

# Anaesthetic Management of a Patient with Advanced Abdominal Pregnancy, Intrauterine Foetal Death and Celiac Disease

RASHMI<sup>1</sup>, ANISH KUMAR SINGH<sup>2</sup>, AMIT DAHIYA<sup>3</sup>, MAMTA JAIN<sup>4</sup>, NIDHI BANGARWA<sup>5</sup>

## ABSTRACT

Abdominal pregnancy is a rare form of ectopic pregnancy where implantation of fertilised ovum occurs in the abdominal cavity. The maternal and foetal mortality is quite high, when it is diagnosed late. The major cause of death in abdominal pregnancy is haemorrhage. This case report is regarding a 31-year-old gravida two woman with 36 weeks of gestation period with Intrauterine Foetal Death (IUFD) and celiac disease. Celiac disease is a chronic malabsorptive disease of the small intestine occurring owing to hypersensitivity to gluten ingestion. Due to chronic malabsorption, the patient presented with calcium deficiency. She also had lesions of dermatitis herpetiformis over the whole body sparing only the face. It is a rare case of advanced abdominal pregnancy with the IUFD, and celiac disease. The patient was managed successfully under general anaesthesia with preparedness for difficult airway management, securing wide bore peripheral cannulas, central venous cannulation, and invasive blood pressure monitoring. Massive haemorrhage intraoperatively was managed using crystalloids, colloids, blood products, and tranexamic acid. The intraoperative period was uneventful. The patient was extubated at the end of the surgery, and followed-up in a high dependency unit.

**Keywords:** Gluten sensitive, Haemorrhage, Laparotomy

## CASE REPORT

A 31-year-old woman complained of abdominal pain and absence of foetal movements for one day. She was gravida two with 36 weeks period of gestation with IUFD. She had one previous spontaneous abortion. She was diagnosed with celiac disease 4 years back and had dermatitis herpetiformis for which she was prescribed Tab. cetirizine 10 mg once a day and Tab. chlorpheniramine 4 mg twice a day. She did not have a history of any other chronic illness and no history of any surgery and exposure to anaesthesia.

On examination, the patient was conscious, oriented to time, place and person, and vitally stable. She had pallor and lesions of dermatitis herpetiformis all over the body except face. Her weight was 40 kgs and her airway examination was unremarkable. On abdominal examination, fundal height corresponded to 32 weeks with breech presentation. Foetal heart sounds could not be heard.

Her haemoglobin was 8.6 g/dL after which one unit packed cell volume was transfused, which was uneventful. Her total leukocyte count was 22,500/mm<sup>3</sup>, serum calcium 7.2 mg/dL, and the rest of investigations including bleeding and clotting profile were within normal limits. For hypocalcaemia she was prescribed tablets of calcium carbonate 500 mg with vitamin D3 250 IU three times a day. Ultrasound examination showed a single foetus in breech presentation lying in the abdominal cavity with no myometrial outline visible surrounding foetus. Foetal movements and foetal heart sounds were not appreciated. The placenta was visualised anterior to foetus.

As the patient had to undergo laparotomy and the large volume of blood loss was anticipated and she also had dermatitis herpetiformis lesions on her back, a decision to proceed with general anaesthesia along with all preparations for massive blood transfusion and difficult airway management was taken. After obtaining informed and written high risk consent, the patient was shifted to the operation table.

Routine monitors ECG, non invasive blood pressure, and pulse oximeter were attached. Her baseline heart rate was 86 beats/min, blood pressure 130/80 mmHg, and SpO<sub>2</sub> was 99% on room

