CASE REPORT

Successful management of pelvic bleeding after caesarean hysterectomy by means of Foley catheter-condom balloon tamponade

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SUMMARY

In this case report, we describe a 28-year-old woman with multipar gestation who developed postcaesarean atonia and severe pelvic haemorrhage which continued in spite of peripartum hysterectomy. A balloon tamponade tool was formed with Foley catheter and a condom, and was inserted into the pelvis through the vaginal cuff. The tampon was inflated up to 2200 mL and the pelvic tamponade was applied and bleeding was controlled. On the patient's incapability of urination, the volume of condom was decreased to 1800 mL and urination was achieved. seventy-two h postoperatively the Foley catheter-condom was removed through an abdominal incision. Pelvic bleeding ceased. After monitoring for a week, no postoperative fever, infection, pelvic abscess and haematoma were observed. Use of Foley catheter-condom as a pelvis pressure tampon tool may be a simple and effective method which can be easily used to control pelvic bleeding.

BACKGROUND

Urgent peripartum hysterectomy (antepartum haemorrhage) is used frequently as a lifesaving procedure for cases with uncontrolled bleeding because of uterine atonia, uterine rupture, placental disorders, infection, fibroids or lacerations during caesarean.¹ In a systematic review comprising 981 urgent postpartum hysterectomy cases, the maternal mortality rate was notified as 2.6%.² Even if the surgical pedicles are strong, posthysterectomy bleeding can occur because of coagulopathy developing due to massive haemorrhage. In 1926, Logothetopoulos³ defined a packing method for managing uncontrolled pelvic haemorrhage after posthysterectomy. Such technique was later defined as a mushroom, parachute, umbrella, pelvic passer or Logothetopoulos pack. Pelvic pressure packs may bring haemorrhages under control by compressing the bleeding sections towards the bone pelvis and fascia by making an effective pressure distribution, if such haemorrhages come from wide, irregular surfaces, venous plexus and from unreachable regions.^{4 5}

We have presented a case in which pelvic packing was applied using the Foley catheter-condom for managing a patient who underwent caesarean hysterectomy because of postpartum atonia and had severe pelvic bleeding.

CASE PRESENTATION

A 28-year-old woman, G7 P6 (*file no: 1030330*) with multipar gestation was admitted to the obstetrics clinic of a county hospital. Based on the previous caesarean experience, the delivery operation was planned to be a caesarean again. Caesarean was performed by means of subsegment transverse cut. She delivered a baby boy weighing 3800 g. After the uterus was closed, uterine atonia developed. Bimanual massage was applied. By inclusion of 40 U syntan inside 500 mL isotonic, an intravenous infusion at 125 mL/min speed was performed. Ergothamine 0.5 mg was applied intramuscularly and misoprostol 0.8 mg was applied rectally. However, uterine contraction could not be achieved and bleeding continued. Hypogastric artery ligation and other compression suture techniques could not be applied because of lack of experience. Therefore, subtotal hysterectomy was performed and because of bleeding in the right ovarian region, right oophorectomy was also performed. Haemorrhage focuses were sutured and bound. However, severe pelvic haemorrhage continued. Since the distance to the nearest tertiary centre is approximately 3.5 h, such transportation was considered fatal for the patient. Therefore, assistance was requested from the Firat University Medical Faculty Obstetric Clinic by telephone. We were told to first apply pressure on the descendant aorta immediately after bifurcation, which would enable us to save time for preparation and decrease bleeding. How to apply the Foley catheter-condom tamponade was also told to us (*figure 1*). After the tampon was prepared, we inserted the distal end of the Foley from the open vagina cuff inside the

Figure 1 Foley catheter appearance.

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vagina and inflated the condom with serum physiological until the pelvic bleeding was brought under control, as recommended. After the condom was inflated to 2200 mL, bleeding stopped. Then the operation was completed and the patient was transferred to the FU erythrocyte and 4 U cryoprecipitate were given. Haemoglobin value was measured as 7.1 postoperatively on the same day after blood replacement. Thereafter, 2 U erythrocyte suspension was given at the F Clinic, and the haemoglobin value increased to 9 g/dL. The estimated blood loss was 4000 mL. Written and signed consent was obtained from the patient.

