INCIDENCE OF CESAREAN SCAR DEFECT IN CASES OF CESAREAN SECTION WITH AND WITHOUT BLADDER FLAP DISSECTION

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لشروط الحصول على درجة

الماجستير في التوليد وأمراض النساء

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INTRODUCTION

Anatomically Uterine niche is an iatrogenic pouch-like defect at the site of previous caesarean scar due to defective tissue healing. Radiologically niche should be defined as an indentation at the site of the CS scar with a depth of at least 2 mm. A niche can be subclassified in: (1) simple niche; (2) simple niche with one branch; (3) complex niche (with more than one branch). [1-3]

Uterine niche occurs in up to 70% women with previous cesarean of whom 30% are symptomatic. Reported prevalence varies: 24–70% with transvaginal sonography (TVS) and 56–84% with gel/saline instillation sonohysterography (SHG).This may be an underestimation because many women are asymptomatic and also because clinicians may not recognize niche as a cause of symptoms due to unawareness. Prevalence of 45.6% was reported in a prospective observational study (n = 371) where sonohysterography was done six months post-cesarean. Prevalence increases with increasing number of previous cesareans. [1-5]

Potential Risk Factors

Niche forms due to poor healing of cesarean scar. Risk factors are: [5-8]

1. **Factors Affecting Lower Uterine Segment**:

Cervical dilatation of > 5 cm, > 5 h duration of labour and advanced fetal station predispose to large niche due to thinner or less vascularized myometrium resulting in inadequate healing.[5,6]

2. **Level of Uterine Incision**

Lower uterine incision towards the cervix results in poor healing, as mucus secreted by cervical glands interferes with myometrial approximation. Mucus accumulation gradually increases the niche size also.[5,7]

Cesarean section done in advanced labour after cervical effacement and also creation of uterovesical fold of peritoneum influence the level of uterine incision.

3. Uterine Closure Techniques

Single-layer, decidua sparing closure technique predisposes to incomplete closure, compared to single full-thickness closure. A strong myometrial scar with proper anatomical approximation without tissue strangulation minimizes risk of niches. [1,8]

If muscular edges are thick, they are best approximated by including deeper part in the first layer and the remaining superficial cut edges in the second layer.

Non-perpendicular sutures leading to an irregular myometrial closure, locking sutures or very tight second layer leading to ischemic necrosis result in poorly healed scar predisposing to niche formation.

Thus, double-layer uterine closure using non-locking sutures is the optimal closure technique that results in thicker residual myometrium and hence potentially lower risk of niches.

Suboptimal surgical techniques: Inadequate haemostasis, tissue ischemia, devascularization and excessive tissue manipulation contribute to poor scar healing and adhesions, consequently forming niche.

4. Adhesions

Adhesion formation with abdominal wall pulls the uterine scar towards abdominal wall, exerting counteracting force opposite to the direction of retracting uterine scar tissue and causing impaired wound healing. This mechanism is encountered in non closure of peritoneum and creation of bladder flap that is not sutured. [7]

5. Retroflexed Uterus

Effect of gravity on uterine corpus also increases counteracting forces. Large niches are mostly found with retroflexed uterus. [6,7]

6. Patient Factors

Genetic predisposition contributes to impaired healing, inflammation, or adhesion formation, post-operative infection. [7]

Gestational diabetes (odds ratio, 1.73), previous caesarean (OR, 3.14) and advanced body mass index (OR, 1.06) are independent risk factors. Risk increases by 6% for every additional unit increase in body mass index. [8]

Diagnosis:

Niche can be visualized in non-pregnant state using TVS, SHG, 3-D ultrasound, magnetic resonance imaging or hysteroscopy. An anechoic space at least 2 mm deep in the myometrium at caesarean scar site clinches the diagnosis. Niche Size and Residual Myometrium thickness are measured.

Residual myometrial thickness (RMT) is the vertical distance between uterine serosa and apex of defect. Large niches are defined when RMT is $< 50\%$ of adjacent myometrium or ≤ 2.2 mm on TVS. Absent residual myometrium is termed a total defect. [9]

AIM OF THE WORK

The aim of this study is to compare Incidence of cesarean scar defect in cases of cesarean section with and without bladder flap dissection.

PATIENTS

This study will be prospectively conducted on 250 women recruited from ElShatby university maternity hospital delivery ward; They will be randomized into two groups group (A) and group (B) by closed envelop randomization. Group (A) will undergo cesarean section with bladder dissection and group (B) will undergo cesarean section without bladder dissection.

