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Case study

HOURGLASS CONTRACTIONS COMPLICATING BIPARTITE PLACENTAL DELIVERY

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ABSTRACT

Bipartite retained placenta, a rare complication where the placenta remains partially attached due to abnormal separation, can pose significant risks to maternal health. Hourglass contraction, characterized by a specific uterine contraction pattern, has been suggested as a potential underlying cause. **Objective:** This case study aims to highlight the role of hourglass contraction in the occurrence of bipartite retained placenta, examining its presentation, management, and outcomes. **Methods:** A detailed case study of a patient who experienced bipartite retained placenta after a vaginal delivery at term. The patient's clinical history, labor details, and intraoperative findings were reviewed. Hourglass contraction was observed during labor, resulting in a partial separation of the placenta. **Results:** She had bipartite placenta which has been removed digitally under general anaesthesia. The mother and baby recovered by appropriate treatment and care with no long-term complications reported. **Conclusion:** This case study underscores hourglass contraction as a contributory factor in bipartite retained placenta. Recognizing this contraction pattern can enhance diagnostic accuracy and inform targeted management strategies. Future studies are recommended to explore the frequency of hourglass contractions in retained placenta cases and develop preventive measures.

INTRODUCTION

A retained placenta can be a life-threatening condition. Retained placenta after vaginal delivery, which occurs in around 1–3% of deliveries, is a relatively common cause of obstetrical morbidity. The incidence of retained placenta is estimated to range from 0.1% to 3% [5,8]. Prospective studies support these estimates; for example, one study involving over 45,000 patients found that retained placenta occurred in approximately 3% of deliveries across all gestational ages. The occurrence of retained placentas (2.0% overall) was significantly higher in pregnancies at or before 26 weeks and in those under 37 weeks compared to full-term pregnancies[1]. The incidence appears to be higher in developed countries, where practices often involve earlier manual removal of the placenta during the third stage of labor[2]. A retained placenta is clinically identified during the third stage of labor if it does not deliver within 15-30 minutes following childbirth[3]. The primary cause of a retained placenta is usually related to abnormal placental attachment. And another cause is Hourglass contractions that can lead to a retained placenta by trapping it in the upper part of a constricted uterus. These contractions occur when abnormal muscle contractions cause the uterus to constrict in the middle during labor. The management of labor and delivery can present unique challenges, particularly when encountering less common phenomena such as hourglass contractions. This case study explores how hourglass contractions can lead to complications such as a retained placenta, with a specific focus on a bipartite placenta- a rare placental anomaly where the placenta is divided into two or more distinct lobes.

Normally, after the placenta is delivered, the uterus contracts, causing the blood vessels within it to constrict and stop bleeding. If the placenta remains inside, the uterus is unable to function properly, which keeps the blood vessels exposed and results in

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persistent bleeding. This can result in haemorrhage, a serious obstetric emergency. Untreated retained placenta is considered the second most frequent cause of postpartum haemorrhage (PPH)[4]. Currently, the only effective treatment is manual removal of the placenta (MROP) under anaesthesia. This procedure should be performed within a few hours of delivery to prevent severe haemorrhage.

Patient Information

A 30-year-old female, gravida 4 para 3, live 3 presented at 39 weeks and 1 days (dated by last menstrual period and first-trimester ultrasound). She had three previous normal spontaneous vaginal deliveries. Patient was a homemaker presented in the hospital IPD at her 39 week 1 day of gestation with complaint of lower abdomen pain since 3:00 pm on 20/8/2024. On examination there was no leaking or bleeding per vagina seen. She was a registered patient in OPD of Ayurveda Hospital and did her ANC visit routinely with Ayurvedic ANC protocol up to the 9th month gestation. Her whole antenatal period was uneventful. Her LMP was 20/11/2023 and EDD 27/8/2024. She had a regular menstrual cycle with 3-4 days of average amount of bleeding and 28-30 days interval and no complaint of dysmenorrhea. Her married life was 9 years and she conceived naturally. The patient reported no history of abortion, miscarriage, or any medical complications related to previous pregnancies or deliveries. She had no significant medical, surgical and addiction history.