TREATMENT

- ▶ Anaemia corrected by 10 U erythrocyte suspension transfusions and 4 U cryoprecipitate totally, and the haemoglobin value increased to 9 g/dL.
- ▶ Treatment with triple antibiotics started (ampicilline 1 g 3×1 intravenously, gentamycine 80 mg 2×1 intravenously, clindamycine 600 mg 3×1 intravenously).
- ▶ The abdomen was opened with reoperation 72 h later (figure 2). The condom was observed to provide effective pelvic compression (figure 3). From a focus in the pelvic area, insignificant venous bleeding was seen and cautered (figure 4).

OUTCOME AND FOLLOW-UP

- ▶ The patient was discharged from the hospital 4 days after surgery.
- ▶ Control examination was carried out 15 days after surgery and no sign of infection, haematoma, pelvic abscess or any other complications were detected.

DISCUSSION

We have presented a case in which pelvic packing was performed using the Foley catheter-condom for management of a patient who had undergone caesarean hysterectomy and was suffering from severe pelvic bleeding because of postpartum atonia, in a small county hospital with very limited facilities and surgical equipments. Tamponade procedure was successful for this patient. Complications such as postoperative infection, haematoma and pelvic abscess did not develop.

The first case of this kind in British literature was published in the 1960s.^{4 5} In this case, posthysterectomy bleeding control

Figure 3 Foley catheter-condom MRI of the pelvis.

was performed. After that, presentation of some cases and case series related with posthysterectomy bleeding control were published. In these studies, there are 23 cases comprising gynaecological haemorrhages and 13 cases comprising obstetric haemorrhages. A 100% success was achieved in gynaecological cases and an 85% success was achieved in obstetric haemorrhage cases.⁶

Abdominal and pelvic postsurgical packing is an old method used for controlling haemorrhages caused by liver trauma, hepatic rupture induced by pre-eclampsia, rectal cancer, gynaecological cancer.⁶ Kumar *et al* state that combined abdominal pelvic packing has an acceptable success rate in surveys of patients with advanced ovarian malignancy with severe primary haemorrhage during cytoreductive surgery. However, based on the probability of secondary intra-abdominal infection complication, they suggested that packing operation should not be performed routinely in such patients. Despite this, if performed in proper time, they emphasised that the packing method is a very effective and a lifesaving tool.⁷

Different packing methods such as bowel bag or dry laparotomy packs are defined. Such methods require reoperation after the patient is stabilised in order to remove the material. In order to bring obstetric haemorrhages under control, there are applications such as rolled gas inside inflated condom or penrose

Figure 2 Seventy-two hours after operation, Foley condom appearance in the pelvis.

Figure 4 After removal of Foley condom balloon, previous bleeding areas in the pelvic region.

drain on 22 Fr catheter inserted from the skin which eliminate the requirement of reoperation.⁶ In packing procedures performed using the Foley condom that was used by us, the distal end of the Foley balloon was suspended from an opening of approximately 2 cm through the vagina cuff after hysterectomy. By inflating the Foley balloon for 30–40 cc, we considered it to prevent the condom to get out of Foley and prevent the condom to remain inside pelvis while the Foley is being removed. Later, until we thought that haemostasis was achieved, the condom was kept inflated with serum physiological. Fascia and the skin were closed by inserting a drain inside abdomen. The distal end of the Foley suspended from the vagina was adhered to the interior part of the thigh, and the condom was prevented from wandering inside pelvis. This application controlled pelvic bleeding.