air. Intravenous (i.v) access was secured with one 16 G cannula in the right hand and 18 G cannula in the left hand. Induction of anaesthesia was performed using inj fentanyl 80 µg i.v and inj thiopentone 200 mg i.v. After assessing for the ability to ventilate, inj vecuronium 5 mg i.v was administered and the airway was secured with a cuffed endotracheal tube of size 7 mm internal diameter. After induction of anaesthesia, ultrasound guided central venous cannulation was performed in the right internal jugular vein. Radial artery cannulation was performed in the left hand under all aseptic precautions after Allen's test was conducted and invasive blood pressure monitoring was started. A nasopharyngeal temperature monitoring probe was placed. The patient was covered with forced air blanket to maintain normothermia during surgery. A midline vertical incision was made and a non macerated dead female foetus of 2.2 kg was delivered from the abdominal cavity after clamping the cord. The placenta was found to be adhered to omentum, descending colon, and peritoneum. Placenta was separated from the underlying structures. Intraoperative blood loss was around 2 L. Along with crystalloids and colloids, three units of packed cell volumes and four units of fresh frozen plasma were transfused. Inj tranexamic acid 1 gm i.v was administered. To maintain normal blood pressure, noradrenaline infusion was initiated at the rate of 0.05 µg/kg/min. Urine output was maintained at ≥0.5 mL/kg/hr during the intraoperative period. The temperature was maintained at around 37°C during surgery. Approximately 10 mL of 10% calcium gluconate was administered.

Towards the end of the surgery, noradrenaline support was discontinued and the patient's blood pressure was 100/60 mmHg off inotropes. Her blood gas analysis had pH 7.38, partial pressure of oxygen and carbon dioxide 141.7 and 36 mmHg, bicarbonates 24.3, base excess -2.3, and oxygen saturation was 98.5%. The patient was extubated after giving inj glycopyrrolate 0.4 mg i.v and inj neostigmine 2 mg i.v and shifted to high dependency unit for postoperative monitoring. In postoperative investigations, patient's haemoglobin was 7.5 gm/dL, serum calcium was 7.8 mg/dL, and all other investigations were within normal limits. The patient's vitals were stable. Calcium replacement was continued in postoperative

period. She was shifted to ward on third postoperative day and discharged home on tenth postoperative day.

## DISCUSSION

Abdominal pregnancy is a rare form of ectopic pregnancy, with incidence ranging from 1:1000 to 1:30,000, where implantation of fertilised ovum occurs in the abdominal cavity [1]. Abdominal pregnancy can be primary or secondary. In primary abdominal pregnancy implantation of fertilised ovum occurs directly in the abdominal cavity; however, secondary abdominal pregnancy is generally a tubal pregnancy where after tubal rupture reimplantation occurs in the abdominal cavity [2]. Various risk factors for abdominal pregnancy are previous ectopic pregnancy, advanced maternal age, endometriosis, multiparity, assisted reproductive techniques, pelvic inflammatory disease, and tubal occlusion [3-5]. Abdominal pregnancy should be diagnosed early to prevent maternal and foetal morbidity and mortality. However, despite advances in technology, only one out of nine women who reached the hospital alive has preoperative diagnosis of abdominal pregnancy [6]. In this case, also it was not diagnosed in previous scans. It was diagnosed very late at 36 weeks when the intrauterine death of foetus had already occurred.

In the case of intra-abdominal pregnancy, placental implantation can occur at any site like a uterine wall, adnexa, omentum, small bowel, pouch of Douglas, liver, and spleen [7]. The placenta can separate at any time during the antenatal period leading to a massive haemorrhage. Therefore, the most common cause of maternal and foetal mortality during the antenatal and intraoperative periods is massive haemorrhage [8]. Placental removal is performed if the blood supply to the placenta can be controlled. If the placenta is adhered to some vital structures and is required to be left in-situ, methotrexate is used to expedite the removal of residual trophoblastic tissue. However, if the placenta is left in-situ, it may result in a lot of complications like disseminated intravascular coagulation, postpartum pre-eclampsia, intestinal obstruction, fistula formation, perforation, abscess formation, and sepsis [9].

