

# Scar Endometrioma

## An Uncommon Yet Easily Treated Condition

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**OBJECTIVE:** To illustrate and emphasize the need for keeping scar endometrioma in mind in order to facilitate an early diagnosis in cases of a mass detected on the abdominal wall in women who have undergone a cesarean section.

**STUDY DESIGN:** Records of 21 patients were reviewed retrospectively. All the patients complained of a mass on the abdominal wall and had undergone cesarean section in the past. Endometrioma was confirmed histopathologically for each patient. Information about the characteristics of the patients are retrieved from the patient records and analyzed.

**RESULTS:** The average age of patients was 31 years. The average duration before onset of the complaints in the postcesarean section period was 32.9 months, and the average duration of the complaints was 25.3 months. In most cases (62%) the scar endometrioma was located at the right end of the Pfannenstiel incision. The average size of the endometrioma masses was 30 mm. Recurrence was not observed in any of the patients during an average follow-up of 31.3 months after total excision.

**CONCLUSION:** Scar endometrioma is a rare disease

which can be treated easily. If a mass on a cesarean section scar which becomes sensitive during menstruation is detected in a patient with history of cesarean section, the diagnosis of scar endometrioma should be suspected. (J Reprod Med 2016;61:249–253)

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**... a mass associated with scar tissue and sensitivity during menstruation in patients who have undergone gynecologic surgery is strongly indicative of scar endometrioma.**

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**Keywords:** abdominal wall, abdominal wall endometrioma, cesarean section, endometrioma, endometrioma mass, endometriosis, Pfannenstiel incision, postcesarean section, scar endometrioma.

Endometriosis is defined as the presence of endometrial tissue in any organ other than the uterus. Endometriosis may occur in any tissue, although it occurs most frequently in the ovaries, uterine ligaments, and the pelvic peritonea. Scar endometrioma (SE), also known as abdominal wall endometrioma or endometrioma externa, is an endometrial tissue mass developing in scar tissue subsequent to uterine surgery, particularly cesarean section (CS).<sup>1,2</sup> In the medical literature the reported incidence of SE after CS is 0.3–3.5%.<sup>3,4</sup>

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Ovarian hormones retain their influence over ectopic endometrial tissue, and endometrial mass growth accelerates during menstruation, causing pain. The presence of SE is easily diagnosed using the medical history, thorough clinical examination, and ultrasound imaging. Diagnosis is confirmed by histopathological examination of the excised mass. Total excision of the mass is sufficient for a complete cure. We examined the medical records of 21 patients with SE and conducted a complete evaluation of symptoms, treatment, and follow-up in the context of current medical literature.

### Materials and Methods

The study group included 21 female patients presenting at the general surgery clinic with complaints of pain and abdominal mass between 2006 and 2013 with histopathologically confirmed SE. All data were obtained retrospectively from the patient medical records. All patients had a prior medical history of CS with Pfannenstiel incision. Imaging methods used during preoperative evaluation varied according to the preferences of the surgeon and included ultrasonography (US) (16 patients), computed tomography (CT) (2 patients), and magnetic resonance imaging (MRI) (2 patients). In 1 patient no imaging tests were conducted. Surgical intervention as initiation based on the preliminary diagnosis of abdominal wall mass and total excision was performed. Histopathological evaluation confirmed the diagnosis as SE.

The analysis included the following parameters: patient age, duration of symptoms, anatomic location of the mass, mass size, date of cesarean section, imaging methods, and disease prognosis. Following the review of the medical records the patients were contacted by phone or in personal conversations regarding any continuing symptoms of endometriosis.

Study data were analyzed using the SPSS 18 statistical package. The Pearson correlation analysis test was used to evaluate the correlation between mass size and the persistence of symptoms over time.

### Results

The mean age of the patients was  $31 \pm 5.8$  (mean  $\pm$  SD; range, 23–47) years. Out of 21 total patients, 17 presented at the hospital with complaints of pain and swelling in the abdominal wall during menstruation, while the remaining 4 patients

experienced swelling of the abdominal wall only. The common physical examination finding was the presence of a hard, inert, sensitive mass at the site of the Pfannenstiel incision. The average time of the emergence of clinical symptoms was 32.9 (range, 0–174) months after CS. The average duration of symptoms was 25.3 (range, 1–69) months (Figure 1). Endometrial masses were detected on the right side of the incision in 13 patients (62%), on the left side of the incision in 6 patients (29%), and in the middle of the incision in 2 patients (9%). All cases involved a single endometrial mass. No recurrence was observed following total excision of the mass.

