



Contents lists available at ScienceDirect

Gynecology and Minimally Invasive Therapy

journal homepage: www.e-gmit.com

Short communication

Hysteroscopic resection of retained products of conception after temporal laparoscopic uterine artery ligation



Munetoshi Akazawa*, Motofumi Yokoyama, Chihiro Minami, Tadahisa Takeuchi, Yuko Kawamoto

Department of Obstetrics and Gynecology, Matsuyama Red Cross Hospital, Ehime, Japan

ARTICLE INFO

Article history:

Received 22 November 2014

Received in revised form

15 January 2015

Accepted 17 March 2015

Available online 27 May 2015

Keywords:

hysteroscopic resection

retained products of conception (RPOC)

temporal uterine artery ligation

ABSTRACT

Objective: To describe hysteroscopic resection of retained products of conception (RPOC) after temporal laparoscopic uterine artery ligation for prevention of massive bleeding.**Materials and methods:** This retrospective study was based in a community medical care hospital. Eight patients with RPOC underwent hysteroscopic resection of RPOC. Before the procedure, we performed temporal laparoscopic uterine artery ligation for prevention of massive bleeding.**Results:** Patients' clinical backgrounds, intervals between the abortion or delivery and the operation, serum human chorionic gonadotropin (hCG) level at diagnosis, surgical times, and blood loss levels during surgery were recorded. The mean patient age was 28.2 ± 4.7 years. The mean interval between the abortions or deliveries and the surgeries was 43.2 ± 20.2 days. Three patients underwent spontaneous abortions, three patients underwent artificial abortions, and two patients had vaginal deliveries. The mean serum hCG level at the initial diagnosis was 168.7 ± 310 IU/L. Rich blood flow in the RPOCs was revealed by two-dimensional Doppler ultrasound examinations. Temporal uterine artery ligation was performed in all patients. The mean surgical time was 123.6 ± 19.4 minutes, and the blood loss was minimal in all eight cases. Neither blood transfusion nor conversion to laparotomy was required. The histologic evaluation revealed trophoblastic cells in all cases.**Conclusion:** Hysteroscopic resection of RPOC after temporal laparoscopic uterine artery ligation is an effective and safe procedure for controlling bleeding.Copyright © 2015, The Asia-Pacific Association for Gynecologic Endoscopy and Minimally Invasive Therapy. Published by Elsevier Taiwan LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Retained products of conception (RPOC) is a partial retention of placental tissue after dilation and curettage (D&C) procedures or vaginal deliveries. The patient's complaint is persistent bleeding a few months after delivery or abortion, and an ultrasound examination is performed to detect the intrauterine mass with blood flow. In unprepared intrauterine manipulation procedures, the bleeding could unexpectedly be so massive as to be potentially life threatening. Hysteroscopic resection is a common treatment for RPOC, but this procedure can cause massive bleeding from the site

of resection. To date, many measures have been reported to control bleeding before the resection, such as uterine artery embolization (UAE), iliac artery ligation, or intra-arterial balloon occlusion. These procedures have the potential to cause adverse effects on fertility or obstetrical outcomes, however, and require consultation with an interventional radiologist. In order to avoid these drawbacks, we devised a novel technique. This study is the first to describe eight successful cases of temporal laparoscopic uterine artery ligation before hysteroscopic resection of RPOC.

Materials and methods

From December 2012 to August 2014, we performed and examined eight cases of RPOC treated with hysteroscopic resection following temporal laparoscopic uterine artery ligation. RPOC was diagnosed when the following criteria were met: a history of abortion or delivery; a complaint of continuous bleeding for

Conflicts of interest: The authors have no conflicts of interest relevant to this article.

* Corresponding author. Matsuyama Red Cross Hospital, Bunkyo-cho 1, Matsuyama city, Ehime, 790-0826, Japan.

E-mail address: navirez@yahoo.co.jp (M. Akazawa).

<http://dx.doi.org/10.1016/j.gmit.2015.03.005>

2213-3070/ Copyright © 2015, The Asia-Pacific Association for Gynecologic Endoscopy and Minimally Invasive Therapy. Published by Elsevier Taiwan LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

longer than 2 weeks after abortion or delivery; positive hCG test result; and imaging modalities [an intrauterine mass with rich blood flow into the mass demonstrated by two-dimensional (2D) vaginal ultrasound examination and/or contrasted computed tomography with intravenous contrast media]. In all the cases, informed consent was given regarding conversion to a laparotomy or hysterectomy if uncontrollable bleeding occurred during the procedure. All patients met these criteria and underwent hysteroscopic resection of RPOC after temporal laparoscopic uterine artery ligation.

