



Original Article

The utility and effectiveness of an internal iliac artery balloon occlusion catheter in surgery for large cervical uterine fibroids



Hiroshi Kaneda ^{a,*}, Yasuhisa Terao ^a, Yuko Matsuda ^a, Kazunari Fujino ^a, Takafumi Ujihira ^a, Soshi Kusunoki ^a, Miki Kimura ^a, Akihiko Shiraishi ^b, Ryohei Kuwatsuru ^b, Satoru Takeda ^a

^a Department of Obstetrics and Gynecology, Juntendo University Hospital, Tokyo, Japan

^b Department of Radiology, Juntendo University Hospital, Tokyo, Japan

ARTICLE INFO

Article history:

Accepted 20 December 2016

Keywords:

Internal iliac artery balloon occlusion catheter
Total abdominal hysterectomy
Abdominal myomectomy
Large cervical fibroids
Intraoperative hemorrhage

ABSTRACT

Objective: Surgery for uterine cervical fibroids is difficult because of restricted surgical access and risks such as intraoperative bleeding or injury to other organs. The internal iliac artery balloon occlusion catheter (IIABOC) provides effective hemostasis for placenta previa and atonic hemorrhage, and is increasingly used in surgery for uterine fibroids for controlling intraoperative hemorrhage. We investigated the efficacy and safety of the IIABOC for controlling intraoperative bleeding in total abdominal hysterectomies (TAH) and abdominal myomectomies (AM) for large cervical fibroids.

Material and methods: From 2007 to 2014, the IIABOC was used in 22 cases (12 for TAH and 10 for AM) in which cervical fibroids fully occupied the pelvic cavity. Intraoperative blood loss, operating time, sample weight, use of blood transfusion, and injury to other organs were assessed.

Result: Mean blood loss, operative time, and sample weight in the IIABOC cases were 510 mL, 178 min, and 2550 g for TAH; and 727.5 mL, 157.5 min, and 1850 g for AM. Blood loss divided by sample weight in IIABOC cases was significantly lower than that in non-IIABOC cases during the same time period, for both TAH and AM. Allogenic blood transfusion was not necessary, and complications of injury to other organs did not occur in any of the 22 cases.

Conclusions: For large cervical fibroids with limited operating space, surgery was performed under bleeding control by occlusion of the internal iliac artery with an IIABOC. This technique enables control of hemorrhage and safe operative management in gynecological surgery.

© 2017 Taiwan Association of Obstetrics & Gynecology. Publishing services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Gynecological surgery requires familiarity with complex pelvic anatomy and careful attention to the control of hemorrhage. The internal iliac artery balloon occlusion catheter (IIABOC) is used for intraoperative control of hemorrhage by placement in the internal iliac artery between the superior gluteal and uterine arteries to block blood flow to the uterus. The IIABOC has been reported to be an effective method for control of hemorrhage in cesarean section

for placenta previa and for hemostasis in postpartum hemorrhage [1–4]. Cervical fibroids can occupy space in the pelvic cavity, shift the position of the ureter, and engorge the uterine artery and vein, resulting in a high degree of difficulty in performing the surgery. In cases of large cervical fibroids, hysterectomy may be unavoidable even if fertility preservation is desired, because of massive bleeding associated with myomectomy. Surgery for cervical fibroids is problematic because of the restricted space in the pelvic cavity. This means it is impossible to perform typical procedures such as uterine artery separation and cut-off, or the Rubin method for the control of hemorrhage in abdominal myomectomy (AM) [5], and it is difficult to manage the parametrium and uterine artery during total abdominal hysterectomy (TAH) because of the risk of damage to ureter or bladder and massive hemorrhage. We have controlled intraoperative hemorrhage by using the IIABOC in gynecological surgery, including difficult surgery for large cervical fibroids. In this

Abbreviations: AM, abdominal myomectomy; IIABOC, internal iliac artery occlusion catheter; MRI, magnetic resonance imaging; TAH, total abdominal hysterectomy.

* Corresponding author. Department of Obstetrics and Gynecology, Juntendo University Hospital, Hongo 2-1-1, Bunkyo-ku, Tokyo, Japan.

E-mail address: hks-knd@juntendo.ac.jp (H. Kaneda).

<http://dx.doi.org/10.1016/j.tjog.2016.12.019>

1028-4559/© 2017 Taiwan Association of Obstetrics & Gynecology. Publishing services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

study, we examined the efficacy and safety of the IIABOC for the control of intraoperative hemorrhage in TAH and AM for large cervical fibroids.

Material and methods

From 2007 to 2015, we performed 12 TAHs and 10 AMs required the IIABOC because the pelvic cavity was filled with large cervical fibroids. Gynecological pelvic examination, transvaginal ultrasound, pelvic magnetic resonance imaging (MRI), and cervical cytology (Pap smear) were performed to exclude gynecological malignancy, and benign uterine fibroids were diagnosed. Pelvic MRI was used to evaluate the number, size, and position of fibroids to determine whether there was adequate surgical space in the pelvic cavity despite displacement by fibroids, and whether the cervix was elongated by fibroids. The criteria for application of cases using the IIABOC is large cervical fibroids fully occupying the pelvic cavity confirmed by MRI, no mobility of the uterus, non-confirmation of cervix at the pelvic and speculum examination, and no effective reduction of fibroids volume after 6 times injections of 1.88 mg Gonadotropin-releasing hormone agonists (GnRHa). Intraoperative blood loss, operating time, sample weight, use of blood transfusion, and injury to other organs were assessed and evaluated in comparison with 506 cases of TAH and 295 cases of AM performed without using the IIABOC during the same period. Control group were large or non-large, multiple or non-multiple, and cervical or non-cervical fibroids cases which were not high degree of difficulty surgeries requiring the IIABOC.

