

Contents lists available at [ScienceDirect](#)

Clinical Radiology

journal homepage: [www.clinicalradiologyonline.net](http://www.clinicalradiologyonline.net)

# Clinical outcomes of 23 patients who had repeat pelvic arterial embolisation for uncontrolled post-partum haemorrhage at a single centre

W. Choi<sup>a</sup>, J.H. Shin<sup>b,\*</sup>, P.H. Kim<sup>b</sup>, K. Han<sup>a</sup>, J.Y. Ohm<sup>c</sup>, J.H. Kim<sup>b</sup>, J.W. Kim<sup>b</sup>

<sup>a</sup>Department of Radiology, Severance Hospital, Research Institute of Radiological Science, Yonsei University, College of Medicine, 50-1, Yonsei-ro, Seodaemun-gu, Seoul, 03722, Republic of Korea

<sup>b</sup>Department of Radiology and Research Institute of Radiology, Asan Medical Center, University of Ulsan College of Medicine, 88 Olympic-ro 43-gil, Songpa-gu, Seoul, 138-736, Republic of Korea

<sup>c</sup>Department of Radiology, Chungnam National University Hospital, 282, Munhwa-ro, Jung-gu, Daejeon, 35015, Republic of Korea

## ARTICLE INFORMATION

### Article history:

Received 19 October 2017

Accepted 13 February 2018

**AIM:** To evaluate the safety and efficacy of repeated pelvic arterial embolisation (PAE) for uncontrolled postpartum haemorrhage (PPH) after a single session of PAE and to compare angiographic findings between the two sessions of PAE.

**MATERIALS AND METHODS:** A total of 23 consecutive patients (age range, 23–44 years) who underwent repeated PAE for uncontrolled PPH between March 2001 and January 2016 in Severance Hospital were reviewed. The interval times between the two sessions of PAE, the angiographic findings, embolic materials, arteries embolised during PAE, and the clinical outcomes were reviewed retrospectively.

**RESULTS:** Overall clinical success was achieved after repeated PAE in 21 of 23 patients (91.3%). There were no procedure-related, major complications. On angiography, active bleeding from the uterine collateral arteries was more frequently observed in the second session of PAE ( $p > 0.05$ ), and embolisation of the anterior division of the internal iliac artery was significantly higher during the second session of PAE. Use of permanent embolic materials was significantly higher during the second session of PAE. Recanalisation of a previously embolised artery was identified in 14 patients (60.9%) during the second session.

**CONCLUSION:** Repeated PAE is safe and effective for managing recurrent bleeding after a single session of PAE. Repeated PAE is related to a higher chance of embolisation of the anterior division of the internal iliac artery, with the use of permanent embolic materials. Recanalisation of a previously embolised artery seems to be a principal source of rebleeding during a repeated session of PAE.

© 2018 The Royal College of Radiologists. Published by Elsevier Ltd. All rights reserved.

\* Guarantor and correspondent: J. H. Shin, Department of Radiology and Research Institute of Radiology, University of Ulsan, College of Medicine, Asan Medical Center, 86 Asanbyeongwon-gil, Songpa-gu, Seoul, 138-736, Republic of Korea. Tel.: +82 2 3010 4380; fax: +82 2 476 0090.

E-mail address: [jhshin@amc.seoul.kr](mailto:jhshin@amc.seoul.kr) (J.H. Shin).

<https://doi.org/10.1016/j.crad.2018.02.019>

0009-9260/© 2018 The Royal College of Radiologists. Published by Elsevier Ltd. All rights reserved.

## Introduction

Postpartum haemorrhage (PPH) is known to account for more than two-thirds of haemorrhage-related, maternal deaths.<sup>1</sup> Pelvic arterial embolisation (PAE) has shown its

effectiveness and safety for patients with severe PPH,<sup>2–6</sup> and PAE is now having an important role in treating PPH because it is a minimally invasive, fertility-preserving procedure compared to conventional surgical procedures<sup>7</sup>; however, the clinical failure rate after PAE has been reported to be 5.2%–13.5%, despite its technical success.<sup>5,6,8–11</sup> In patients who had recurrent bleeding after PAE, repeated PAE or surgical treatment was considered; however, the outcomes of repeated PAE were not evaluated separately and in detail, and the number of patients reported was also very small. In addition, there have only been a few reports regarding the difference in angiographic findings between the first session and the second session of PAE.

In the present study, 23 patients underwent repeated PAE for uncontrolled PPH after a single session of PAE. The purpose of this study was to evaluate the safety and efficacy of repeated PAE and to determine the difference in angiographic findings between the first and second PAE session.

