Case Series

Postpartum Hemorrhage in IVF Pregnancies — A Case Series

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Postpartum Hemorrhage (PPH) is the leading cause of maternal mortality Worldwide especially in low income countries. PPH is associated with various risk factors, ART conception is one among them. IVF conception is an independent factor for third stage complications like PPH. With increasing use of ART Worldwide, the risk of PPH also increases. This article emphasizes on the association between the IVF pregnancies and postpartum hemorrhage. Five cases are discussed in this series which are conceived through IVF. Three cases had twin gestation and 2 cases had singleton pregnancy. Four cases were primary PPH and 1 was secondary PPH. Three cases were atonic PPH, 1 traumatic PPH and 1 case was retained product of conception. All these cases were managed conservatively without the need for hysterectomy. Focal atony of the lower uterine segment, a distinct entity for PPH was also noted in 2 cases which is described here.

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Postpartum Hemorrhage (PPH) is a serious obstetric complication having severe maternal morbidity and mortality. PPH is the leading cause of maternal mortality Worldwide especially in low income countries which accounts nearly one-quarter of all maternal deaths globally[1]. Each year, about 14 million women experience PPH resulting in about 70,000 maternal deaths globally[2]. Traditionally, PPH is defined as blood loss of more than 500 ml following vaginal delivery or more than 1000 ml following cesarean section. The main cause of PPH is uterine atony[3], followed by retained placenta, placental abnormalities, genital tract laceration and coagulopathies.

There are numerous risk factors associated with PPH. The presence of these predisposing factors gives a clue to remain vigilant and one such risk factor is Assisted Reproductive Techniques (ART). Women conceived using ART are associated with higher prevalence of perinatal complications than pregnancies conceived spontaneously[4]. These includes higher risk of twin gestation, increased risk of preterm birth, hypertensive disorders, antepartum hemorrhage, placental disorders. Also, IVF conception is an independent factor for third stage complications like PPH, manual removal of placenta, blood transfusion in the third stage[4].

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Editor's Comment :

- IVF is an independent risk factor for 3rd stage of labour complications.
- In view of increasing use of ART worldwide one needs to be vigilant during labour of IVF pregnancies to prevent catastrophic complications.

In last few decades, there has been an upward trend in the use of Assisted Reproductive Techniques (ART) worldwide[5]. This is mainly attributed to late marriage, delayed child bearing, lifestyle changes affecting fertility and better knowledge and availability of these services. With increasing use of ART, the incidence of Postpartum Hemorrhage also rises, adding to maternal mortality and morbidity. This article emphasizes on the association between the IVF Pregnancies and Postpartum Hemorrhage (PPH).

Case 1

A woman of 25-year-old primigravida with post IVF conception at 35 weeks of gestation with DCDA twins with overt diabetes on treatment, with pre-eclampsia with severe features with hypothyroidism was admitted. She was planned for cesarean delivery in view of non-cephalic presentation of first twin. She delivered twin male babies of weight 3 kgs and 2.3 kgs respectively. Intraoperatively, uterus was atonic and was managed medically with estimated blood loss of 600ml. During the vaginal toileting, active bleeding was noted. Uterotonics were repeated and bimanual compression of uterus was done. Patient was reassessed and found to have persistent bleeding from the cavity. Uterine tamponade with Foley's catheter with vaginal packing was done and patient was observed. Bleeding was controlled and total blood loss was 1.5L. Patient was

shifted to ICU and maintained on uterotonics and blood transfusion. The vaginal pack and tamponade was removed next day. Patient was stable and discharged on day 8.

Case 2

A 27-year-old G3A2 at 38 weeks 5 days of gestation, conceived following invitro fertilization with gestational diabetes on treatment was taken up for cesarean delivery in view of failed induction. She delivered an alive female baby of weight 2.8kgs. Hemostasis was achieved and abdomen was closed. During the immediate postpartum period, vaginal bleeding was noted and around 350g of clots were removed on vaginal toileting. Medical management of PPH was initiated along with bimanual compression for 15 minutes. Despite these measures, the bleeding was not controlled and thus decision for re-exploration taken. On laparotomy, the Lower Uterine Segment (LUS) was flabby and bulged out. The uterus was reopened and around 400g clots removed. Placental bed bleeding was noted and multiple haemostatic sutures were taken. Bilateral uterine and ligation of Ovarian- Uterine anastomosis and B Lynch sutures were taken. Blood transfusion and medical management of PPH was continued. Abdomen was closed after ensuring the hemostasis. Estimated blood loss was 2.5L. Patient was shifted to ICU on mechanical ventilator and was monitored for 1 day. Patient recovered and was discharged on postoperative day 8.

Case 3

A 29-year-old G2A1 with post IVF conception of DCDA twins at 36 weeks of gestation with pre-eclampsia with severe features was taken for emergency cesarean delivery in view of unfavorable cervix. She delivered twin female babies of weight 2.3kgs and 1.85kgs. Intraoperatively, upper segment of uterus was contracted but LUS was flabby and bulging. On compression, the blood was oozing from the suture line. Bilateral uterine and ligation of Ovarian-Uterine anastomosis along with the use of uterotonics was carried out. Uterine sutures were reinforced with Lambert's suture and hemostasis achieved. Estimated blood loss was 2200ml. Uterotonics were continued and patient was shifted to ward. Patient was discharged on postoperative day 8.

