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Original Article OPEN ACCESS

Surgical Scar Endometriosis: A Painful Scar

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Abstract

Introduction: *A variant of extrapelvic endometriosis known as "surgical scar endometriosis" is defined by the development of functional endometrial glands and stroma close to the site of incision in individuals who have had prior surgery. As Cesarean sections have grown more popular in recent years, surgical scar endometriosis has been on the rise. The purpose of this study is to characterize surgical scar endometriosis's clinical features and management.* ***Materials and Methods:*** *This cross-sectional, observational study was carried out in a tertiary care center within the Obstetrics and Gynecology department of Bangabandhu Sheikh Mujib Medical University for two years, from July 2022 to June 2024. This study was designed for six women who underwent surgery for scar endometriosis. The study's objectives were to examine the general features as well as the lesions of the patients. The general features consist of mode of delivery, symptoms, ultrasound images, age and parity. The patient's lesion features, such as the size and location of the scar endometriosis (SE), the layers involved, and the surgical procedure, have been documented from the surgical notes included in the case sheet.* ***Result:*** *We found 6 cases of scar endometriosis in two years. The mean age of the patient was 30.7 years (range 27-36). All patients were parous women and majority (83.3%) had delivered through cesarean section, with just one had developed scar endometriosis after total abdominal hysterectomy. Here, cyclical pain and swelling at the scar site are the most typical first symptoms. In 66.7% of patients, the time between the diagnosis of surgical scar endometriosis and surgery exceeded two years. Subcutaneous tissue (100%) was the most often affected layer in surgical scar endometriosis, followed by the rectus sheath (66.7%). The preferred treatment strategy for this problem is wide local excision with or without reconstruction.* ***Conclusions:*** *Cesarean section is a clear risk factor for surgical scar endometriosis. Clinicians should be cautious about surgical scar endometriosis in patients who come with cyclic pain at the scar site. Scar endometriosis may be accurately diagnosed with ultrasound. The preferred therapy is surgical management with extensive local excision with a clear margin, with or without mesh repair. Precautions during obstetrical surgery to minimize wound infection can help lower the prevalence of scar endometriosis.*

Key Words: *Cross-sectional study, clinical features, surgical scar endometriosis, Excision, Painful scar.*

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Introduction:

Endometriosis is known as a functional endometrial glands with stroma external to the uterus and outside the uterine cavity, which is estimated to affect almost 5-10% of all women. Pelvic endometriosis is increasingly a prevalent disorder seen by gynecologists and infertility experts. Endometriosis can cause both extreme pain and infertility. Endometriosis is expected to affect 89 million women of reproductive age worldwide[1]. Endometriosis is an estrogen-based chronic inflammatory illness that affects in two ways in a woman's body

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through the pelvic or extra-pelvic regions. Pelvic endometriosis is increasingly a prevalent disorder seen by gynecologists and infertility experts. However, extra pelvic endometriosis in distant areas such as the urinary bladder, umbilicus, gastrointestinal system, and thoracic cavity is an uncommon occurrence. Scar endometriosis (SE) is caused by iatrogenic endometrial tissue implantation following uterine surgeries, although it can also arise after nonuterine treatments in rare cases. Scar endometriosis after cesarean section has been reported to be 0.03–0.4%[2]. Surgical scar endometriosis is a variant of extra-pelvic endometriosis distinguished by the presence of endometrial glands and stroma at the incision site in women with previous record of surgery. The researchers found just a few cases of surgical scar endometriosis in the medical literature, making it an uncommon clinical disorder. Scar endometriosis has been reported to develop following obstetric and gynecological surgeries, including Cesarean sections, vaginal deliveries in episiotomy sites, laparotomies or laparoscopic port sites for hernial repair sites, tubectomy, hysterectomy, ovarian cystectomies, ectopic pregnancies, and even needle tracking after amniocentesis[3,4]. This iatrogenic consequence remains a mystery, and the specific cause of surgical scar endometriosis is still unclear; numerous theories have been proposed to explain its development. The incidence of surgical scar endometriosis varies greatly, ranging between 0.03% and 1.08%[5,6]. Because of their atypical appearance, these patients may first see general doctors, general surgeons, or plastic surgeons. Raising awareness about this ailment can aid in early detection and treatment. The incidence of surgical scar endometriosis has grown in recent years, as Cesarean sections have become more common. The purpose of this study is to characterize the clinical features and treatment options for surgical scar endometriosis.