## Materials and methods

### *Clinical data and definitions*

From March 2001 to February 2016, 643 patients underwent PAE for management of primary or secondary PPH in Severance Hospital, Seoul, Republic of Korea. They were referred to interventional radiology for potential embolisation because they did not achieve cessation of bleeding with pelvic packing and Bakri balloon. Among those patients, 80 patients were excluded due to their data not being recorded as electronic medical records and were considered inaccurate. Of the remaining 563 patients, 23 underwent repeated PAE after initial PAE, 26 underwent additional surgery, five died, and 509 recovered without additional treatment. This study included 23 patients who underwent repeated PAE for uncontrolled PPH after the first session of PAE. The clinical data of the 23 patients were reviewed retrospectively, including the time interval between the first and second procedure sessions, patient age, type of delivery, cause of bleeding, maternal characteristics, the presence of disseminated intravascular coagulation (DIC), the amount of blood transfusion, procedure-related complications, and the final clinical outcome as well as the angiographic findings for each procedure.

The cause of bleeding was divided into four categories, i.e., uterine atony, uterine rupture, retained products of conception, such as placenta accreta and percreta, and iatrogenic injury such as genital tract laceration or postoperative injury. Maternal characteristics were divided into only two categories of primiparity and multiparity. According to the criteria of the DIC scoring system of the International Society on Thrombosis and Haemostasis (ISTH), the laboratory data were analysed and DIC was noted if the score was  $\geq 5$ .<sup>12</sup> Massive transfusion was defined when  $>10$  pints of bloods were administered. Haemodynamic instability was defined as a systolic blood pressure  $<90$  mmHg and heart rate  $>120$  beats/min even with adequate medical management or when continuous vasopressor administration was needed.

All clinical and laboratory data were collected by review of the electronic medical records, and the requirement for written informed consent for each patient was waived due to the retrospective nature of the study.

### *Embolisation procedures and angiographic findings*

Before the procedure, the decision to perform repeated PAE was made based on the presence of recurrent or persistent bleeding after the first PAE session even after additional medical or surgical treatment. Repeated PAE procedures were performed by five, clinically experienced interventional radiologists. During the procedure, the electrocardiogram, blood pressure, and oxygen saturation with pulse oximetry were continuously monitored.

Under local anaesthesia, a 5-F vascular sheath was inserted into the right common femoral artery in order to access the pelvic arteries. Bilateral pelvic angiograms were obtained in order to identify the uterine arterial supply as well as any other potential sites of bleeding. A 5-Fr angiographic catheter (Cobra Glidecath or Radifocus; Terumo, Tokyo, Japan or Roberts; Cook Bloomington, IN, USA) was used to access and to perform angiography of the bilateral, internal iliac arteries. Selective catheterisation of a transverse or ascending segment of the uterine arteries were performed using a microcatheter (Renegade; Boston Scientific, Cork, Ireland or Progreat; Terumo, Tokyo, Japan). Bilateral, external iliac angiograms were obtained to identify the bleeding focus from inferior epigastric arteries when the bleeding focus was not apparent on internal iliac angiograms. Aortography was performed to identify the ovarian arteries in patients with persistent bleeding after embolisation of the uterine arteries and/or other uterine collateral arteries.

Absorbable gelatin sponge particles (GSP, Gelfoam; Spongostan; Johnson and Johnson, Gauteng, South Africa) were initially used for uterine artery embolisation. Blind embolisation was performed using gelatin sponge particles when the uterine artery was prominently hypertrophied, even though there was no active bleeding focus. If there was persistent bleeding without an active bleeding focus, despite embolisation of the uterine artery, embolisation was performed blindly using gelatin sponge particles for the anterior division of the internal iliac artery. A permanent, embolic material was used when bleeding persisted even after embolisation of the uterine artery using gelatin sponge particles or when an active bleeding focus is identified, at the discretion of the operator. Coil (Nester or Tornado; Cook) and N-butyl cyanoacrylate (NBCA; Histoacryl; Braun, Sempach, Switzerland) were used as permanent embolic materials.

Vaginal speculum inspection was performed immediately after embolisation in order to confirm the cessation of bleeding. If the bleeding persisted, additional embolisation of uterine collateral arteries and/or uterine arteries was performed at the discretion of the interventional radiologist.

The embolisation procedures were reviewed retrospectively for each session of PAE in all 23 patients. The presence of active bleeding, the site of the active bleeding focus, the

Download English Version:

<https://daneshyari.com/en/article/8786389>

Download Persian Version:

<https://daneshyari.com/article/8786389>

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