

# Histological Spectrum of Retained Products evacuated after Secondary PPH

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Received: 22 January, 2025

Accepted: 11 February, 2025

Published: 18 February, 2025

## Abstract

**Background:** Postpartum hemorrhage (PPH) represents a critical factor contributing to maternal mortality worldwide, highlighting the need for immediate and effective intervention. Hence; the present study was conducted for assessing histological Spectrum of Retained Products evacuated after Secondary PPH.

**Materials & methods:** Twelve patients with secondary PPH were taken into the study who had their period of gestation of more than 24 weeks. Two women presented after 7 days: one presented 20 days after delivery, one on the 24th day, and 10 women presented within seven days after delivery. Patients in our hospital who experienced SPPH were initially managed in the LRE. A pelvic examination and pelvic ultrasound scan were then undertaken to exclude retained uterine content, or associated vascular abnormalities, respectively. When indicated, uterine evacuation was performed under anesthesia and all obtained tissue were sent for histopathology. A categorization of histological study of the products of evacuation was done and analyzed.

**Results:** Inflammatory changes were mentioned 50% of the time, whilst placental tissue was encountered in 25% of specimens. Separately or in variable combination, decidualized tissue, hemorrhagic tissue, fibrinous material, and membranous tissue amounted to about 25% of mentions. There were three cases of primigravida while there were 9 cases of multigravida. Time elapsed since delivery was less than 7 days in 10 patients while it was 20 days and 24 days in 1 patient each. The histological features consistent with the Arias-Stella reaction may be demonstrated up to eight weeks in the postpartum endometrium. Involvement of sub-decidual tissue may suggest varying degrees of placental invasion. Very rare chances of intra-placental choriocarcinoma or AV malformation could be diagnosed in some cases.

**Conclusion:** Almost half of the content of histological reports on tissue evacuated after Secondary PPH were consistent with expected findings of a postpartum endometrium that is inflammatory. In about a quarter of them remnant of placental tissue was mentioned. SPPH was reported more in Multigravidas than Primis, more so in previous Caesarean Sections. There was no relation between Histopathological specimen and Time elapsed since delivery. This suggests that evacuation of uterus in SPPH often amounts to a therapeutic rather than diagnostic procedure.

**Key words:** Postpartum hemorrhage

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## Introduction

Postpartum hemorrhage (PPH) represents a critical factor contributing to maternal mortality worldwide, highlighting the need for immediate and effective intervention. Primary PPH, which occurs within the first 24 hours postpartum, is predominantly caused by uterine atony in approximately 70% of cases, but can also result from trauma or PAS.<sup>1-3</sup> Uterine atony is characterized by insufficient myometrial contraction and can be managed through techniques such as uterine massage, administration of oxytocin, and, when necessary, mechanical interventions like balloon tamponade. PPH related to trauma may arise from perineal injuries or the rupture of pseudoaneurysms,

while PAS is associated with abnormal placental attachment and requires prompt identification due to the risk of severe hemorrhage during delivery. Secondary PPH, which occurs between 24 hours and 6 weeks postpartum, is often linked to RPOC. Treatment options may include medications to promote uterine contractions and hemostatic agents; however, surgical interventions such as dilation and curettage (D&C) or hysteroscopic resection may be necessary.<sup>4-6</sup> In addressing postpartum hemorrhage (PPH), it is essential to implement both immediate and sequential interventions, with the primary focus on ensuring and/or restoring the patient's hemodynamic stability. A significant challenge in the effective management of

PPH is its oftendelayed diagnosis; however, the critical aspect lies in the timely recognition of the condition and the execution of appropriate corrective actions. The initial management of PPH includes fluid resuscitation, correction of any coagulation abnormalities, removal of any residual placental tissue, and the administration of uterotonics. When initial interventions fail, balloon tamponade, such as the Bakri® balloon, serves as a secondary treatment for PPH, successfully controlling bleeding in approximately 85% of cases.<sup>7-9</sup> Retained Products of Conception (RPOC) refers to fetal or placental tissues that remain within the uterine cavity after delivery or termination of pregnancy. RPOC may lead to the persistence and even expansion of physiological maternal arteriovenous shunting in the placental giving a marked vascularity or even an arteriovenous malformation (AVM) behaviour.<sup>10</sup> This hypervascular nature of the lesion underlies to being one of the leading causes of secondary PPH.<sup>11</sup> Hence; the present study was conducted for assessing histological Spectrum of Retained Products evacuated after Secondary PPH.

### Materials & methods

The present study was conducted at NMCH Patna, Bihar for assessing histopathological analysis of retained products of conception evacuated after secondary PPH. Inclusion criteria included all patients presenting with post-partum hemorrhage after 24 hours and within 42 days of delivery. Exclusion criteria included all patients presenting with post-partum hemorrhage within 24 hrs of delivery and Post partum hemorrhage after suction following molar pregnancy. The study took place at NMCH, Patna for a duration of 1 year from March 2023 to February 2024. Twelve patients with secondary PPH were taken into the study who had their period of gestation of more than 24 weeks. Two women presented after 7 days: one presented 20 days after delivery, one on the 24th day,

and 10 women presented within seven days after delivery. Patients in our hospital who experienced SPPH were initially managed in the LRE. The first line of care is fluid resuscitation, administration of uterotonics and antibiotics, and urgent red blood cell transfusion. Baseline investigations were sent- CBC, ABORh, LFT, RFT, BT-CT, Coagulation profile. A pelvic examination and pelvic ultrasound scan were then undertaken to exclude retained uterine content, or associated vascular abnormalities, respectively. When indicated, uterine evacuation was performed under anesthesia and all obtained tissue were sent for histopathology. A categorization of histological study of the products of evacuation was done and analyzed. The purpose of submitting evacuated tissue from patients with SPPH for histopathological examination is to establish a possible cause or to indicate the need for additional care.