Material and Methods:

We performed a prospective, cross-sectional observational investigation in a tertiary care facility at Bangabandhu Sheikh Mujib Medical University (BSMMU) in Dhaka, Bangladesh, for two years (July 2022 to june 2024). During the course of this investigation, six women had scar endometriosis removed. We examined the data for both general and lesional features of the patients. General features include age, parity, method of birth, symptoms, the time between index surgery and symptom start, and ultrasound imaging (diagnostic). We collected the patient's lesion characteristics, such as the location and size of the scar endometriosis, as well as the surgical procedure, from the surgical notes on the case sheet. Histopathological investigation verified the final diagnosis in all cases where surgical excision occurred. The data were analyzed with SPSS version 21. We reported quantitative factors as mean and standard deviation, and qualitative variables as frequency and percentage.

Results:

We included six individuals with pathologically confirmed surgical scar endometriosis in our study and examined their outcomes. Here, table 1 describes the general features of surgical scar endometriosis. The research patients had a mean age of 30.7 years (range 27–36 years). In our study, the average BMI was 27.15, and more than half of the participants were obese. According to the classification of obesity in Asia Pacific region, Obesity Class I: when BMI is 25-29.9 and Obesity Class II: when BMI is ≥30. In our study all patients (6) were multipara (100%). Among 6 patients, majority (83.3%) had delivered by Cesarean section.

Table I: General Characteristics of the study of patients

General Characteristics	Frequency	Percent
Age (in years)	Mean 30.7 Standard deviation ± 3.2 year	
BMI (kg/m²)	Mean 27.15 Standard deviation 3.49	
Obesity Class I (25-29.9)	4	66.7%
Obesity Class II (≥30)	1	16.7%
Parity		
Multipara	6	100%
Mode of Delivery		
1 Lower segment cesarean section	3	50%
2 Lower segment cesarean section	2	33.3%

Here, table II describes the lesion features associated with surgical scar endometriosis. The surgical operations preceding the scar endometriosis were primarily cesarean sections (5 patients, 83.3%). Hysterectomy was one of the procedures performed prior to scar endometriosis diagnosis. The average time from index surgery and clinical diagnosis of surgical scar endometriosis was 4.75 years. In our investigation, the most prevalent signs of scar endometriosis were cyclical pain and swelling at the scar site (100%). One women had bleeding from lesion with umblical involvement. Preoperative imaging includes ultrasonography for all patients, which is correct in 83.3% of instances. All of the patients (100%) had undergone medical treatment for scar endometriosis before undergoing definitive surgery with tablet Dinogest orally. They stay asymptomatic while receiving therapy, but when treatment is discontinued, symptoms recur, necessitating surgery.

Following surgery, all patients were administered hormonal suppression by oral Dinogest pill for six months. Our investigation found no recurrence after 11 months (±3 months) of follow-up. In a research, Zhang and Liu[7] showed that the postoperative medication group had considerably lower recurrence.

In 66.7% of patients, the time between the diagnosis of scar endometriosis and surgical treatment was more than two years. The average size of the surgical scar endometriosis lesion was 4.7×5.1cm. In surgical scar endometriosis, the most typically affected layer was subcutaneous tissue (100%), followed by the rectus sheath (66.7%). All patients, with or without defect correction, underwent a wide local excision of the lesion with a margin of at least 1 cm.

Table II: Lesion Characteristics and Symptoms of the Study Patients.

Lesion Characteristics	Frequency	Percentage
Index Surgery		
Lower segment cesarean section	5	83.3%
Hysterectomy	1	16.7%
Duration Between Index Surgery and Onset Symptoms (in years)	Mean 4.75 Standard Deviation 0.76	
Cyclical pain at scar	6	100%
Swelling or lump	6	100%
Cyclic bleeding	1	16.7%
Dysmenorrhea	2	33.3%
Pelvic Endometriosis	1	16.7%
Ultrasound diagnosis of scar endometriosis		
Correct	5	83.3%
Wrong	1	16.7%
Preoperative medical management	6	100%
Postoperative medical management	6	100%
Duration between symptoms and surgery		
With 2 year	2	33.3%
More than 2 year	4	66.7%
Location of Scar Endometriosis		
Supra Pubic Transverse Scar		
Left Lateral	5	83.3%
Umbical	1	16.7%
Layer involved in scar endometriosis		
Skin involvement	3	50%
Subcutaneous involvement	6	100%
Rectus sheath	4	66.7%
Wide Local excision	6	100%

Discussion:

Surgical scar endometriosis still remains as a mystery. Endometriosis's actual origin and natural course remains unknown. Surgeons transplant active endometrial cells directly into the layers of a surgically incised lesion, and these types of cells resist immune-mediated apoptosis, causing the ectopic endometrial cell to persist[8]. The estrogen-dependent inflammatory response theory describes endometriosis's natural course and symptoms. In this investigation, we looked at an iatrogenic consequence. The average age of women with surgical scar endometriosis in our investigation was 30.7 years. Yildirim et al.[9] and Zhang et al.[10] found a mean age of 31 and 34, respectively. We attributed the high frequency among women of reproductive age to an increase in surgical scar endometriosis patients after a Cesarean delivery. The mean body mass index (BMI) in our investigation was 27.15, with more than half of the participants being obese, indicating that scar endometriosis is more common among obese people. This result was consistent with the findings of Sumathy et al.[11] and Ding et al.[12]. Obesity can provide a large surgical surface for the trapping of active endometrial cells, perhaps initiating the process[8]. The index surgery is clearly a risk factor for surgical scar endometriosis. In our analysis, the index procedures initiating the scar endometriosis were primarily obstetric (83.3%) after Cesarean delivery. Scar endometriosis is thought to grow with parity due to increased adhesions and non-closure of peritoneal layers, which expose endometrial cells to the abdominal cavity. In our study, just one patient developed scar endometriosis after abdominal hysterectomy. This might be due to endometrial cells being inoculated onto the incision site during the specimen removal process. Cyclical pain and a painful mass at the scar site, either with or without bleeding from the scar location, are the defining characteristics of surgical scar endometriosis. Dysmenorrhea was prevalent in 33.3% of patients, however pelvic endometriosis was found in only 13.3% of them. In a research by Yan Ding et al.[12], concurrent pelvic endometriosis was found in 5.3% of cases, despite the fact that the incidence is claimed to be 14.2-26%. The mean size of the surgical scar endometriosis lesion was 4.7×5.1cm. Subcutaneous tissue involvement (100%) followed by rectus sheath involved (66.7%) was the most common form of surgical scar endometriosis. This result was consistent with the findings of Sumathy et al.[11]. For the diagnosis of surgical scar endometriosis, we only employed ultrasonography in conjunction with a high level of clinical suspicion. Our study found that ultrasonography was accurate in 83.3% of individuals with scar endometriosis. This observation is similar to those reported by Yuan et al.[13] and Zhang et al.[10]. The USG characteristics of scar endometriosis are generally hypoechoic and heterogeneous, with dispersed internal echoes at the surgical site and minimal vascularity. Surgical scar endometriosis can be treated with medication and surgery. Dinogest 2mg is an oral tablet used in medical treatment. Scar endometriosis is best treated surgically by completely excising the lesion with a wide margin of about 1 cm and reconstructing the abdominal wall if necessary with mesh with a 1 cm clear margin, as well as minimizing contamination during handling to avoid recurrence after surgery. Following surgery, all women were given Dinogest 2mg tablets orally for 6 months. This diagnosis is confirmed by the histopathological examination of the excised tissue by the presence of endometriosis and stroma. Recurrence and malignant transformation are complications of scar endometriosis. Ding and Zhu's investigation found a 1.5 recurrence rate[12]. The key to preventing recurrence following surgery is complete excision with a 1 cm clear margin along with minimizing endometriotic cell contamination of the area during handling. Scar endometriosis transforms in several ways, incorporating genetic, immunological, and environmental variables. Clear cell carcinoma is the single most prevalent histological subtype, succeeded by endometrial cancer. The prophylaxis of scar endometriosis is essential. To achieve this prevention, we must minimize the contamination of surgical incision layers with decidual or endometrial cells. They can avoid cesarean scar endometriosis by conducting an introflexed suture of the uterine incision and sealing the visceral and parietal peritoneums[14]. Vigorous abdominopelvic cavity irrigation, avoiding the use of a mop to clean the uterine cavity, approaching the visceral and parietal peritoneum, and suturing the uterine and abdominal walls with separate needles[8]. However, no evidence suggests that these measures can prevent the development of scar endometriosis.

Conclusions:

We found a clear link between surgical scar endometriosis with obstetrics and gynecology operations. A cesarean delivery is a clear risk factor for scar endometriosis. Scar endometriosis may become more common as the number of lower segment cesarean sections increases. Clinicians should have a high level of suspicion for scar endometriosis in women who approach with cyclic pain and swelling at the scar site. Scar endometriosis may be diagnosed accurately using ultrasound imaging. Medical care provides only short relief; a later excision with a clear margin, with or without mesh restoration, is the recommended treatment. We can avoid these iatrogenic consequences by following aforementioned surgical precaution. Furthermore, more prospective studies are needed on post-operative medical management in order to reduce recurrences.

Conflict of Interest: None.

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