Informed Consent: Written permission for this case report publication has been taken from the patient.

Clinical Findings

At the time of admission, on her general examination, her BP was 120/80 mmHg, PR was 80/min, she was afebrile, her height was 4 feet 11 inches, and her weight was 49kg. She didn't have pallor conjunctiva and also didn't have pedal oedema. On inspection during per abdominal examination, striae gravidarum was observed, and on palpation, lie was found longitudinal, fundal height at term with head presentation and right occiput- anterior (ROA) position. Head was found just engaged, at 2/5th above the brim. Fetal heart sounds are heard clearly below the umbilicus on the right side. On inspection of the vulva, no abnormality was found. On per vaginal examination cervix was dilated up to 4-5 cm with 50% effacement, and the fetal head was palpated at -3 station with membrane intact. The BISHOP score was 7 points as cervix was soft, at midline position, 50% effaced with 4-5cm dilatation and fetal head at -3 station.

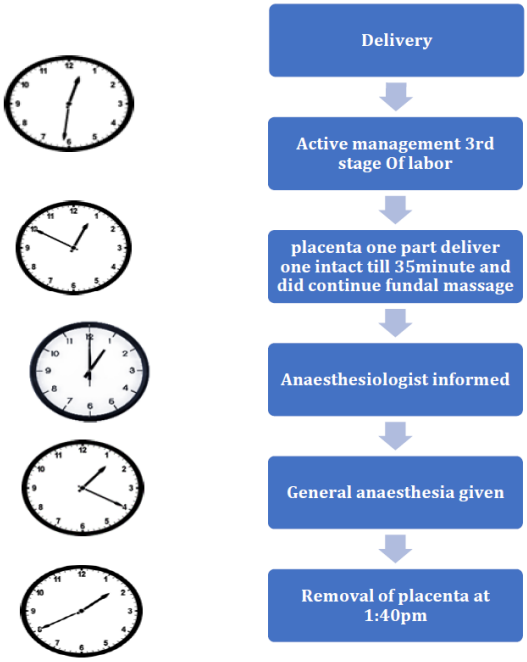
The patient underwent ultrasonography during her antenatal period. The ultrasound was on 4/5/24 revealed a single live fetus of 24 weeks gestation, cephalic presentation, 678gm estimated fetal weight with adequate liquor and placental location on posterior upper segment.

On hematological examination, her blood group was O+; on 30/4/2024, Hemoglobin was 10.2gm%, CBC finding was normal, HBsAg, HIV, VDRL were negative, LFT and RFT were within normal limits, Prothrombin time was 10.60 sec, INR was 0.88, and no albumin and sugar present in urine.

Follow up and Outcomes

The patient delivered an alive female child of weight 2.11 kg as vertex presentation and the APGAR score was 9-10 points. Despite the progression of labour, the delivery team encountered difficulties in detaching the placenta. The bipartite structure of the placenta added complexity, as each lobe required individual attention for full detachment. After the baby was delivered, some part of placenta remained attached, which was digitally removed under general anaesthesia. Hourglass contractions seemed to impede the uniform separation of the placental lobes. [Table 1]

Date & Time	Findings
20/8/2024 At 10:30 Am	Patient came with labor pain No history of leaking and bleeding per vaginal Contractions: Present (Mild Intensity) Per Vaginal examination: Cervix 4-5cm dilatation 50% effacement Head at -3 station Membrane - present
20/8/2024 At 11:40 Am	Contractions: present (Moderate Intensity) Cervix 7-8cm dilatation 60-70% effacement Head at '0' station Membrane- present

20/8/2024 At 12:15 Pm	Contractions: present (Strong Intensity) Cervix fully dilated Fully effaced Bag of membrane – absent Liquor – clear
20/8/2024 At 12:31 pm	Delivered an healthy alive female child of weight 2.11 kg As vertex presentation at 12:31 pm on 20/8/2024 but The placenta could not be fully delivered, with a part still remaining, until 12:50 PM Therefore, a part of the placenta was Digitally removed under General Anaesthesia 
24/8/2024	The patient was stable with minimal vaginal bleeding during the next two days. Her uterine fundus was firm and non-tender. the patient was discharged on the fourth day with her neonate, both in stable condition. with postoperative and peurperal advice.