The procedures were performed as follows. General anesthesia was administered to the patient, and a Foley catheter was inserted into the bladder. A uterine manipulator was not used in hopes of avoiding unnecessary uterine bleeding. A pneumoperitoneum was created after insertion of a trocar at the umbilicus. A video laparoscope was introduced into the abdominal cavity. Three 5-mm trocars were inserted into the right and left lower abdomen and left upper abdomen. The patient was placed in the Trendelenburg position so that the intestines are pulled away from the pelvis. The uterine body was lifted upward and adhered to the abdominal wall with sutures of bilateral round ligaments (Figure 1A). In the view of the posterior broad ligament, the posterior leaf of the broad ligament was cut just along the upper edge of the ureter. After securing the ureter, the uterine artery was identified in the lateral side of the ureter (Figure 1B). The uterine artery was temporarily ligated with vessel tape (Figure 1C). The same procedure was performed on the patient's opposite side. Next, the hysteroscope was inserted into the uterus to confirm the site of the mass (Figure 1D). We resected the mass using the hysteroscope. After hysteroscopic resection, the vessel tape was cut and removed laparoscopically, and we checked for any intrauterine bleeding with the hysteroscope. After confirming the absence of intrauterine bleeding, the peritoneum was reapproximated with 3-0 Vicryl sutures (Johnson & Johnson, 1 Johnson and Johnson Plaza, New Brunswick, NJ 08933, USA).

The patients' clinical backgrounds, intervals between abortions or deliveries and the surgeries, serum hCG at diagnosis, surgical times, and surgical blood loss are shown in Tables 1 and 2.

Results

The clinical backgrounds and surgical records of the eight cases are summarized in Table 1 and Table 2. The mean patient age was 28.2 ± 4.7 years. The mean interval between the abortions or deliveries and the operations was 43.2 ± 20.2 days. Three patients underwent spontaneous abortions, three patients underwent artificial abortions, and two patients had vaginal deliveries. The mean serum hCG level at the initial diagnosis was 168.7 ± 310 IU/L. Rich blood flow in the RPOCs was revealed by 2D Doppler ultrasound examinations. Temporal uterine artery ligation was performed in all patients. The mean surgical time was 123.6 ± 19.4 minutes, and the blood loss was minimal in all eight cases. Neither blood transfusion nor conversion to laparotomy was required. The histologic evaluation revealed trophoblastic cells in all cases. The patients were discharged from the hospital on Day 5. After hospital discharge, a regular follow-up was conducted, including serial hCG measurements and ultrasound examinations. No postoperative complications were confirmed.

Discussion

RPOC has not been consistently and accurately defined. Some similar clinical terms, such as "hypervascular placental polypoid mass (HPPM)," "residual trophoblastic tissue," "retained trophoblastic tissue," or "placental polyp" have been used. On reviewing reports that used these terms, we found that all the terms met this study's definition criteria and the differences between these terms seem to be minor.

The management for RCOP consists of surgical intervention, medical treatment, and expectant management. Although the