### Results

Inflammatory changes were mentioned 50% of the time, whilst placental tissue was encountered in 25% of specimens. Separately or in variable combination, decidualized tissue, hemorrhagic tissue, fibrinous material, and membranous tissue amounted to about 25% of mentions. There were three cases of primigravida while there were 9 cases of multigravida. Time elapsed since delivery was less than 7 days in 10 patients while it was 20 days and 24 days in 1 patient each. The findings of superficial myometrium in curetted tissue may be due to edema and neighboring inflamed endometrium. The histological features consistent with the Arias-Stella reaction may be demonstrated up to eight weeks in the postpartum endometrium. Involvement of sub-decidual tissue may suggest varying degrees of placental invasion. Very rare chances of intra-placental choriocarcinoma or AV malformation could be diagnosed in some cases.

**Graph 1: Histopathological findings**



**Table 1: Gravida**

PARITY	NO. OF PATIENTS		
PRIMI	3		
MULTI	9	3 with previous VD	6 with previous Caesarean Section

**Table 2: Time elapsed since delivery**

TIME ELAPSED SINCE DELIVERY	NO. OF PATIENTS
< 7 DAYS	10
20 DAYS	1
24 DAYS	1

### Discussion

Secondary postpartum hemorrhage (SPPH) is characterized as any notable vaginal bleeding that takes place between 24 hours following the delivery of the placenta and within the subsequent six weeks. The reported incidence of SPPH ranges from 0.2% to 0.8%, making it one of the leading causes for readmission post-delivery. While the prevalence of SPPH is relatively low compared to primary postpartum hemorrhage, it poses significant risks if diagnosis and treatment are not timely. Research indicates that up to 22% of individuals experiencing SPPH may necessitate intensive care unit admission. Given that SPPH typically manifests during the second week postpartum, coinciding with the period when most patients are discharged from the hospital, this timing may hinder prompt identification of the condition.<sup>10-13</sup> Hence; the present study was conducted for assessing histological Spectrum of Retained Products evacuated after Secondary PPH.

Inflammatory changes were mentioned 50% of the time, whilst placental tissue was encountered in 25% of specimens. Separately or in variable combination, decidualized tissue, hemorrhagic tissue, fibrinous material, and membranous tissue amounted to about 25% of mentions. There were three cases of primigravida while there were 9 cases of multigravida. Time elapsed since delivery was less than 7 days in 10 patients while it was 20 days and 24 days in 1 patient each. The findings of superficial myometrium in curetted tissue may be due to edema and neighboring inflamed endometrium. The histological features consistent with the Arias-Stella reaction may be demonstrated up to eight weeks in the postpartum endometrium. Involvement of sub-decidual tissue may suggest varying degrees of placental invasion. Very rare chances of intra-placental choriocarcinoma or AV malformation could be diagnosed in some cases. Babarinsa IA et al explored the possible yield of pathology requests on tissue obtained in uterine evacuation for secondary postpartum hemorrhage (SPPH) at our institution over five years. From the 53 tissue samples reported, they clustered 114 descriptive mentions of phrases and terms and categorized them based on parent tissue, changes, and background cellularity. Inflammation and/or inflammatory changes were mentioned 18.4% of the time, no tissue was identified in 5.8% of instances, whilst placental tissue was encountered in 9.7% of specimens. Separately or in variable combination, decidua, decidualized tissue,

hemorrhagic tissue, fibrinous material, and membranous tissue amounted to 48.5% of mentions. There was no correlation between aggregate tissue measurements and time elapsed since delivery. Nearly half of the content of histological reports on tissue evacuated SPPH patients were consistent with expected findings on a postpartum endometrium.<sup>14</sup> Chainarong N et al compared the etiologies of secondary postpartum hemorrhage following cesarean delivery versus vaginal delivery. The incidence of secondary postpartum hemorrhage was 0.21%. The median onset of bleeding was 12 days after delivery. Fifty-two percent of the deliveries were by cesarean section. The most common etiology of secondary postpartum hemorrhage was endometritis (67.5%), followed by retained placental tissue (21.1%). Women who delivered by cesarean section had a higher rate of endometritis (80.0% vs 53.4%) and a lower rate of retained placental tissue (10.8% vs. 32.8%) than those who delivered vaginally. Surgical intervention included uterine evacuation in 29.3% and hysterectomy in 8.1% of the patients. Five percent of women were treated by embolization. Endometritis was the most common cause of secondary postpartum hemorrhage.<sup>15</sup>

### Conclusion

Almost half of the content of histological reports on tissue evacuated after Secondary PPH were consistent with expected findings of a postpartum endometrium that is Inflammatory. In about a quarter of them remnant of placental tissue was mentioned. SPPH was reported more in Multigravidas than Primis, more so in previous Caesarean Sections. There was no relation between Histopathological specimen and Time elapsed since delivery. This suggests that evacuation of uterus in SPPH often amounts to a therapeutic rather than diagnostic procedure.

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