

A Retrospective Study on Association between Abnormal Uterine Bleeding and Caesarean Scar**Meena Mehta**

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Conflict of interest: Nil

Abstract:**Aim:** The purpose of this investigation was to describe the various hysteroscopic findings of previous caesarean delivery scar defects (PCDS) and to assess their association with abnormal uterine bleeding.**Methods:** This was a retrospective study of patients with abnormal uterine haemorrhage following caesarean delivery. To determine the cause of the symptoms, transvaginal ultrasound and hysteroscopy were utilised, and the gynaecological symptoms and hysteroscopy findings were documented. The correlations between hysteroscopic findings and abnormal uterine haemorrhage were assessed.**Results:** Ninety-six patients (82.8%) presented with intermenstrual haemorrhage. On hysteroscopy, the most frequent findings of scar defects were increased local vascularization (74.1%) and oozing areas (47.4%). Intermenstrual haemorrhage was significantly associated with increased local vascularization on the defect ($p=0.048$).**Conclusion:** This investigation classified the various PCDS findings observed during hysteroscopy. The relationship between increased local vascularization on the scar defect and intermenstrual haemorrhage was statistically significant.**Keywords:** Cesarean scar, uterine bleeding, obstetric procedure, isthmocele, Gynecological symptoms.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Caesarean section (CS) is the most common obstetric procedure [1] performed. Each year, millions of women undergo this procedure. Multiple studies on isthmocele, also known as caesarean scar defect, have been published recently. It indicates inadequate myometrium recovery at the site of uterine incision. Ultrasonography is frequently used to detect isthmocele [2]. The prevalence of isthmocele has been reported to range from 6.9 to 69.0%, depending on the study population and evaluation method [2, 3]. Patients are not always symptomatic, but isthmocele has been linked to numerous gynaecological symptoms such as abnormal uterine bleeding (AUB) [4, 5, 6]. Specifically, postmenstrual spotting has been linked to isthmocele and has been found to correlate with the defect's size [3, 5, 6]. Other symptoms include chronic pelvic pain, dysmenorrhea, and protracted menstrual cycles [3, 4, 5, 7].

In the majority of studies evaluating the symptoms associated with isthmocele, selection bias is likely to have played a role, as these studies primarily consisted of symptomatic women. This may have led to an exaggerated estimate of the prevalence of

postmenstrual spots. In fact, a retrospective study found no association between isthmocele and AUB, but AUB was associated with CS when compared to women with only a vaginal delivery history [8]. We found only two prospective studies that investigated the symptoms associated with isthmocele in arbitrarily selected populations [5, 6].

Bij de Vaate et al. [4] reported a twofold increase in the prevalence of postmenstrual spotting among women with isthmocele versus women without isthmocele. In the study by Bij de Vaate et al. [5], the prevalence of postmenstrual spotting was 28.9% among women with isthmocele versus 6.9% among women without the defect. Symptomatic women with isthmocele are frequently treated with invasive surgical techniques [7, 8], despite the paucity of large prospective trials examining the clinical outcome of isthmocele. In this study, we classified the hysteroscopic findings and assessed their association with abnormal uterine haemorrhage.

Methods

We conducted this retrospective investigation at Rajendra Institute of Medical Sciences, Ranchi,

India, between February 2020 and March 2022. After a caesarean section, patients with abnormal uterine haemorrhage were given TVS and hysteroscopy to determine the cause of the bleeding. Hysteroscopy and TVS were performed between the eighth and fifteenth day of the menstrual cycle, after the conclusion of the menstrual flow. Intermenstrual bleeding, excessive menstrual bleeding, and postcoital bleeding were the abnormal bleeding conditions. Intermenstrual bleeding was defined as persistent mild vaginal bleeding between periods, and heavy menstrual bleeding was defined as soaking a pad or tampon more frequently than every two hours.

We excluded patients who were lost to follow-up, those with indistinct examination images, those with a history of concomitant gynecologic cancer, and those whose bleeding was caused by other endometrial lesions identified under hysteroscopy, such as submucosal fibroids or endometrial polyps. Included were a total of 116 premenopausal . We used normal saline as the uterine distention medium under 80-100 mmHg of pressure. During the procedure, the patients were situated in the lithotomy position without anaesthesia or analgesia. The patient's fundamental medical history, gynaecological symptoms and hysteroscopic

findings were documented. Following the diagnosis, we provided patients with multiple treatment options and informed them of the risks and benefits of hormone therapy and surgical interventions.

According to the sample size and distribution of the parameters, we used Fisher's exact test and the chi-square test to analyse the relationships between PCDS findings and symptom parameters. SPSS software for Windows, version 19 (SPSS Inc., Chicago, IL, USA) was used to analyse the data. A p value of less than 0.05 was considered statistically significant for two-sided tests.

