ASSOCIATION BETWEEN CESAREAN SCAR DEFECT AND ABNORMAL UTERINE BLEEDING

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ABSTRACT:

Background: The complications related to CS have increased. One of the known complications is a defect of uterine wall at the site of Cesarean section (CS) scar called isthmocele or niche. It has been associated with adverse pregnancy outcome, higher risk of complications during gynecological procedures as well as clinical symptoms such as post menstrual spotting. A common symptom reported to be associated with the presence of a niche is reported a high prevalence of niches in women with abnormal uterine bleeding (AUB), including prolonged menstruation or postmenstrual spotting.

Key words: Cesarean Scar Defect, Abnormal Uterine Bleeding (AUB).

I. CESAREAN SCAR DEFECT (NICHE)

The lifetime prevalence of Over the last few decades Caesarean section (CS) rates have continued to rise. The World Health Organization estimates the optimal CS rate at 15%. The increasing CS rate has stimulated an interest in the potential long-term morbidity of CS scars (1).

Recently, researchers have observed the presence of a niche at the site of the cesarean scar. The term ‘niche’ is a sonographic finding describes the presence of anechoic area within the myometrium of the lower uterine segment, reflecting a discontinuation of the myometrium at the site of incision of a previous cesarean section. Alternative terms for a niche are cesarean scar defect deficient cesarean scar diverticulum, pouch and isthmocele (2).

Several studies have demonstrated that a niche may be responsible for abnormal uterine bleeding in women with a previous cesarean section. However, most studies included women with gynecological complaints such as dysmenorrhea, chronic pelvic pain and dyspareunia (3).

Thurmond et al. postulated the hypothesis that a niche in the Caesarean scar could be a cause of abnormal bleeding due to the collection of menstrual blood in a uterine scar defect causing postmenstrual spotting (4).

Morphological abnormalities in the Cesarean scar can be visualized using transvaginal sonography (TVS), gel or saline instillation sonohysterography (GIS or SIS) or hysteroscopy. A wedge-shaped defect in the uterine wall following CS was first described using hysterosalpingography in 1961. Niches are defined as indentations of the myometrium of at least 2 mm (5).

In addition to the gynecological symptoms, niches may in theory, impair subsequent fertility. Intrauterine fluid during the ovulation or mucus and blood accumulation in the cervix in association with a niche may hamper the penetration of sperm cells or impair embryo implantation. A recent meta-analysis including 85728 women reported that a CS on average reduced the probability of subsequent pregnancy by 10% [relative risk (RR) 0.91, 95% confidence interval (CI) (0.87–0.95)] in comparison to a vaginal delivery (6).

The presence of a niche may be associated with obstetric complications in future pregnancies. A Cesarean scar pregnancy is a pregnancy located at the site of a niche, outside the uterine cavity and is completely surrounded by
myometrium or fibrous tissue of the scar. Although this is a very rare event, it is highly relevant to recognize this type of ectopic pregnancy. It can lead to uterine scar rupture and life-threatening hemorrhage; in particular if a vacuum curettage is performed in case it is misdiagnosed as an ongoing miscarriage (1).

Other obstetric complications include malplacentation and possibly increased risk of unsuccessful vaginal birth after CS resulting in an intrapartum emergency CS (7).

Given the association between a niche and gynecological symptom, obstetric complications (such as niche pregnancy and malplacentation) and potentially with subfertility, it is important to elucidate the etiology of niche development after CS in order to develop preventive strategies (7).

Cesarean section scar as cause of abnormal vaginal bleeding

Abnormal vaginal bleeding is most often caused by a hormone imbalance. Vaginal bleeding also is caused by pregnancy, polyps, myomas, endometrial hyperplasia and cancers of the cervix or endometrium (8).