All surgeries were performed by same skilled surgeons. Statistical analysis was performed independent t-test. Statistical significance was set at p value < 0.05 . This study is a retrospective-case control study, with the approval of the ethics committee in our hospital, we explained to the patient about the use of IIABOC and got with consent.

IIABOC

The IIABOC was used with the assistance of an interventional radiologist. On the day prior to surgery, catheterization was performed via the contralateral inguinal femoral artery by the Seldinger technique, with the catheter advanced through the common iliac and the internal iliac artery, past the superior gluteal artery, and placed proximal to the uterine artery. Pelvic angiography confirmed the location of the dominant vessels and blood flow from the uterine artery. The balloon remained in the internal iliac artery between the superior gluteal and uterine arteries ensuring prevention of blood flow to the uterine artery. This procedure was performed on both sides. The catheter was extended to the out of surgical field for inflation and deflation of the balloon in the appropriate timing during surgery by assistant. Blood flow from the external iliac artery to the femoral artery was monitored during surgery with a pulse oximeter on both lower extremities. After the surgery the catheter was removed immediately and the catheter insertion site should be pressured for 24 h.

TAH

Laparotomy for TAH requires attention to the possibility of bladder injury due to the proximity of large fibroids. After resection of the round ligament and proper ligament/suspensory ligament, the bladder was separated from the uterus. If the sacrouterine ligament was determined or visible, both sacrouterine ligaments were resected, and both ureter should be detected on the common iliac artery and into the pelvic cavity. The balloon was inflated to occlude the uterine artery before the parametrium could be treated.

The bladder was further separated from the uterus, which was gradually brought outside of the pelvis. The parametrium and the uterine artery were treated under determining the ureter through the side of the uterus. Finally, after cutting off the vaginal tract, the uterus was removed. The balloon was deflated after closing the vaginal tract and it should be confirmed that there was no bleeding from the wounds after restoration of blood flow to the pelvis.

AM

Laparotomy for AM requires attention to the possibility of bladder injury as in laparotomy for TAH. As the fibroids were cervical, the position of the cervix had to be confirmed, and an incision was performed with care to avoid damage to the cervix. After injection of vasopressin, the uterine artery was occluded by expanding the balloon. No bleeding from the removal site of fibroids should be confirmed after resection of all of the fibroids and deflation of the balloon leading restoration of blood flow to the pelvis and the uterus.

Results

The IIABOC was used in 22 cases that had been diagnosed by preoperative pelvic MRI as having cervical fibroids and inadequate surgical space in the pelvic cavity (Fig. 1A–C). There were 12 TAH cases and 10 AM cases (Table 1). Placement of the IIABOC is shown in Fig. 2. Angiography confirmed cut-off blood flow to the uterine artery by inflation of the IIABOC. The means and ranges for blood loss, operating time, and sample weight in TAH and AM cases with and without the IIABOC are shown in Table 1. The index of blood loss divided by sample weight was significantly lower in IIABOC cases compared with non-IIABOC cases for both TAH and AM (Fig. 3). The mean hemostasis time was the same for TAH and AM (Table 2). In all, 22 cases requiring the IIABOC, there were no allogeneic blood transfusions or complications such as injury to the bladder, ureter, or rectum (Table 3). No additional any complications were observed furthermore after surgery.

Discussion

The IIABOC has been reported to be effective for hemorrhage control in cesarean section for placenta previa and for hemostasis in postpartum hemorrhage [1–4]. As the uterine artery delivers 90% of the blood flow to the uterus [6], the control of this blood flow is effective for preventing uterine bleeding. There are also reports that the IIABOC can effectively control bleeding in cesarean hysterectomy [7], laparoscopic myomectomy [8], and laparoscopic hysterectomy [9]. Surgery for uterine fibroids is a common procedure performed by gynecologists [10,11].

The location and size of the fibroids are important factors determining the difficulty of the surgery [12]; the problem in surgery for cervical fibroids is very restricted operable space in the pelvis. It makes increasing risk of injury to other organ such as ureter, rectum or the uterine artery and vein in TAH, difficulty of control bleeding in AM, and injury to the bladder at the time of laparotomy in both surgeries. Despite this problem, we safely performed surgery for large cervical fibroids in cases of TAH and AM with effective control of intraoperative hemorrhage by using the IIABOC to control bleeding from the uterus via the uterine artery.

There was no significant difference in the volume of blood loss between with and without IIABOC in TAH. In AM requiring the IIABOC, the volume of blood loss was slightly higher than in AM without the IIABOC. This does not alter the fact that the IIABOC in AM can suppress active hemorrhage during the operation. Because the volume of fibroids determined the use of the IIABOC, and the

Download English Version:

<https://daneshyari.com/en/article/8784537>

Download Persian Version:

<https://daneshyari.com/article/8784537>

[Daneshyari.com](https://daneshyari.com)