Case 4

A 34-year-old G2P1L0 conceived following IVF with overt diabetes on insulin was planned for induction of labor at 38+1 weeks of gestation. Pre-induction cervical ripening was done with 2 doses of PGE2 followed by augmentation of labor with oxytocin. She delivered a live female baby of weight 3.85kgs vaginally and AMTSL done. Excessive bleeding was noted from the vagina and on examination vitals were stable and uterus was contracted. Vaginal exploration was done and a cervical tear of 3 cm long was noted at 9'o clock position. Tear was sutured and hemostasis achieved. Estimated blood loss was 600ml. Patient was discharged on post-natal day 4.

Case 5

A 30-year-old P1L2 woman presented with complaints of bleeding per vagina with passage of clots and giddiness on postoperative day 7. She had conceived following IVF and had twin pregnancy. Antenatally she was diagnosed with pre-eclampsia and underwent emergency cesarean section for pre-eclampsia with unfavorable cervix. Her intrapartum and immediate postpartum period was uneventful. However, she presented on POD 7 with above complaints. On examination, patient was pale looking with cold peripheries, found to have hypotension and tachycardia. Per abdominal examination revealed soft, flabby uterus and healthy abdominal wound. On per vaginal examination, around 100g of clots were evacuated. Immediate resuscitation was done to stabilize the patient with antibiotics, methylergo-metrine, tranexamic acid and blood transfusion. Transvaginal ultrasound showed RPOC of 8*6cm in cervical canal. She underwent dilatation and evacuation and 300ml of foul smelling clots were removed with ovum forceps. Antibiotics were continued and she was discharged on day 7 of admission.

Discussion

The Postpartum Hemorrhage is defined based on quantity of blood loss. Usually a blood loss of more than 500 ml following vaginal delivery or more than 1000 ml following cesarean section is considered significant. However, in developing countries where anaemia is prevalent, any bleeding that is enough to compromise the woman's hemodynamic stability is taken as PPH.

The common causes of PPH are grouped into 4 T's – Tone (uterine atony), Trauma, Tissue (placenta-related problems), Thrombin (failure of the blood coagulation system). In our case series, 3 cases were atonic PPH, 1 traumatic PPH and 1 case was retained product of conception. The first 4 cases were primary Postpartum Hemorrhage which presented in immediate postpartum period within 24 hours while case 5 was secondary PPH which presented after 24 hours on day 7 postoperatively.

Various risk factors for PPH are extremes of age, a previous cesarean section, history of PPH, anaemia, prolonged labor, placenta previa, placental abruption. The risk of atonic PPH in IVF pregnancy is 2.7 times higher than that of spontaneous pregnancy[6]. IVF conceptions considered as an independent factor for third stage complications like PPH are discussed in this case series. Of the 5 cases discussed, 3 had twin gestation and 2 had singleton pregnancy. Twin pregnancy is a known risk factor for PPH mainly attributed to overdistended uterus, but even the singleton pregnancies conceived through ART have a higher incidence of PPH. A recent pathology study analyzed the morphological characteristics of the placental basal plate in ART pregnancies and found a higher mean thickness of Rohr fibrinoid layer and a higher percentage of loss of decidua which correlated with bleeding at birth[7]. The loss of decidua is due to hormonal treatments in early pregnancy which results in changes structural and/or functional changes in the extracellular matrix of the decidual layer. Thus, may produce suboptimal angiogenesis and placentation, predisposing to PPH[7]. It is also suggested that muscle weakness/ hypofunction may be a reason for a global increase in atonic PPH[8]. This is mainly due to the fact that after IVF treatment, women tend to take a physical rest leading to decreased exercise levels.

A common factor that was noted in case 2 and case 3 was focal atony of the Lower Uterine Segment (LUS). LUS was flabby and bulging out which was noted during the operation. Primary atony of the Lower Uterine Segment is a distinct entity, causing PPH which is characterized by well contracted fundus and Upper Uterine Segment and ballooned out LUS[9]. The diagnosis is often difficult to make clinically as fundus of uterus is well contracted. Ultrasonography is helpful is such situation. LUS bleed is a challenge to manage, balloon tamponade of lower segment, compression sutures, stepwise devascularization of uterus may be needed.

For the management of PPH, a step wise approach is instituted. Medical therapy is first initiated, followed by mechanical methods and if it fails, organ-sparing surgical intervention is instituted with hysterectomy as the last resort. In this case series, atonic PPH was managed with mechanical method with uterine tamponade in one case while 2 cases required surgical intervention. While step wise devascularization of uterus was performed in 2 of the cases, uterine compression sutures were taken for one case. Case 4 with traumatic PPH was managed with vaginal exploration and suturing the cervical tear. The case of secondary PPH was managed with dilatation and evacuation of products of conception and antibiotics with uterotonics. All the cases were managed conservatively without the need for hysterectomy. The postoperation recovery was good in all cases.

Conclusion

One should be vigilant and anticipate the complication of Postpartum Hemorrhage when managing a woman conceived with IVF. Early recognition and prompt treatment should be the goal to improve the maternal outcome. Primary atony of the Lower Uterine Segment a distinct entity causing PPH poses a challenge in diagnosis and management, hence, awareness regarding this entity is needed. Further studies are needed to determine the etiology and develop appropriate therapy.

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