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Original Research Article

Association of Cesarean Scar Defect with Abnormal Uterine Bleeding: The Results of a Prospective Study

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Abstract:

Background: CSD, also known as isthmocele, is a disorder in which the myometrium fails to repair after a caesarean section. Recent studies link CSD to abnormal uterine bleeding (AUB), notably postmenstrual spotting. Most studies have focused on symptomatic women, which may create selection bias. This study examines CSD and AUB in a prospective, unselected sample.

Objective: To assess the prevalence of CSD in women with a history of cesarean section and to evaluate the association between CSD and AUB, with a specific focus on postmenstrual spotting.

Methods: From January 10 to June 30, 2024, Jawahar Lal Nehru Medical College & Hospital in Bhagalpur, Bihar, conducted this prospective study. The study included 60 women with AUB and a history of caesarean section, 10 per month. All subjects were screened for CSD by transvaginal ultrasound. Patients with and without CSD were compared for AUB symptoms like postmenstrual spotting, delayed bleeding, and dysmenorrhea.

Results: Participants with CSD were 63.3% (38/60). Participants with CSD reported 92% postmenstrual spotting, compared to 45% without CSD, indicating a significant correlation ($p < 0.01$). Prolonged menstrual bleeding and dysmenorrhea were not significantly different across groups ($p > 0.05$). The results show that CSD is strongly linked to postmenstrual spotting in AUB women.

Conclusion: Women with a history of caesarean section have a higher risk of postmenstrual spotting due to CSD. This suggests that women with irregular uterine bleeding, especially postmenstrual spotting, should be evaluated for CSD to enhance therapy and outcomes.

Keywords: Cesarean scar defect, abnormal uterine bleeding, postmenstrual spotting, isthmocele

Introduction

Caesarean section (CS) represents the most frequently conducted obstetric procedure globally, with millions of women undergoing this surgery each year [1]. Recent years have seen a growing focus on the complications related to caesarean sections, particularly the development of caesarean scar defects, referred to as isthmoceles [2,3]. Isthmoceles are defined as pockets or indentations resulting from insufficient healing of the myometrium at the location of the uterine incision. The prevalence of isthmoceles, frequently identified through ultrasonography, varies significantly across studies, with reported rates ranging from 6.9% to 69%, contingent upon the population and evaluation methods employed [4]. Although numerous women with isthmoceles remain asymptomatic, a notable correlation exists between isthmoceles and several gynaecological symptoms, especially abnormal uterine bleeding (AUB) [5]. Postmenstrual spotting is a significant symptom associated with the presence and size of the defect, in addition to other symptoms such as chronic pelvic pain, dysmenorrhea, and extended menstrual periods. Previous research on the association between isthmocele and abnormal uterine bleeding (AUB) frequently includes symptomatic women, which may lead to an overestimation of the prevalence of postmenstrual spotting in this population. In contrast, certain studies suggest that AUB may be more generally linked to caesarean delivery rather than exclusively associated with isthmocele presence [6-8].

Limited prospective studies have investigated isthmocele-related symptoms in randomly selected populations. Research conducted by Vaate et al. and Van der Voet et al. indicates a higher prevalence of postmenstrual spotting in women with isthmocele relative to those without the condition [9]. Invasive treatments are frequently employed to manage symptomatic isthmoceles;

however, there is a scarcity of comprehensive prospective studies evaluating their clinical outcomes [10]. This study aims to prospectively examine the relationship between isthmocele and abnormal uterine bleeding, with an emphasis on postmenstrual spotting in a large, unselected cohort. This approach aims to elucidate isthmocele's significance in abnormal uterine bleeding (AUB) and its implications for gynaecological health, potentially guiding treatment strategies and enhancing care for women impacted by this condition.

Methodology

Type of Article: This study is an Original Research Article conducted as a prospective study to investigate the association between cesarean scar defect (CSD) or isthmocele and abnormal uterine bleeding (AUB), specifically focusing on postmenstrual spotting.

Total Number of Patients: A total of 10 patients per month were enrolled in the study. Over the study period, this approach yielded an estimated sample size of 60 patients.

Place and Time of Study: This study was conducted at Jawahar Lal Nehru Medical College & Hospital in Bhagalpur, Bihar, India. Data collection and patient evaluations took place between 10th January 2024, and 30th June 2024.

Inclusion Criteria: Women presenting with abnormal uterine bleeding (AUB) who had a history of prior cesarean section were included in the study. Patients were required to be of reproductive age and have had at least one cesarean delivery.

Exclusion Criteria: Women with other known causes of abnormal uterine bleeding, such as hormonal disorders, uterine fibroids, or endometrial hyperplasia, were excluded to reduce potential confounding factors.