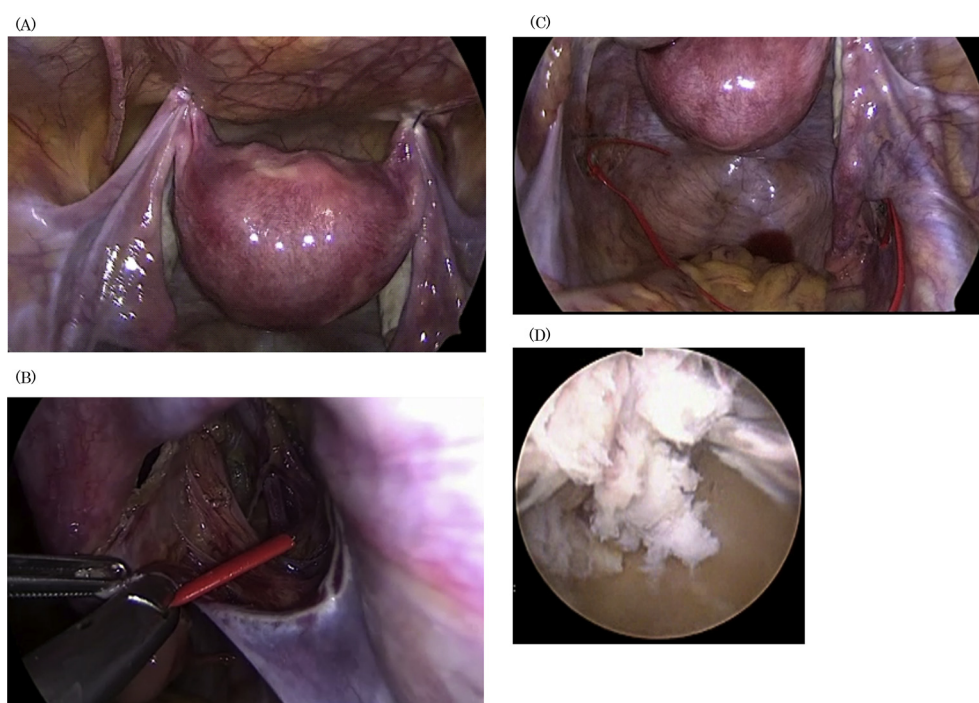


Figure 1. (A) The uterine body was lifted upward and adhered to the abdominal wall with sutures of bilateral round ligaments. (B) After securing the ureter, the uterine artery was identified in the lateral side of the ureter. (C) The bilateral uterine arteries were temporarily ligated with vessel tape. (D) The hysteroscope was inserted into the uterus to confirm the site of the mass.

Table 1
The patients' profiles.

	Age (y)	GP	Type	Intervals	Size/cm	Doppler flow	Contrast CT	Serum hCG (IU/L)
1	32	G1P0	SA	34	2	+	+	2
2	21	G3P1	VD	62	2	+	+	2
3	29	G1P0	SA	31	2	+	+	162
4	28	G5P2	AA	55	2	+	not performed	8
5	25	G1P1	VD	22	3	+	+	18
6	23	G1P0	AA	14	2	+	+	965
7	32	G6P3	AA	50	3	+	+	2
8	36	G5P1	SA	78	4	+	+	191
Mean	28.25			43.25	2.50			168.75

AA = artificial abortion; CT = computed tomography; hCG = human chorionic gonadotrophin; intervals = days between abortions or deliveries and operations; SA = spontaneous abortion; VD = vaginal delivery.

Table 2
Surgical summary.

	Surgical time (min)	Blood loss (mL)
1	107	Small
2	151	Small
3	144	Small
4	107	Small
5	115	Small
6	96	Small
7	145	Small
8	124	Small
Mean	123.625	

choice of the management depends on the patient's condition including the severity of bleeding or intrauterine infection, there is no definitive method for RCOP. The rate of complete evacuation on expectant management is said to be 47–81%, compared with 95–97% in surgical treatment.¹ As medical treatment, misoprostol is frequently used in the patient with incomplete spontaneous abortion. However, few studies exist for RCOP after artificial abortion. In addition, misoprostol is not permitted for abortion in Japan. As surgical intervention, hysteroscopic resection or dilation/curettage is performed.

Surgical intervention is commonly used in clinical situations; unexpected bleeding is one complication that occurs during surgery. Golan et al² reported 159 cases of RPOC treated with hysteroscopic resection. Among them, massive postoperative bleeding complications was encountered in one case, and an intrauterine balloon was used in order to control the bleeding. Smorgick et al³ performed a meta-analysis of 326 cases of RPOC treated with hysteroscopic removal. In this review, three perioperative complications occurred (uterine perforation, infection, and vaginal bleeding). Hiraki et al⁴ showed eight cases of RPOC with hysteroscopic resection. In one of the eight cases, the procedure was converted to laparotomy in order to control bleeding from the resected site. Marques et al⁵ presented a case of massive bleeding from a hypervascular RPOC a few weeks after spontaneous abortion. The bleeding was controlled using iliac artery occlusion catheters with a concomitant hysteroscopic resection.

