubber glove tamponade arrest or stop bleeding in 77.5% to 88.8% or more cases without any further need for surgical treatment.^{16,17} Other reviews state that the balloon tamponade is effective in 91.5% of cases and recommend that this relatively simple technology be part of existing protocols in the management of PPH.¹⁶ Further, the balloon tamponade can test if the bleeding is uterine or from another source. If the bleeding does not stop with inflation, it is likely to be coming from a laceration or cause other than uterine atony.

If uterine inversion has persisted despite non-surgical approach, then surgery will usually be required. For three cases of inversion, we did surgical management i.e. Haultain's repair and hysterectomy. In our study, 16% cases required surgical management.

Out of 18 cases, 3 maternal mortality occurred because patient landed up in acute renal failure, sepsis and DIC. Therefore, it is paramount that further assistance is promptly summoned, so that the patient can be effectively resuscitated and appropriately stabilized. Maternal morbidity may be significant with an uterine inversion and mortality rates approach 15%.^[13] We reported maternal mortality around 16% with uterine inversion as patients are diagnosed in early phase with receiving early primary life saving treatment.

In 7 non-puerperal inversion cases of fibroid with polyp 4 cases were with third degree inversion of uterus; 3 cases were of second degree type of inversion of uterus, one of them was diagnosed during laparotomy. We did surgical management i.e., hysterectomy or polypectomy followed by hysterectomy with good outcome of patient.

CONCLUSION

From our study of 18 cases of puerperal and 7 non-puerperal uterine inversion, both physiologic and active forms of management of the third stage of labour are acceptable, although routine active management will diminish the frequency of postpartum hemorrhage.

Uterine inversion is an unusual and potentially life-threatening complication of third stage of labour. The morbidity and mortality associated with this complication can be decreased by prompt diagnosis and early initiation of pertinent treatment. In non-puerperal inversion of uterus, the most common cause is fibroid polyp.

In puerperal inversion of uterus, most common presentation is bleeding and shock (83%) followed by severe lower abdominal pain (55.5%). Hence, in all patients of postpartum haemorrhage with shock, one should keep high degree of suspicion of inversion of uterus. As at this stage if patient gets the correct treatment, then morbidity and mortality can be avoided. We conclude that proper education and training regarding placental delivery, diagnosis and management of uterine inversion should be given, so that this potentially life-threatening condition can be prevented.



Fig. 1: Showing Inversion of Uterus with Placenta in Situ



Fig. 2: Showing Third Degree Inversion of Uterus

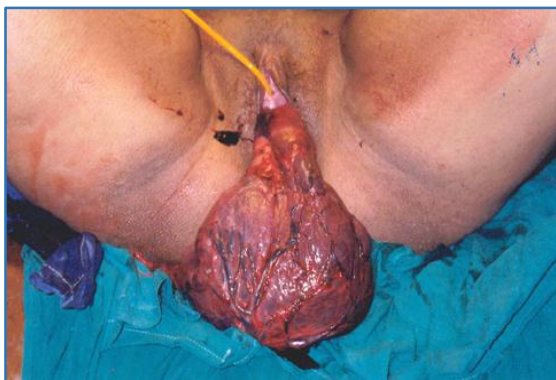


Fig. 3: Showing Third Degree Inversion of Uterus with Placenta in Situ



Fig. 4: Showing Balloon Glove Catheter Used in Atonic Uterus



Fig. 5: Non Puerperal Inversion of Uterus



Fig. 6: Classical Flower Vase Appearance of Inversion of Uterus

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