Data Collection and Evaluation:

1. **Patient History and Clinical Examination** Each patient underwent a detailed clinical history and gynecological examination to document prior cesarean deliveries, characteristics of abnormal uterine bleeding, and any other gynecological symptoms.
2. **Ultrasound Assessment**

   All participants underwent transvaginal ultrasound to assess the presence and dimensions of the caesarean scar defect (CSD). CSD was diagnosed through sonographic findings indicating myometrial thinning or indentation at the location of the prior caesarean incision.
3. **Symptom Correlation**

   Symptomatic findings, particularly postmenstrual spotting and the severity of AUB were assessed about the presence and dimensions of CSD identified via ultrasound.
4. **Statistical Analysis**

   The analysis investigated the relationship between CSD and AUB, with particular emphasis on postmenstrual spotting. Descriptive and inferential statistics were employed, with significance levels established at $p < 0.05$.

Results

Patient Demographics and Baseline Characteristics: 60 patients participated in the study, with 58 completing all necessary assessments. The average age of participants was 32 years, with a range spanning from 25 to 40 years. Each patient had a history of at least one prior caesarean section. The main presenting issue was abnormal uterine bleeding (AUB), particularly emphasising postmenstrual spotting as the most commonly reported symptom.

Table 1: Baseline Characteristics of the Study Population

Characteristics	Mean ± SD or n (%)
Total Patients	60
Age (years)	32.1 ± 4.2
Previous Cesarean Sections	
- One CS	42 (70%)
- Two or more CS	18 (30%)
Presenting Symptoms	
- Abnormal Uterine Bleeding (AUB)	60 (100%)
- Postmenstrual Spotting	45 (75%)
- Prolonged Menstrual Bleeding	18 (30%)
- Dysmenorrhea	15 (25%)

Table 1 presents a summary of the baseline characteristics of the study population. Seventy percent of participants had a history of one prior caesarean section, and all exhibited abnormal uterine bleeding (AUB). The predominant symptom linked to AUB was postmenstrual

spotting, observed in 75% of patients, which was followed by prolonged menstrual bleeding and dysmenorrhea.

Association of Cesarean Scar Defect (CSD) with Abnormal Uterine Bleeding (AUB): Ultrasound examinations identified cesarean scar defects (CSDs) in 38 out of the 60 patients (63.3%). Patients with CSD were more likely to report postmenstrual spotting compared to those without a detectable defect.

Table 2: Comparison of AUB Symptoms in Patients with and without Cesarean Scar Defect (CSD)

Symptom	Patients with CSD (n=38)	Patients without CSD (n=22)	p-value
Postmenstrual Spotting	35 (92%)	10 (45%)	<0.01
Prolonged Menstrual Bleeding	12 (32%)	6 (27%)	0.73
Dysmenorrhea	10 (26%)	5 (23%)	0.82

Table 2 presents a comparison of the prevalence of AUB symptoms among patients with and without CSD. A notable correlation exists between CSD and postmenstrual spotting ($p < 0.01$), with 92% of patients with CSD experiencing this symptom, in contrast to 45% of those without CSD. No statistically significant difference was observed in the incidence of prolonged menstrual bleeding or dysmenorrhea among the two groups.

The findings demonstrate a significant association between caesarean scar defect (CSD) and postmenstrual spotting in women with abnormal uterine bleeding (AUB), reinforcing the hypothesis that CSD may play a role in particular bleeding patterns. However, CSD does not significantly impact other symptoms, including prolonged menstrual bleeding or dysmenorrhea. The findings indicate that patients experiencing postmenstrual spotting following a caesarean section require evaluation for the presence of CSD.

Discussion

This prospective study demonstrates a significant correlation between caesarean scar defect (CSD) and abnormal uterine bleeding (AUB), especially postmenstrual spotting. This result is consistent with other studies that have identified similar associations, reinforcing the notion that CSD may be a primary factor in certain abnormal bleeding patterns in women with prior caesarean sections. Our study revealed that 63.3% of participants with a history of caesarean delivery exhibited CSD upon ultrasound examination. Ninety-two percent of individuals with CSD reported postmenstrual spotting, a result consistent with the findings of Vaate et al. and Van der Voet et al. [11,12]. Vaate et al. (2011) documented a two-fold increase in the prevalence of postmenstrual spotting in women with isthmocele relative to those without it. Additionally, Van der Voet et al. (2014) found a prevalence of 28.9% for postmenstrual spotting in women with CSD, compared to 6.9% in those without the defect. These findings contribute to the ongoing discourse surrounding the prevalence and symptomatic presentation of CSD. Research indicates that the prevalence of CSD exhibits significant variation, ranging from 6.9% to 69%, influenced by population characteristics and methodological approaches. Our findings indicate that 63.3% of the study population exhibited evidence of CSD. This indicates that CSD is prevalent among women with a history of caesarean section, particularly when employing sensitive detection techniques like transvaginal ultrasound.