The postpartum period was uneventful, and the patient was discharged on the fourth postoperative day in good health. At her 4–6 weeks follow-up appointments, she reported no complaints and remained in good condition.

DISCUSSION

The retained placenta and hourglass contractions are significant complications in obstetric practice that can have severe consequences if not properly managed. Both conditions are rare but have critical implications for maternal health, especially during the third stage of labor, where effective placental expulsion is crucial. This discussion delves into the pathophysiology, clinical presentation, management, and outcomes of retained placenta and hourglass contractions, with a focus on the associated risks and modern treatment modalities.

The patient presented at 39 weeks of gestation with regular contractions. Labor progressed normally until the third stage, during which complications arose. Despite the delivery of a healthy infant, some part of placenta remained attached. The delivery was complicated by hourglass contractions, which are characterized by excessive localized contractions forming a constriction ring in the uterus, this ring impeded the uniform separation of the placental lobes, leading to difficulty in expelling the placenta completely. After digitally removal of placenta a bipartite placenta was identified, with two distinct lobes connected by fetal blood vessels. (figure 1)

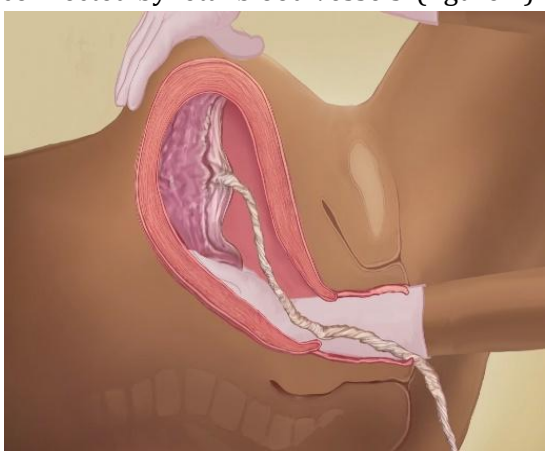


Figure 1: Bipartite placenta

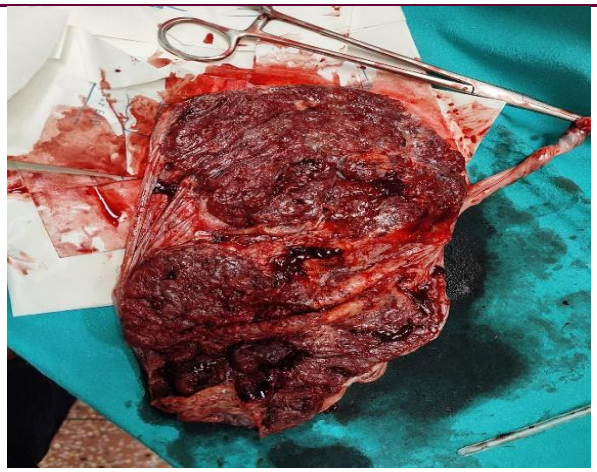


Figure 2: Manual Removal of Placenta

Pathophysiology

Normal placentation starts with the implantation of the blastocyst into the maternal endometrium. In preparation for implantation, the endometrium transforms into the decidua, influenced by progesterone and estrogen during early pregnancy. As the blastocyst invades the decidua, the outer layer of the blastocyst develops into the chorionic membrane. Cytotrophoblast cells from this membrane proliferate and form multinucleated Syncytiotrophoblast cells, which develop into placental villi. These villi facilitate fetal-maternal exchange through interaction with the decidua. After the infant is delivered, a hormonal cascade and uterine contractions help separate the placenta and expel it from the uterus.