It is critical to establish adequate intravenous access in case massive blood transfusion is required intraoperatively. Therefore, two wide bore peripheral cannulas were secured and central venous access along with invasive blood pressure monitoring was performed before the start of surgery. Blood and blood products were cross matched and arranged. Tranexamic acid was also administered at the start of bleeding as it has been reported to decrease postpartum bleeding [10]. Intraoperative embolisation of blood vessels supplying the placenta can be performed by intervention radiology whenever such facilities are available [11].

Celiac disease is a gluten sensitive enteropathy in which there is an inflammatory T-cell response in the small intestine leading to a decrease in surface area available for absorption [12]. Signs and symptoms of this disease are mainly due to malabsorption. Most patients present with recurrent aphthous stomatitis, paraesthesia, skin disorders like dermatitis herpetiformis, infertility, poor development of bone structure, osteoporosis, lack of muscle co-ordination, and malignancies [13]. It is important to rule out hypoalbuminaemia, hypocalcaemia, hypomagnesemia, and vitamin K deficiency, which may be present due to malabsorption. Therefore, appropriate laboratory investigations should be performed and any deficiency should be corrected preoperatively. Hypomagnesemia should be given special attention as magnesium helps in the presynaptic release of acetylcholine [14]. Vitamin K deficiency, if present, can cause prolongation of prothrombin time [14]. However, the patient was adherent to gluten free diet; therefore, only calcium deficiency was present for which replacement was initiated preoperatively.

She also had lesions of dermatitis herpetiformis all over her body except her face, for which she was prescribed Tab. cetirizine and Tab. chlorpheniramine. In patients with dermatitis herpetiformis, for short-term relief from itching, dapsone can be prescribed; however, this patient was not on dapsone therapy. Dapsone use may be associated with methemoglobinaemia [15]. Methaemoglobin interferes with pulse oximetry, oxygen saturation falls and plateaus at 85% as the level of methaemoglobin rises because pulse oximeter can only measure oxyhaemoglobin and reduced haemoglobin [16]. Patients may have other associated autoimmune diseases with dermatitis herpetiformis like type 1 diabetes, hypothyroidism, and pernicious anaemia [17]. The index patient only had anaemia for which blood transfusion was performed preoperatively. As lesions of dermatitis herpetiformis were also present over the back and a large volume of blood loss was anticipated; therefore, subarachnoid block with epidural anaesthesia was not selected. These patients are at increased risk of aspiration because of delayed gastric emptying; therefore, a long fasting period of 8 hours for solids and aspiration prophylaxis was administered before surgery [14]. Due to growth retardation, difficult airway may be present. Hence, the authors were prepared for management of unanticipated difficult airways. Airway examination was unremarkable in this patient.

## CONCLUSION(S)

The patient had celiac disease with abdominal pregnancy and IUFD. Abdominal pregnancy and celiac disease both are rare occurrences in themselves; however, in this patient both were present making the anaesthetic management even more challenging. The patient was managed successfully by proper preanaesthetic check-ups to rule out any deficiencies, and complications due to celiac disease and IUFD. Massive haemorrhage intraoperatively was managed successfully by securing adequate i.v access, invasive blood pressure monitoring, crystalloids, colloids, blood products, tranexamic acid, and inotropes.

