Original Article

Evaluation Of The Caesarean Scar Niche In Women With Previous Caesarean Section 2D Saline Sonohystrography Versus 3D Saline Sonohystrography

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Abstract

A niche is defined as any uterine dimpling measuring 2mm or more at the site of cesarean scar and could be visualized by ultrasound. the cesarean-induced isthmocele may lead to the occurrence of gynecologic symptoms such as abnormal uterine bleeding(AUB) secondary to intermittent passage of retained menstrual blood within the cesarean scar defect (CSD), pelvic pain, and sterility. The worldwide prevalence of post-cesarean scar niche out of all cesarean sections ranges from 19% to 84%, but this may be underrated because of asymptomatic patients and a lack of clinician awareness. Sonohysterography (SHG) identified a higher number of patients with isthmoceles (56%–78%) than transvaginal ultrasound (24%–69%) . There is an increasing tendency for cesarean delivery worldwide so several obstetric complications such as placenta accreta, scar dehiscence, rupture uterus especially in trial of birth after cesarean section and ectopic scar pregnancy due to inappropriate healing. Niche with total score between 0 and 2 is probably clinically irrelevant and other specific features should be investigated but total score>2 indicates potentially clinically relevant features of uterine niche and future pregnancies should be monitored closely.

Key words Caesarean scar niche, 2D saline sonohystrography, 3D saline sonohystrography.

INTRODUCTION

A niche also called An isthmocele, cesarean scar defect, cesarean scar dehiscence, uterine diverticulum, pouch, or sacculation. It is a pouch like defect of the anterior uterine isthmus at the site of a prior cesarean section, ***(Gubbini et al.,2007)*** which was first described by Morris in 1995 ***(Morris et al.,1995).***

A niche is defined as any uterine dimpling measuring 2mm or more at the site of cesarean scar and could be visualized by ultrasound ***(Jordans et al.,2019)***.

Therefore, the cesarean-induced isthmocele may lead to the occurrence of gynecologic symptoms such as abnormal uterine bleeding(AUB) secondary to intermittent passage of retained menstrual blood within the cesarean scar defect (CSD), pelvic pain, and sterility ***(Morris et al.,1995) & (Wang et al.,2009)***

The first scar defect ever reported was in 1975 when Stewart,et al who noted that preoperative historiography or pelvic arteriography might help with diagnosis and that the uterus could be saved by excision of the lower segment scar ***(Stewart et al.,1975).***

The worldwide prevalence of post-cesarean scar niche out of all cesarean sections ranges from 19% to 84%, but this may be underrated because of asymptomatic patients and a lack of clinician awareness ***(Bij et al.,2014)***.

Sonohysterography (SHG) identified a higher number of patients with isthmoceles (56%–78%) than transvaginal ultrasound (24%–69%) as noted by ***(van der Voet et al..2014)***

There is an increasing tendency for cesarean delivery worldwide so several obstetric complications such as placenta accreta, scar dehiscence, rupture uterus especially in trial of birth after cesarean section and ectopic scar pregnancy due to inappropriate healing.

World Health Organization issued a statement warning about the high rate of cesarean sections and recommending a maximum 15% rate of surgical intervention ***(Robson et al., 2017).***

Despite this, the United States reported an increase of 50% in cesarean sections from 1996 to 2007; and other nations such as Brazil reported an overall cesarean section rate of 45% ***(Barber et al.,2011)***

In Egypt, the past decade has seen a precipitous growth in the prevalence of CS with the most recent Egypt Demographic and Health Survey (EDHS) documenting a CS rate of 52%, which suggests that cesarean delivery might be overused or used for inappropriate indications. ***(Barros et al.,2011)***

In the UK it has been reported over 26%, but in some countries more than half of births involve the procedure: in the Dominican Republic over 58% of babies are presented this way, while in Egypt the figure is 63% when looking just at births in institutional contexts ***(Davis et al.,2018)***.

Many patients with uterine niche are asymptomatic, and patients might consult with different physicians before the right diagnosis is found.

The most frequent complaint relates to intermittent postmenstrual bleeding because the niche act as a reservoir collecting blood during menstruation with irregular menses that can run for 2 to 12-days ***(Tower et al.,2013).***

Various sources have described uterine niche as a cause of infertility, stating deficient sperm motility and implantation. Pain and dysmenorrhea are general symptoms common to numerous gynecologic causes ***(Tulandi et al.,2016)***.

The relationship between uterine niche and pain is not clear but could be linked to contractions caused by continuous efforts of the uterus to evacuate the contents of the isthmocele. Wang et al found a significant relationship among dysmenorrhea, the breadth of the defect, and abnormal bleeding infertility has been reported in the literature with a high prevalence***.(Florio et al.,2012)***

The presence of blood in the isthmocele could affect the cervical mucus and sperm quality, obstruct sperm transport and make embryo implantation more difficult, therefore impairing fertility. Several studies have evaluated the fertility outcomes after isthmocele treatment demonstrating that the repair of the defect is associated with high rates of restoring fertility. ***(Florio et al.,2012)***

Interpretation: niche with total score between 0 and 2 is probably clinically irrelevant and other specific features should be investigated but total score>2 indicates potentially clinically relevant features of uterine niche and future pregnancies should be monitored closely.

*Estimated based on automatic calculation (SonoAVC), manual calculation using (VOCAL) preferentially using rotation step ≤15◦,

or manual calculation based on three diameters (length×depth×width×0.52). Thickness of residual myometrium above main niche +Supplementary features ***(Ludwin et al.,2017)***

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