We found a strong association between CSD and postmenstrual spotting, but no significant correlation with other symptoms like prolonged menstrual bleeding and dysmenorrhea. This aligns with Juhasz et al. (2016) [13], which suggests that the relationship between AUB and cesarean delivery may be linked to the cesarean section itself, affecting uterine function and integrity. Although menstrual spotting is common among women with CSD, the management of symptomatic isthmocele is still debated. Invasive treatments, such as hysteroscopic resection and laparoscopic repair, are often used for relief, but large prospective studies assessing their efficacy are lacking. Our study highlights the need to evaluate patients with postmenstrual spotting for CSD to guide management strategies and reduce unnecessary interventions [14,15].

The limitations of this study include a relatively small sample size and a single-center design, potentially impacting the generalisability of the findings. Furthermore, although our primary focus was on postmenstrual spotting as the main symptom, other variables, including the depth and length of the defect, were not examined in depth. Additional investigation in a larger, multi-center context is advised to confirm these results and evaluate the influence of various CSD characteristics on AUB symptoms.

Conclusion

This study confirms the link between caesarean scar defect (CSD) and postmenstrual spotting in women with a history of caesarean section. Considering the prevalence of CSD and its potential effects on quality of life, clinicians should include CSD in the differential diagnosis for women experiencing postmenstrual spotting. This

approach facilitates targeted management, which may enhance outcomes for this patient population.

References

1. Thurmond AS, Harvey WJ, Smith SA. Cesarean section scar as a cause of abnormal bleeding: diagnosis by sonohysterography. J Ultrasound Med. 1999;18(1):13-6.
2. Gubbini G, Casadio P, Marra E. Surgical hysteroscopic treatment of cesarean-induced isthmocele in restoring fertility: prospective study. J Minim Invasive Gynecol. 2008;15(2):172-5.
3. Florio P, Filippeschi M, Moncini I, Marra E, Franchini M, Gubbini G, et al. Hysteroscopic treatment of cesarean-induced isthmocele in restoring fertility: prospective study. J Minim Invasive Gynecol. 2011;18(2):234-7.
4. Ofili-Yebovi D, Ben-Nagi J, Sawyer E, Yazbek J, Lee C, Jurkovic D. Deficient lower-segment cesarean section scars: prevalence and risk factors. Ultrasound Obstet Gynecol. 2008 ;31(1):72-7.
5. Wang CJ, Huang HJ, Chao AS, et al. Cesarean scar defect: correlation between cesarean section number, defect depth, and postmenstrual spotting. Taiwan J Obstet Gynecol. 2011;50 (4):512-6.
6. Wang CB, Chiu WW, Lee CY, Sun YL, Lin YH, Tseng CJ. Cesarean section scar defect: correlation between the depth of the defect and menstrual bleeding. J Ultrasound Med. 2009 ;28(5):687-92.
7. Tanimura S, Suzuki K, Ushimaru Y, Takehara Y, Nakano-Kobayashi T. Clinical significance of cesarean scar defect in non-pregnant women. Ultrasound Obstet Gynecol. 2015;45 (4): 460-5.
8. Cacciatore B, Ramalingam U, Kuusela L, Joutsenlahti U, Perheentupa A. Cesarean scar defect as a potential cause of abnormal uterine bleeding detected by transvaginal ultrasound. J Obstet Gynaecol Res. 2009;35(1):98-103.
9. Donnez O, Donnez J, Orellana R, Dolmans MM. Cesarean scar defects: management of the isthmocele. Best Pract Res Clin Obstet Gynaecol. 2018;50:86-95.
10. Vervoort AJ, van der Voet LF, Hehenkamp WJ, Thurkow AL, Bijdevaate AJ, Huirne JA. Hysteroscopic resection of post-cesarean delivery niche. J Minim Invasive Gynecol. 2016; 23(5):856-62.
11. Vaate AJ, Linskens IH, Hehenkamp WJ, Thurkow AL, Van der Voet LF, Van der Slikke JW, et al. The prevalence of uterine scar defects in women with a history of cesarean section. Ultrasound Obstet Gynecol. 2011;37(4): 487-92.
12. Van der Voet LF, Vervoort AJ, Hehenkamp WJ, Thurkow AL, van Kesteren PJ, Huirne JA. Postmenstrual spotting and cesarean section scar defect (isthmocele) in relation to quality of life and sexual activity. Ultrasound Obstet Gynecol. 2014;43(4):461-5.
13. Juhasz G, Gyamfi C, Gyamfi-Bannerman C. Correlation between cesarean scar defect and abnormal uterine bleeding. J Obstet Gynaecol. 2016;36(6):737-41.
14. Naji O, Abdallah Y, Bij de Vaate AJ, Smith A, Pexsters A, Stalport C, et al. Standardized approach for imaging and measuring cesarean section scars using ultrasonography. Ultrasound Obstet Gynecol. 2012;39(3):252-9.
15. Wang Y, Cheng Z, Dai H. Cesarean scar defect in non-pregnant women and its relation to postmenstrual spotting. Int J Gynaecol Obstet. 2015;128(3):244-7.