## REFERENCES

- [1] Nwobodo EL. Abdominal pregnancy: A case report. *Ann Afr Med.* 2004;3(4):195-96.
- [2] Abdelrahman S, Deeter M, Muthusami A, Peterson TG, Wackener L. A live term intra-abdominal pregnancy in a Field Hospital: A case report. *J Surg Case Rep.* 2017;2017(3):rjx062. Doi: 10.1093/jscr/rjx062.
- [3] Dialani V, Levine D. Ectopic pregnancy: A review. *Ultrasound Q.* 2004;20(3):105-17.
- [4] Fader AN, Mansuria S, Guido RS, Wiesenfeld HC. A 14-week abdominal pregnancy after total abdominal hysterectomy. *Obstet Gynecol.* 2007;109:519-21.
- [5] Varma R, Mascarenhas L, James D. Successful outcome of advanced abdominal pregnancy with exclusive omental insertion. *Ultrasound Obstet Gynecol.* 2003;21(2):192-94.
- [6] Atrash HK, Friede A, Hogue CJ. Abdominal pregnancy in the United States: Frequency and maternal mortality. *Obstet Gynecol.* 1987;69(3):333-37.
- [7] Matovelo D, Ng'walida N. Hemoperitoneum in advanced abdominal pregnancy with a live baby: A case report. *BMC Res Notes.* 2014;7:106.
- [8] Bertrand G, Le Ray C, Simard-Emond L, Dubois J, Leduc L. Imaging in the management of abdominal pregnancy: A case report and review of the literature. *J Obstet Gynaecol Can.* 2009;31(1):57-62.
- [9] Moodley J, Subrayan KT, Sankar D, Pitsoe SB. Advanced extra-uterine pregnancy associated with eclampsia. A report of 2 cases. *S Afr Med J.* 1987;71(7):460-61.
- [10] Woman Trial Collaborators. Effect of early tranexamic acid administration on mortality, hysterectomy, and other morbidities in women with post-partum haemorrhage (Woman): An international, randomised, double-blind, placebo-controlled trial. *Lancet.* 2017;389(10084):2105-16.
- [11] Marcelin C, Kouchner P, Bintner M, Linard M, Boukerrou M, Goupil J. Placenta embolisation of advanced abdominal pregnancy. *Diagn Interv Imaging.* 2018;99(4):265-66.
- [12] Kumar V, Cotran RS, Robbins SL, editors. *Basic Pathology.* 6<sup>th</sup> ed. Philadelphia: W.B. Saunders Company; 1997; p.498.
- [13] Leffler D, Saha S, Farrell RJ. Celiac disease. *Am J Manag Care.* 2003;9(12):825-31.
- [14] Boynes SG, Moore PA, Shepherd CJ, Bennett, CR. Anesthetic management of a patient with celiac disease. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2005;99(2):E8-E10.
- [15] Ash-Bernal R, Wise R, Wright SM. Acquired methemoglobinemia: A retrospective series of 138 cases at teaching hospitals. *Medicine (Baltimore)* 2004;83(5):265-73.

- [16] O'Dwyer D, McElvaney NG. A case of dapsone induced methemoglobinemia. *Ir J Med Sci.* 2008;177(3):273-75.
- [17] Collin P, Salmi TT, Hervonen K, Kaukinen K, Reunala T. Dermatitis herpetiformis: A cutaneous manifestation of coeliac disease. *Ann Med.* 2017;49(1):23-31.

**PARTICULARS OF CONTRIBUTORS:**

1. Senior Resident, Department of Anaesthesia, Pt. B.D. Sharma PGIMS, Rohtak, Haryana, India.
2. Assistant Professor, Department of Anaesthesia, Pt. B.D. Sharma PGIMS, Rohtak, Haryana, India.
3. Consultant, Department of Cardiac Anaesthesia, Holy Heart Hospital, Rohtak, Haryana, India.
4. Associate Professor, Department of Anaesthesia, Pt. B.D. Sharma PGIMS, Rohtak, Haryana, India.
5. Assistant Professor, Department of Anaesthesia, Pt. B.D. Sharma PGIMS, Rohtak, Haryana, India.

**NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. Mamta Jain,  
Associate Professor, Department of Anaesthesia and Critical Care,  
Pt. B.D. Sharma PGIMS, Rohtak, Haryana, India.  
E-mail: mamtajainsingh@gmail.com

**PLAGIARISM CHECKING METHODS:** [\[Jain H et al.\]](#)

- Plagiarism X-checker: Mar 23, 2022
- Manual Googling: May 03, 2022
- iThenticate Software: Jun 29, 2022 (11%)

**ETYMOLOGY:** Author Origin**AUTHOR DECLARATION:**

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **Mar 14, 2022**Date of Peer Review: **Apr 08, 2022**Date of Acceptance: **May 04, 2022**Date of Publishing: **Jul 01, 2022**