Cesarean section uterine scar dehiscence - A review

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Cesarean section uterine scar dehiscence is a rare but important complication of Lower segment cesarean section (LSCS); one of the commonest performed operations. The presentation of the patient can be subtle with abnormalities in menstruation or with features of dyspareunia and secondary infertility. Sometimes the dehiscence can present with features of peritonitis (generalized/localized) and even sepsis. In any circumstance a high index of suspicion should be present to identify this condition with modalities like the transvaginal ultrasonography or the MRI scan. Once confirmed treatment can be done conservatively by antibiotic cover and repair using open or laparoscopic techniques. If extensive infection, endomyometritis or intrabdominal abscess exist then hysterectomy is the best form of treatment especially in women who are not planning further pregnancies. This review article highlights all the aspects of uterine scar dehiscence based on evidences collected from studies and case reports.

Keywords: cesarean section; uterine scar dehiscence; transvaginal ultrasonography; conservative treatment; hysterectomy

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Introduction

Cesarean section uterine scar dehiscence (CSD) is a rare but notable complication of Lower segment cesarean section (LSCS) surgery. Underlying defects in the uterus like a cesarean scar are implicated in most circumstances. The incidence of cesarean section scar defect reportedly ranges between 6.6 % to 69 % with variations mainly due to absence of criteria for the CSD [1-4]. Meta-analysis reports have shown the incidence of cesarean scar dehiscence to be around 1.9 %. [8]

Ofili-Yebovi et al found uterine scars in 99.1% of patients who had undergone cesarean section surgery, but 19.4% had a defect in their scars; 9.9% of the CSDs were severe, defined as the loss of >50% of myometrial mantle at the scar level. [5] Other studies have reported rates of CSD between 0.6% and 3.8% [6, 7]. Incidence of Uterine scar dehiscence irrespective of cause is around 0.6 % worldwide [9].

Cause

The cause for a uterine scar dehiscence is based on the etiology behind the uterine scar defect or any event that would predispose the cesarean scar to dehisce. Underlying anatomical defects in the uterus which would have been corrected prior to pregnancy like uterine septum or fibroid uterus may weaken the uterus and the resultant scar of the cesarean section.

In cesarean sections, risk of rupture in classical (vertical) incision in subsequent pregnancies is greater with the vertical incision as compared to the transverse incision. Risk factors for uterine rupture include myomectomy, septoplasty, metroplasty, trauma, congenital uterine anomalies (especially...
ectopic pregnancy in the rudimentary horn), inadequate treatment of endometriosis, placental abruption, and mid-forceps delivery. Sometimes postpartum ruptures occur in patients giving birth by vaginal delivery following previous cesarean sections [11].

Typical important causes would be previous lower segment cesarean section, classical cesarean section, previous uterine trauma, congenital anomaly, abnormal placenta implantation and inappropriate oxytocin administration [9,10]. Reported risk factors applicable to many patients would be nulliparity, diabetes, emergency surgery, infection, and incision placed too low in the uterine segment [12].

Types

Uterine dehiscence is of 2 types - complete and incomplete dehiscence. In incomplete uterine dehiscence, the myometrium is disrupted but the serosa is intact. Full thickness tears of uterine wall result in complete uterine ruptures. These ruptures mostly occur at the level of previous cesarean section scars. Compared to complete uterine rupture, uterine dehiscence has much lower maternal and neonatal morbidity [12].

Presentation

Cesarean scar dehiscence can present in multiple ways. The presentation may be silent in many, but may cause symptoms like dysmenorrhea, inter menstrual bleeding, irregular genital bleeding, chronic pelvic pain, dyspareunia and secondary infertility [14,15]. In a 3-year study, Wang et al found that among the 293 patients diagnosed with CSD by transvaginal sonography, the most common symptom was intermenstrual spotting (64%), followed by dysmenorrhea (53%), chronic pelvic pain (40%), and dyspareunia (18%) [13,16].

During labor symptoms of eminent uterine rupture would include vaginal bleeding, sharp pain between contractions, abdominal pain or tenderness, recession of the fetal head, bulging under the pubic bone and onset of sharp pain at the site of previous scar [17,18].

Uterine scar dehiscence can thence occur either immediately after childbirth or some may have presentation after about 2-4 weeks of delivery. Presentation can be with post partum hemorrhage, endomyometritis and peritonitis (generalized/localized). Once peritonitis occurs as a result, sepsis may ensue risking the life of the patient [19].

