An unusual cause of hemodynamic instability in an adolescent girl
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What is your diagnosis
An adolescent girl aged 16 years presented in emergency department with features of shock. She had severe pallor with feeble pulse of 120/min, BP - 80/40 mmHg, Respiratory rate - 22/min, SpO2 - 98%, urine output was almost nil. Initial resuscitation was performed. History couldn’t be elicited by the patient herself. Her relatives revealed that she had history of 4 months amenorrhea along with pain abdomen and bleeding per vaginum for last one day. Urine pregnancy test was positive. They denied any history of pill intake or surgical procedure for termination of pregnancy.

Abdominal examination was within normal limit. There was no guarding, rigidity, tenderness or any palpable mass felt. Bleeding was present on local examination. A gentle vaginal examination revealed a 6x6 cm smooth, tender round mass in the vagina, cervical rim and uterus couldn’t be felt. As it was very painful, the patient did not allow proper examination. Urgent blood investigation suggestive of haemoglobin of 6.9 gm%, total leucocyte count - 28000/cumm with normal coagulation profile. The patient was planned for examination under anaesthesia (EUA).

Answer
The patient was taken to the operation theatre for EUA in view of uncertainty of diagnosis and hemodynamic instability. An informed and written consent was obtained for EUA along with emergency laparotomy if required. Remote possibility of hysterectomy also explained. EUA was suggestive of second degree uterine inversion, tissues were oedematous and bleeding was present (fig. 1). Fundus of the uterus was not palpable on manual palpation. Intra-operative trans-abdominal scan (fig.2) also suspected inverted uterus. Manual reposition as well as hydrostatic technique did not work. Laparotomy and repair of uterine inversion by halstain technique was performed. Intra-operatively, a cervical constriction ring with a depression was observed in place of uterus and bilateral round ligaments, fallopian tubes and ovaries were seen dragged into the depression along with the upper half of uterine body (fig.3). An vertical incision was made over posterior aspect of constricted cervical ring. Inversion was then corrected by following the principle ‘part which goes first should be repositioned first’. Uterus was well retracted after correction. The incision site was repaired with delayed absorbable suture in two layers. A total of 4 units of packed red blood cells and 4 units of fresh frozen plasma was transfused to the patient. Her postoperative recovery was uneventful.

Puerperal uterine inversion is a life threatening emergency condition occurs after vaginal or cesarean delivery, even with hysterotomy. It has been classified on the basis of time of occurrence from delivery (Acute - < 24 hours, Subacute - 24 hours to 4 weeks, Chronic - >4 weeks) [1]. Most of the cases present within 24 hours of delivery [2] with severe postpartum hemorrhage followed by hypovolemic shock. In addition, neurogenic shock due to stretching of the pelvic parasympathetic nerves worsens the condition. The incidence varies in different population, ranges from 1 in 3500 to 20,000 deliveries [3,4]. There are only few case reports of uterine inversion after mid trimester abortion [5,6]. Though it is a rare event, health care workers should be aware and vigilant about this condition as if not timely diagnosed and managed, it can lead to shock and even death.

The incidence of non puerperal uterine inversion is further less than puerperal uterine inversion. In a systemic review of literature [7], a total of 170 case reports of non puerperal uterine inversion were found. The reason behind its occurrence is an polypoid tumor of uterus mostly submucosal fibroid (57.2%) followed by sarcoma (13.5%). Most of these patients (86.8%) underwent hysterectomy.

Uterine inversion is typically diagnosed by clinical findings which include vaginal bleeding, pain lower abdomen, with or without features of shock, inability to palpate uterus on abdominal examination and presence of a round smooth mass protruding from the cervix or vagina. Imaging studies are not recommended but has a role in few cases with uncertain diagnosis, provided the patient is hemodynamically stable [8].

The objectives of management is to stabilise the patient by managing postpartum hemorrhage and shock, if present and repositioning of the uterus. Prompt recognition and timely intervention is the key of management. After initial resuscitation, manual replacement of the inverted uterus should be attempted. Do not remove the placenta, if attached.
When the immediate replacement manoeuvres don’t work, surgical methods for replacement should be considered. Surgical procedures include Huntington procedure (giving upward traction on the inverted uterus with a clamp) or Haultain procedure which involves making an incision on the cervical constriction ring posteriorly to increase its size followed by repositioning of the inverted uterus, followed by repair of the incision. Hydrostatic reduction is an option if all other interventions have failed and surgical intervention is not possible [9].

Reported incidence of complications associated with puerperal uterine inversion are postpartum hemorrhage (38%), need of blood products (22%), laparotomy (6%), hysterectomy (3%), hypotension (2%), and shock (1.3%) [4]. There is not enough data to report the rate of recurrence in subsequent pregnancies. No recurrence was noticed in a case series (n=40) by Baskett TF [10].

The mode of delivery in next pregnancy is based upon the management option used, if the women had underwent surgical replacement with an incision over uterus, cesarean section is a better option [11].

**Conclusion**

Puerperal uterine inversion is a rare but life threatening condition, may present in any women of reproductive age group. Health care workers should be aware and vigilant about this condition and keep it in mind whenever a woman presents with pain abdomen and bleeding per vaginum leading to shock in post-partum or post-abortion period. Early

**Figure 1. Speculum examination shows a rounded smooth mass in vagina, bleeding ++**

**Figure 2.** Transabdominal scan suggestive of inverted uterus

**Figure 3.** Bilateral round ligaments, fallopian tubes and ovaries seen dragged into the depression along with the upper half of uterine body. Cervical constriction ring is seen holding with babcock’s forceps.