In a study performed on patients with internal haemorrhage inside the abdomen after trauma, Garrison *et al*⁸ stated that in cases of hypothermia, extended hypotension, coagulopathy and acidosis, the tampon should be inserted immediately. Therefore, when haemostasis is clearly disrupted, tampon insertion should be performed earlier. In these critical patients who received blood transfusion previously and in whom a foreign object was inserted in the contaminated area, serious febrile diseases are frequently seen.⁶ Also in our case, this procedure could not be tried since the surgeon conducting the first operation did not have hypogastric artery binding experience. A compress was performed on the aorta in order to decrease bleeding after bifurcation by the operation nurse while the Foley condom was being prepared. Therefore, aortic pressure and early decision of pelvic packing prevented the patient from disseminated intravascular coagulation.

Sepsis is the major reason for morbidity and mortality following application of abdominal packing (AP). Therefore, it is suggested that AP should be removed as soon as possible. Abikhaleh *et al*⁹ stated that morbidity and mortality is significantly increased in patients who have AP for more than 72 h. In every case where pelvic pressure tampon is applied, prophylactic wide-spectrum antibiotics should be administered and should be continued until the tampon is removed and the patient undergoes an afebrile period of at least 24–48 h.

Ordóñez *et al*¹⁰ stated that at least a period of 48 h is required for achieving haemostasis in the majority of patients and that removal of AP after 2 or 3 days is the safest way. They showed that at the end of this period, low rebleeding rates and acceptable infection rates were achieved. Hence, we should avoid keeping AP for more than 3 days since there was a significant increase in infectious complication risks. However, Ordóñez *et al* performed damage control laparotomy and AP on 121 patients out of 503 patients suffering from penetrant abdominal trauma in the period between 2003 and 2010. In this study, they found that the risk of intra-abdominal infection may be increased because of contamination. In pelvic packing cases dependent on obstetric haemorrhage, for which we accepted that no abdomen wall and intestinal injury was of concern, we assumed that the risk of intra-abdominal infection would be less. However, for such cases and also for obstetric patients in whom vaginal cleaning could not be performed effectively and the vagina cuff proceeding to hysterectomy was contaminated, the intra-abdominal infection risk may increase similarly. In our case, we kept the balloon in the pelvis for 72 h under triple-antibiotic treatment. During such term we did not encounter any infectious findings. Later, with reoperation, we removed the condom. We observed that bleeding in the pelvic region had stopped almost completely. Haematoma and infection were not observed within the abdomen.

The Foley condom may also be removed through the vagina under mild sedation. However, the reason for reoperation is the fact that we used the Foley condom for the first time and that the operation was conducted outside our clinics. Furthermore, in a focus we removed after 72 h, we observed that insignificant and venous bleeding continued. Maybe, if we had removed the balloon earlier in this case, we would have had to insert the balloon again because of rebleeding.

Foley condoms are easily accessible and cheap equipment that are mostly available in every obstetric clinic. They can be inflated to high volumes. When inserted in the pelvis, they can easily take the shape of the inside structure of the pelvis, and therefore, tampon can be used on a wide region. We believe that Foley condoms will cause less compression in the small intestine as compared with the more rigid tampons. In cases with such pelvic packing, we can find whether an abdominal compartment syndrome has developed or not by checking the urination per hour. In our case, after inflating the condom for 2200 mL, the bleeding stopped however, at first, urination occurred for 3 h. Thereupon, after deflating the balloon to 1800 mL, urination of the patient per hour reached to normal levels. Lack of urination may be caused by volume deficit or pressure of the balloon on the urethra. We also observed in our case that another advantage of the Foley condom is that decreasing or increasing the balloon volume with the help of Foley catheter can be performed easily.

In summary, the use of Foley condom as a pelvis pressure tampon may be a simple and effective method which can be easily used for controlling pelvic bleeding.

Learning points

- ▶ The control of postpartum haemorrhage is a difficult problem due to lack of equipment in the small country hospitals.
- ▶ Foley catheter-condom may be a simple and effective method for controlling pelvic bleeding which can be easily used in small clinics with insufficient equipment or in case of insufficient surgeon experience.
- ▶ Foley catheter-condom may be a lifesaving method in case of need for patient transport to a tertiary medical centre.

Competing interests None.

Patient consent Obtained.

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