Inclusion Criteria:

1- Patients who will undergo cesarean section for the first time (primi section)

Exclusion Criteria:

1- Patient with excessive adhesion that necessitate bladder dissection

2- Previous uterine surgery e.g. myomectomy

3- Patient with comorbidities affecting wound healing e.g. diabetes, autoimmune diseases , immunosuppression

4- Patient in active labour with cervical dilatation > 5cm

METHODS

The patients will be randomized into two groups by closed envelop randomization ; group (A) will undergo cesarean section with bladder dissection and group (B) will undergo cesarean section without bladder dissection.

All patients will be subjected to the following:

1- Complete history taking (gynecological, obstetric, medical, surgical)

2- Cesarean section using Joel-Cohen incision [10] :

- Joel-Cohen skin incision(straight skin incision 3 cm below the line connecting the anterior superior iliac spines)
- Blunt dissection of the subcutaneous layer
- Blunt extension of the fascial opening
- Blunt entry into the peritoneum
- Sharp superficial then blunt entry into the uterus
- Spontaneous removal of the placenta
- Double layer closure of the uterus
- Non-closure of the peritoneum
- Continuous closure of the fascia
- Continuous suture of the skin

Group (A) will be subjected to bladder flap dissection after blunt entry to peritoneum and before sharp entry to uterus, while group (B) will undergo traditional steps with sharp and blunt entry into uterus directly after blunt entry into peritoneum

After 3 and 6 months all patients will be subjected to Two-dimensional trans vaginal ultrasound:

Women will be examined after emptying their bladder. The uterus and uterine scar will be examined in the mid sagittal plane. A niche is defined as an anechoic space at least 2 mm deep at the presumed site of the cesarean section scar.

Methods of measurement according to modified Delphi procedure:

Endometrium should be ignored; niche measurements are based only on myometrium. Best method to obtain correct sagittal plane for niche measurement is by starting in mid-sagittal plane, with good visualization of cervical canal, then moving transvaginal probe laterally to both sides.

Best method to visualize niche in transverse plane is by starting in sagittal plane, keeping good visualization of niche while rotating transvaginal probe from sagittal to transverse plane.

Best method to detect possible branches is in transverse plane, screening entire lower uterine segment from cervix to corpus.

To measure uterine niche, there should be good visualization of lower uterine segment only; this applies to all uterine positions (anteversion, retroversion or stretched).

It is useful to vary pressure with transvaginal probe in order to achieve best plane for niche measurement.

For simple niches, all measurements can be done in a single plane, while, for complex niches, more than one plane may be necessary.

The length, depth and width of the niche should each be measured in the plane in which it is largest. The distances between the niche and the VV

fold, and the niche and the external os were considered not to provide additional value for basic niche evaluation.

RMT should be measured in the sagittal plane in which the main niche has the smallest RMT.If visible, branches should be measured; measurements of the depth and the RMT should be made separately for the main niche and including any branch. (11)

Outcome measures:

1. Incidence of occurrence of cesarean scar (cs) niche in each group.
2. Correlation between the depth of niche and the residual myometrium in each group.
3. Comparison between the thicknesses of residual myometrium to adjacent normal myometrium in each group.
4. Complains of niche if present.

ETHICS OF RESEARCH

Research on human or human products:

- [√] Prospective study: Informed consent will be taken from patients. In case of incompetent patients, the informed consent will be taken from the guardians.
- [ ] Retrospective study: Confidentiality of records will be considered.
- [ ] DNA / genomic material: Informed consent for DNA / genomic test and for research will be taken from patients. No further tests will be carried out except with further approval of committee and patients. If the samples will travel outside Egypt the researcher will be responsible for transportation and security approval.
- [ ] All drugs used in the research are approved by the Egyptian Ministry of Health.

Research on animal:

- [ ] The animal species are appropriate for the test.
- [ ] After test, if the animal will suffer, it will be euthanized and properly disposed.
- [ ] After operation, it will have a proper postoperative care.

سأقوم بتسليم الموافقات المبنية على علم المريض الخاصة بالدراسة عند الانتهاء منها أو عند طلبها من اللجنة

RESULTS

The results will be tabulated and statistically analyzed, using the standard statistical methods.

DISCUSSION

The results will be discussed in view of achievement of the aim and will be compared with available literature and published data.

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