Rare and unusual presentations have been reported in associations with wound infections, secondary PPH, concurrent postpartum uterine and abdominal wall dehiscence, site of implantation for ectopic pregnancy, etc. Infections with Streptococcus anginosus and Staphylococcus aureus have been reported also indicating the wide spectrum of infection possible in such a circumstance.

Following table shows the incidence of CSD in various studies/ case reports:

<table>
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<tr>
<th>STUDY</th>
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Investigations and Diagnosis

Among the methods for detecting CSD, TVUS (transvaginal ultrasonography) and SIS (saline infusion hysteroscopy) are the simplest and most useful [21,22]. In the TVUS, the CSD can be detected as a defect appearing as a triangular or dome-shaped echo-free space, which has been referred to by Monteagudo et al. as a “niche”. In addition, Gubbini et al [20]. named it “isthmocele,” whereas for Regnard et al., a niche with a depth accounting for 80% or more of the muscle layer in the anterior wall of the uterus was referred to as “dehiscence” [23]. Performing SIS allows the TVUS results to be clearer and facilitates an accurate diagnosis. Hence patients with CSD symptoms, such as prolonged menstruations, should undergo SIS, in addition to TVUS [24].

MRI has been shown to be the most definitive modality to evaluate uterine incision healing after cesarean deliveries [25, 26]. It has the advantage of superior contrast resolution, enabling detailed visualization of tissue planes. Furthermore, MRI is not impeded by body habitus or bowel gas. The size of the defect can be better estimated by using MRI. In a case of posterior wall dehiscence from laparoscopic myomectomy, MRI was able to clearly depict the defect, whereas the initial ultrasonography evaluation did not [27]. Hemorrhage or hematomas have a characteristic signal on MRI and therefore can be readily distinguished from other fluid collections or masses. In expectant management of
uterine dehiscence during pregnancy, MRI can be used to confirm the diagnosis, and then the lesion can be followed by ultrasonography if it is adequately visualized by the latter modality. [28]

**Treatment**

Exploratory laparotomy should be considered as the most important tool for diagnosis and treatment for uterine scar dehiscence and repair. Conservative resuturing after debridement can be chosen, but in presence of marked wound infection, endometriometritis and/or intra-abdominal abscess, hysterectomy should be considered [29,30,31,32].

There are still reports of conservative treatment even in the presence of infection [32,33].

The consequences of this complication for a future pregnancy are unknown. It has been recommended that all women who do not undergo a hysterectomy after a significant PPH following CS should undergo evaluation for any defect of scar. Laparoscopic and vaginal repair of scar dehiscence has been diagnosed and repaired after many years after caesarean section. The future pregnancies in such patients heralds risk of scar rupture again and needs prior assessment and a high index of suspicion [34,35].

The treatment of CSD in patients who desire to bear children requires the use of surgical repair. In the past, surgical repair required a laparotomy; recently, microsurgical, laparoscopic and robotic surgical repair / uterus reconstruction has also been reported. [36] In women who do not desire to bear children, the treatment choices have involved either low doses of monophasic contraceptives or total hysterectomy. A total hysterectomy is a radical surgical treatment that many patients may be reluctant to undergo. There have also been recent reports of symptom improvement after resectoscopic surgery for removal of the flap-shaped fibrous tissue at the site of the scar [37,38].

**Prevention**

In order to decrease the frequency of many of the most serious complications associated with cesarean delivery like endometritis, wound infection, wound disruption, thromboembolism and mainly uterine scar dehiscence in a subsequent pregnancy; simple, evidence based, eight - item checklist has been suggested.

Removing hair at site to surgical incision with electric clippers, using chlorhexidine solution to wash skin, broad spectrum antibiotic prophylaxis before surgery begins, broad spectrum antibiotic prophylaxis, removal of placenta by traction on the umbilical cord, 2 layer closure of the uterine incision, closure of the deep subcutaneous layer in patients with subcutaneous tissue thickness greater than 2 cm and appropriate deep vein thrombosis prophylaxis formed the checklist [39].

Identification of the condition requires a high index of clinical suspicion and dependence on radiological signs seen on ultrasonography (transvaginal/3D) or the CT/MRI scan. The identification of such condition can guide the doctor towards decreasing maternal and neonatal morbidity/mortality.

**References**


