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Case Study

Tourniquet technique to reduce hemorrhage in placenta accreta to allow transportation of patient to tertiary care hospital.

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Abstract

Background: Placenta accreta is an obstetrical complication that can result in life-threatening hemorrhage if not managed adequately and cause high maternal morbidity. Cesarean hysterectomy is an effective method to control intra-operative bleeding.

Case Presentation: We present a case of placenta accreta that was diagnosed intra-operatively in secondary care hospital. Due to the lack of a multidisciplinary team, bleeding was temporarily controlled by tying a tourniquet using a Foley catheter around the lower uterine segment with the tourniquet left in situ.

Management & Results: The patient was shifted to a tertiary care hospital. This novel tourniquet technique bought time to transport the patient, arrange for a multidisciplinary team needed for this patient's management, and reduce hemorrhage, which directly determined maternal outcome.

Conclusion: In this case report, we present that using a Foley catheter as a simple cervical tourniquet can effectively reduce hemorrhage, particularly in the case of blood loss originating from the placenta.

Keywords

Placenta Accreta, Cesarean Hysterectomy, Tourniquet, Hemorrhage.

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Introduction

The placenta accreta spectrum refers to the placenta that directly adheres to uterine myometrium and is further classified as placenta accreta, increta, and percreta based on the degree of invasion into the myometrium. Penetration of trophoblastic villi into the entire thickness of myometrium and invasion into nearby organs such as bladder and rectum is diagnosed as placenta percreta[1]. The risk of placenta accreta spectrum increases with several previous cesarean deliveries, with 50-67% in women who have had three or more cesarean deliveries[2].

Antenatal diagnosis of placenta accreta is possible via ultrasound and MRI[1]; however, around 1/3rd to 2/3rd cases remain undiagnosed. Major maternal complications arise primarily due to massive hemorrhage[3], with an estimated mean blood loss of 3000-5000 ml in placenta accreta[4]. These risks are exceptionally high when a cesarean section takes place in a facility that is not equipped with managing placenta accreta[5]. We here report a case of placenta percreta that was diagnosed intra-operatively in our secondary care hospital whose bleeding was secured by tying a simple tourniquet around the cervix, and the patient was transported to a tertiary care hospital 25 kms away to proceed with cesarean hysterectomy.

Case Presentation

30-year-old, G3P2+0, previous 2 cesarean sections born 3 and 1 year ago respectively with no antenatal care presented at Koohi Goth women hospital emergency department at 37+ weeks gestation with lower abdominal pain. She only had an ultrasound report which showed gestational age of 36 weeks, and the placenta was localized fundo-posteriorly. There were no signs of placenta accreta spectrum on ultrasound examination.

An urgent CBC was sent, and her hemoglobin was 9.5 gm/dl. The on-call surgeon decided for an emergency cesarean section due to a raised pulse (130 bpm) with a previous scar in labour and to avoid rupture of the uterus.

Management & Results

At the time of emergency cesarean section, the placenta was found to be anterior and low-lying. The bladder was found higher up, which was carefully separated and pushed down. A transverse incision on the uterus was given, and a healthy male baby weighing 2800 gm was delivered with an APGAR of 7 and 8 at the 1st and 5th minute, respectively. Controlled cord traction was applied to deliver the placenta, but it failed as the placenta was densely adherent to the uterine wall. Part of the placenta was in the lower uterine segment and almost wholly embedded in the myometrium and serosa. Manual extraction of this invasive placenta was impossible.

Treatment

In an attempt to stop the abundant bleeding from this adherent placental tissue, a 16F Foley catheter tube was tied around the cervix, 3-4 cm anterior to cesarean section incision. The bladder was pushed as down as possible by opening the uterovesical fold of the peritoneum. In this manner, the ascending branches of uterine arteries were effectively compressed, and bleeding was reduced as much as possible. The uterus was closed-back, and Foley's catheter was left in situ to avoid further bleed and to timely transfer the patient to a tertiary care hospital for multidisciplinary management.

Estimated blood loss was 1000 ml, and intraoperative vitals were as follows: BP: 70/40 mmHg, Pulse: 121 bpm, RR: 18/min, O_2 saturation: 99%

Outcome and follow-up

The patient remained vitally and hemodynamically stable in the tertiary care hospital. She underwent a re-laparotomy the following day (within 12 hours of 1st surgery) to remove Foley's catheter and perform a cesarean hysterectomy. A multidisciplinary team was present and onboard, comprising senior gynecologists, anesthesiologists, hematologists, and laboratory staff. The patient bled profusely after opening the tourniquet. The bladder was quickly separated, and cesarean hysterectomy with right salpingectomy and left

salpingo-oophorectomy was done owing to placenta percreta.

The total amount of blood loss was 2000 ml (1000 ml in first surgery). After administering 3 packed red cells, the hemoglobin level was 7.2 gm/dl, and the patient remained hemodynamically stable. The patient was discharged on the 4th postoperative day and was seen again at Koohi Goth Women Hospital on 12th postoperative day for a standard postoperative checkup and removal of stitches. The patient was further managed for correction of anemia.

Discussion

The patient presented in Koohi Goth Women hospital (a secondary set-up for maternal and children healthcare). This hospital is located approximately 25 kms from the nearby hospital where up to the mark tertiary care facilities are available.

Placenta accreta spectrum disorder, when diagnosed peri-operatively, can potentially lead to massive hemorrhage and increase morbidity and mortality of patients if not managed promptly[6]. Hence these patients should be operated on under a multidisciplinary team due to anticipated blood loss and the need for potential resuscitation and blood transfusion[7]. This patient was an un-booked case who had presented to our emergency care with deteriorating vitals and previous scar in labour with no ultrasonic features of placenta accrete. This made the on-call surgeon proceed with an emergency cesarean section. As the placenta was localized fundo-posterior on ultrasound examination, no special measures and precautions were taken before or during the cesarean section, e.g., blood products. Perioperative findings of placental invasion suggested the diagnosis of placenta percreta, which required an emergency obstetric hysterectomy. The patient had to be transferred under an experienced multidisciplinary team for obstetric hysterectomy.

As the patient was profusely bleeding from the placenta and was getting hemodynamically unstable (BP: 70/40 mmHg, pulse: 136 bpm), therefore a previously described simple tourniquet technique was applied[8], which quickly secured hemostasis and cleared the surgical field. However, this simple tourniquet technique involved using a Foley catheter instead of atraumatic DeBakey vascular clamps. This had multiple advantages over other hemostatic techniques: Foley's catheter was readily available, easy and quick to perform, and did not require special expertise given the size of our hospital. Furthermore, there was no bladder involvement which reduced the risk of the tourniquet slipping over the placental bed. Foley's rubber tube is ideal when it has to be left intra-abdominally for more extended hours[9] that allowed time for transportation of the patient to a tertiary care hospital, calling an experienced surgeon, and arranging blood products for transfusion.

This tourniquet technique reinforced the initial rationale of performing an emergency cesarean section: to reduce maternal mortality and morbidity. Effective bleeding control in this patient directly determined maternal outcome and reduced total blood loss to 2000 ml as opposed to more than 3000 ml mentioned in various literature[4,10].

Conclusion

In conclusion, various hemostatic techniques have been described, each having its indications, expertise, and availability of necessary instruments. In this case report, we present that using a Foley catheter as a simple cervical tourniquet can effectively reduce hemorrhage, particularly in the case of blood loss originating from the placenta. This valuable technique can buy time for the surgeon to convert emergency cesarean hysterectomy to elective cesarean hysterectomy.

Conflicts of Interest

The authors have declared that no competing interests exist.

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