Results

We included 116 women with an average age of 39.5 years (range: 24-53 years). The median number of caesarean deliveries was 1.8 (range: 1-4). Table 1 shows that 78 patients (67.2%) had an anteflexed uterus. PCDS was detected by TVS in 33.6% of patients. Eightytwo percent of the patients exhibited intermenstrual haemorrhage. Table 1 displays that 41 patients (35.3%) had excessive menstrual bleeding, 6 (5.2%) had intermittent supra-pubic tenderness, 14 (12.1%) had dysmenorrhea, and 5 (4.3%) had postcoital bleeding.

Table 1. Patient characteristics and gynecological symptoms

Basic characteristics	Frequency/Mean
Age	39.5
Number of CS	1.8
Anteflexed Uterus	78
Gynecological symptoms	
Intermenstrual bleeding	96
Heavy menstrual bleeding	41
Supra-pubic tenderness	6
Dysmenorrhea	14
Postcoital bleeding	5

Increasing local vascularization was the most common hysteroscopic finding for scar defects (74.1%). On the defects, we also discovered various vascular patterns, including a vascular tree with branches, a mosaic pattern of vascular distribution, and irregular spiral vessels. Six patients (5.2%) had active bleeding at the defect, and 55 patients (47.4%) had oozing areas on the defects. Both findings indicated haemorrhage from scars. We distinguished between active haemorrhage and oozing based on velocity. In instances of oozing scars, blood steadily leaked from the vessel's edge. Eight (6.9%) of the patients had polypoid lesions, and eleven (9.5%) of the defects contained blood residue.

Under hysteroscopy, haemorrhage from the PCDS (active bleeding and oozing) was detected in 61 patients (52.6%). Blood traces were discovered in

the defects of eleven patients. 60 of 96 women with intermenstrual bleeding (85.7%) and 10 of 20 women without intermenstrual bleeding (50%) had blood in the PCDS ($p=0.324$). Increased local vascularization on the scar defect was the most common hysteroscopic finding, and it was significantly associated with intermenstrual haemorrhage ($p = 0.048$).

Discussion

TVS is a straightforward and non-invasive tool used in outpatient departments. Women who received a low transverse caesarean section had a scar defect detection rate of 37% using TVS, compared to 59% using sonohysterography and 58% using hystero-graphy, according to a previous study [9]. Comparable to previous research, the detection rate of scar defects under TVS was 33.6% in the current investigation. Therefore, we

recommend using TVS for Dysmenorrhea 14 Postcoital bleeding 5 general evaluations, but hysteroscopy should be used to confirm haemorrhage from PCDS. Several studies have described caesarean scar defects detected by ultrasonography and sonohysterography [1, 2, 5, 6, 8], but fewer studies have reported the specifics of caesarean scar defects detected by hysteroscopy [10]. In this study, we categorised scar defects into groups based on observations made during daily practise. These groups included increased local vascularization, seeping spot, active bleeding, polypoid lesions, and blood residue.

The typical symptom of aberrant uterine bleeding associated with PCDS was the passage of dark red or brown discharge after the cessation of the majority of menstrual flow. Among the possible mechanisms are impaired blood drainage [11] and in situ production [12]. The optimal time to perform hysteroscopy on patients with intermenstrual bleeding is likely at the conclusion of the main menstrual cycle, so that the source of the blood can be directly observed. The relationship between these potential mechanisms and symptoms remains ambiguous. Some patients who had a caesarean section did not exhibit aberrant uterine bleeding symptoms or scar defects, and not all patients with scar defects experienced intermenstrual bleeding. The majority of patients who visited our department had intermenstrual haemorrhage, which is consistent with the majority of previous studies. Possible causes of the symptoms were the in situ production and the impaired blood drainage. During the hysteroscopy examination, which was performed after the conclusion of the main menstrual cycle, 52.6% of our patients were found to have PCDS bleeding (including oozing and active bleeding). 9.5% of patients who did not have active haemorrhage had blood residue in their pouches. In addition, increased local vascularization on the defect was significantly linked to menstrual haemorrhage. These results corroborate the concept of in situ production and degraded drainage.

Hormone therapy [1, 13] and surgical interventions such as hysteroscopic resection and repair through laparoscopy or a vaginal approach can be used to manage the symptoms. These procedures have the potential to yield positive results, but they are not without risk. [14]

Conclusion

As this was a retrospective study, patients with indistinct images or incomplete data were excluded. To comprehend the association between specific hysteroscopic findings and PCDS-related gynecologic symptoms, additional prospective studies are required. This is, to the best of our knowledge, one of the first investigations to

classify PCDS findings under hysteroscopy. Increased local vascularization on the defect was found to be significantly associated with menstrual haemorrhage.

More prospective studies are required to better comprehend the mechanisms underlying PCDS-related abnormal uterine haemorrhage.

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