Unprepared intrauterine manipulation in the presence of RPOCs with rich blood flow might lead to uncontrollable massive bleeding, potentially requiring an undesired hysterectomy or UAE to preserve the uterus. To prevent such bleeding, some authors have described various ways to control bleeding before the hysteroscopic resection. Marques et al⁵ reported that iliac artery occlusion was effective for controlling bleeding. Takeda et al⁶ reported that UAE could control excess bleeding from RPOC during hysteroscopic resection of the polyp. We also experienced a case of resultant hysterectomy from massive bleeding after unprepared uterine manipulation for a placental polyp. Therefore, careful management of RPOC with blood flow is required to prevent unnecessary hysterectomies or laparotomies after unprepared uterine manipulation.

Historically, we also performed UAE followed by hysteroscopic resection before using the temporal laparoscopic uterine artery ligation technique. However, UAE might alter risk profiles of adverse obstetric sequelae such as spontaneous abortion, abdominal delivery, and postpartum hemorrhage due to adherent placenta.⁷ It also affected fertility of the patient after the procedure.^{8–10} Moreover, it was necessary to consult with an interventional radiologist before performing UAE.

Therefore, beginning in 2012, we performed laparoscopic uterine artery temporal ligations in order to block the uterine arterial flow before hysteroscopic resection. We performed and examined six cases of RPOC treated with hysteroscopic resection after laparoscopic uterine artery temporal ligations. There was minimal blood loss in each patient. The efficacy of the procedure in reducing blood loss was clearly demonstrated. The effect of uterine artery ligation on fertility was unclear. Considering that blood flow is blocked for only a short time (< 120 minutes) during the procedure, the procedure may have fewer effects on fertility and obstetric outcomes than UAE, and it might lead to a better prognosis.

In conclusion, the procedures described in this report could prevent massive bleeding during hysteroscopic resections. Although UAE might be equally effective in preventing bleeding, laparoscopic uterine artery temporal ligation had a shorter uterine artery block time, potentially leading to fewer adverse effects on fertility and negative obstetric outcomes. In addition, a consultation with an interventional radiologist was not mandated. Laparoscopic uterine artery temporal ligation for prevention of massive bleeding could be a feasible, effective, and safe measure for treating RPOC.

References

- Nanda K, Peloggia A, Grimes D, Lopez L, Nanda G. Expectant care versus surgical treatment for miscarriage. *Cochrane Database Syst Rev*. 2006;2:CD003518.
- Golan A, Dishit M, Shalev A, Keidar R, Ginath S, Sagiv R. Operative hysteroscopy to remove retained products of conception: novel treatment of an old problem. *J Minim Invasive Gynecol*. 2011;18:100–103.
- Smorgick N, Barel O, Fuchs N, Ben-Ami I, Pansky M, Vaknin Z. Hysteroscopic management of retained products of conception: meta-analysis and literature review. *Eur J Obstet Gynecol Reprod Biol*. 2014;173:19–22.
- Hiraki K, Khan KN, Kitajima M, Fujishita A, Masuzaki H. Uterine preservation surgery for placental polyp. *J Obstet Gynaecol Res*. 2014;40:89–95.
- Marques K, Looney C, Hayslip C, Gavrilova-Jordan L. Modern management of hypervascular placental polypoid mass following spontaneous abortion: a case report and literature review. *Am J Obstet Gynecol*. 2011;205:e9–e11.
- Takeda A, Koyama K, Imoto S, Mori M, Sakai K, Nakamura H. Placental polyp with prominent neovascularization. *Fertil Steril*. 2010;93:1324–1326.
- Goldberg J, Pereira L, Berghella V, et al. Pregnancy outcomes after treatment for fibromyomata: uterine artery embolization versus laparoscopic myomectomy. *Am J Obstet Gynecol*. 2004;191:18–21.
- Takeuchi K, Sugimoto M, Kitao K, Yoshida S, Maruo T. Pregnancy outcome of uterine arterial embolization followed by selective hysteroscopic removal of a placental polyp. *Acta Obstet Gynecol Scand*. 2007;86:22–25.
- Holub Z, Mara M, Kuzel D, Jabor A, Maskova J, Eim J. Pregnancy outcomes after uterine artery occlusion: prospective multicentric study. *Fertil Steril*. 2008;90:1886–1891.
- Homer H, Saridogan E. Uterine artery embolization for fibroids is associated with an increased risk of miscarriage. *Fertil Steril*. 2010;94:324–330.