In absence of these causes still post cesarean section scar defect will be the cause of vaginal bleeding. In 1995, Morris described the presence of anatomic and histologic distortions as well as scar tissue in the anterior isthmus at the place of the previous cesarean scar in uterine samples obtained after hysterectomy in women with abnormal uterine bleeding. These women underwent hysterectomy, even in the absence of identifiable uterine abnormalities (apart from the presence of scar tissue in the lower segment), because they had continued bleeding problems after several medical treatment attempts. In 1996, some group described the presence of an anatomic defect at the site of the previous CS scar on transvaginal sonography in 20 women with abnormal uterine bleeding. In 1999, using sonohysterography, Erickson and Van Voorhis (14) and Thurmond et al (15). reported findings of diverticula on the anterior wall of the uterine isthmus at the expected site of previous CS scar in 3 and 9 women, respectively (9).

The lack of coordinated muscular contractions occurs around the cesarean scar, allowing the defect to collect menstrual debris. Subsequently, the debris leaches out through the cervix for several days after the majority of menstrual flow has ceased. The blood that accumulates in the pouch may be produced insitu or may remain there only because of impaired drainage (4).

Clinical examination:
The following points are of importance in assessing the condition of the scar:

- Inspection of the prior abdominal cesarean section scar.
- Degree of uterine distension.
- Clinical pelvic assessment.

Hysteroscopic Findings in Abnormal Uterine Bleeding.

Special investigation:

1. Hysteroscopy:

Indentations in the anterior wall of the lower uterine segment have been detected during hysteroscopy performed after caesarean section. This corresponds to the diverticuli seen in the lower uterine segment in hystero gram of these patients (10).
Figure (1): Hysteroscopic image of previous cesarean delivery scar (PCDS) defect (arrows) located on anterior uterine segment behind cervical inner os (11).

Figure (2): Niche surface during hysteroscopic evaluation of proximal part of the niche, several small vessels that easily bleed can be visualized (12).

Figure (3): Sonohysterographic visualization of a niche. The arrow indicates a disruption of the myometrium in the anterior wall of the uterus over a distance of approximately 15 mm (13).

Saline is infused into the uterus during sonographic evaluation to distend the uterus and delineate the endometrial cavity's contours, detection of a "niche" ranging from 2.5 to 11.5 mm in the anterior uterine wall of all women who had previously delivered by cesarean, also risk of uterine dehiscence and rupture might be related to the depth of the niche or the thickness of the overlying myometrium (3).

In another study, niches were identified by SCSH following a cesarean section in about 60% of patients. This makes them too common to show a clear relationship between a niche and uterine rupture (13).

In comparison with hysterosalpingographic diagnosis of cesarean scar defects, a similar rate of cesarean section scars (57.5%) via saline contrast sonohysterography. One clear limitation of hysterosalpingography is the inability to precisely measure myometrial thickness and the size of the scar, both of which can be readily characterized via sonohysterography (13).
Abnormal hysteroscopic findings of endometrial cavity:

Exploration of the uterine cavity started at the level of internal os and proceeded systemically to evaluate the scar of previous section to detect the presence of the niche and its appearance. Detection of a cesarean scar appearance began with visualization the scar site, through the stoma near the level of the internal os.

Importantly, the niche appeared as a depression or diverticulum in myometrium of the scar site with the end cervical canal or above it. Cesarean scar defect was visualized to assess if there was blood or vascularized area within it as either present or absent. Cesarean scar seen by hysteroscopy as one of these types:

- **Smooth cesarean scar**: Area of a pale scarred, fibrosed line at the site of previous uterine incision of CS.

- **Hypertrophied scar**: Like the smooth scar but with increased thickness and raised fibrosis.

- **Hypertrophied vascularized scar**: appears like hypertrophied scar but covered with small blood vessels on its surface.

- **Clear niche**: Appears as depression or diverticulum in the myometrium with thin or devoid of endometrium at the scar site containing clear fluid.

- **Vascularized niche**: Appears as a Niche filled by blood vessels and capillaries.

- **Blood-filled niche**: Appears as depression or isthmocele in the myometrium of the scar site and containing altered blood, brownish in color in its cavity.

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**REFERENCES:**