Retained placenta can occur due to one of three primary mechanisms. First, an atonic uterus, characterized by poor contractions, can prevent normal placental separation and expulsion.[5] Second, an abnormally adherent or invasive placenta, such as in placenta accreta spectrum (PAS), may be unable to separate normally. Third, a separated placenta might be trapped if the cervix closes before the placenta is delivered[6]. Additionally, placental hypoperfusion disorders, like preeclampsia, and infections have been suggested as potential mechanisms for retained placenta, though the specifics remain unclear.[7]

A bipartite placenta is divided into two or more separate lobes rather than a single, cohesive structure. During delivery, these lobes must separate from the uterine wall individually. The presence of hourglass contractions adds complexity to this process. Hourglass contractions create a localized constriction in the uterus, forming a "ring" that hinders effective placental separation. These hourglass contractions cause a constriction ring in the uterus, which can trap parts of the placenta and prevent its complete delivery. The localized contraction impedes the uniform detachment of placental lobes, complicating their expulsion.

Management of Retained Placenta

Retained placenta requiring invasive procedures is associated with several obstetric complications. A primary concern is the risk of postpartum haaemorrhage, which ranks as the second leading cause of significant and potentially life-threatening bleeding in the obstetric population.[8] So the management of retained placenta depends on the underlying cause. Initial management involves stimulating uterine contractions using uterotonic agents, such as oxytocin or misoprostol. These medications help the uterus contract more effectively, facilitating placental detachment. If the placenta does not expel naturally, manual removal of the placenta is typically the next step.

Manual Removal of the Placenta

Manual removal of the placenta is a common and effective method for treating retained placenta. In this procedure, the healthcare provider inserts a gloved hand into the uterus to manually detach the placenta from the uterine wall. (Figure 2) This is typically performed under regional or general anaesthesia to reduce pain and allow for better relaxation of the uterine muscles.

In cases of hourglass contractions, manual removal can be particularly challenging due to the constriction ring. General anaesthesia is often required to relax the uterus and allow for easier removal of the placenta. During this process, care must be taken to avoid excessive force, which could lead to uterine rupture or other trauma.

Surgical Intervention

In some cases, manual removal may not be successful, particularly in cases of placenta accreta spectrum or severe hourglass contractions. Surgical intervention, such as dilation and curettage (D&C) or even a hysterectomy in extreme cases, may be required to ensure complete removal of the placenta and to control bleeding.

Postpartum Follow-up and Outcomes

Following the management of retained placenta and hourglass contractions, postpartum follow-up is essential to ensure that there are no residual complications, such as retained placental tissue, ongoing bleeding, or infection. Women who have experienced retained placenta may be at increased risk of the condition in future pregnancies, particularly if they have underlying risk factors such as placental abnormalities or uterine scarring.

In the majority of cases, if managed promptly and appropriately, women recover fully from retained placenta and hourglass contractions. Postpartum

haemorrhage and infection, if controlled, do not typically lead to long-term health problems.

CONCLUSION

Retained placenta, particularly when associated with hourglass contractions, presents a challenging clinical scenario that requires timely intervention to prevent serious maternal complications. The complexity of hourglass contractions, combined with placental abnormalities such as bipartite placenta, can make the management of retained placenta particularly difficult. However, with the appropriate use of uterotonic agent, manual removal under anaesthesia, and careful postpartum monitoring, the risks can be effectively managed.

This case study underscores the complexity of managing a retained bipartite placenta complicated by hourglass contractions. The unique challenge lies in addressing both the structural anomaly of the bipartite placenta and the functional issue of hourglass contractions. Effective management requires a multidisciplinary approach, combining medical, manual, and if necessary, surgical interventions. Future research and improved clinical guidelines may help to further refine the management of this rare but critical obstetric condition.

Key Takeaways

- **Early Detection:** Prenatal ultrasounds can aid in identifying a bipartite placenta, allowing for proactive management during labor.
- **Timely Intervention:** Prompt recognition and management of hourglass contractions can prevent complications related to retained placenta.
- **Individualized Care:** Each case requires a tailored approach based on the patient's specific circumstances, including the use of general anaesthesia for complex manual removal.

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