Imaging modalities (US, CT, or MRI) yielded information regarding the size, location, and depth of the mass and provided strong evidence in favor of a diagnosis of SE. No other endometrial foci were observed within the abdomen. True-cut biopsy was used in 1 patient, resulting in a preoperative diagnosis of endometrioma.

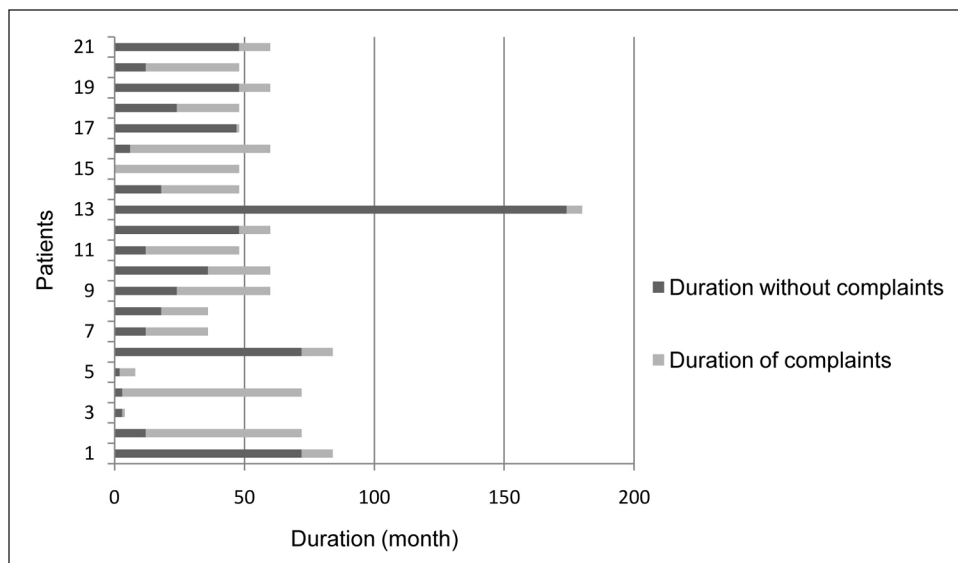
The average diameter of the endometrioma masses was 30 mm (range, 14–48 mm). There was no significant correlation between mass diameter and the duration of symptoms ( $p=0.323$ ,  $r=0.227$ ) and symptom-free duration ( $p=0.680$ ,  $r=0.096$ ).

Excision of the endometrial mass and adjacent adipose tissue was performed under general anesthesia. With the exception of a single case, the location of the mass on the abdominal wall fascia facilitated excision without the introduction of fascial defects. In 1 case the mass had infiltrated the muscular layer and invaded to the peritoneum. This defect occurred after excision and was repaired through primary suturing of the tissue layers. Endometrioma was confirmed using histopathological methods in all patients.

The patients were not offered additional therapy during the postoperative period. After the review of the medical records 3 patients were examined in person and the remaining patients were contacted by phone. Patients were questioned regarding the presence of recurring masses and/or complaints of endometrioma. No recurrence was observed in any of the patients over an average follow-up period of 31.3 (range, 0–78) months.

### Discussion

Endometrioma may occur anywhere in the abdominal cavity, as well as on abdominal wall scars, episiotomy scars,<sup>3,4</sup> and trocar entrance points resulting from laparoscopic surgery.<sup>5</sup> SE is a mass generated by endometrial cells implanted within



**Figure 1**  
Duration of patient symptoms.

the scar tissue on the abdominal wall following uterine surgery. Although often occurring subsequent to CS, reports of spontaneous endometrioma following certain gynecologic surgeries, including hysterectomy, or the development of pelvic endometrioma can be found in the medical literature.<sup>6,7</sup>

Perhaps as a result of the rarity of this condition, SE is generally discussed in case reports. Incidence of SE following CS can vary between 0.03% and 3.5%.<sup>3,4</sup> It has been hypothesized that SE results from transplantation of endometrial cells to the subcutaneous tissues during surgical intervention.<sup>8</sup> Experimental studies have demonstrated that transplanted endometrium can generate endometrioma foci in subcutaneous tissue or in the peritoneum.<sup>9</sup> Our study group consisted entirely of fertile women who had undergone CS.

Endometrial masses typically occur singly, although there is at least 1 report of multiple endometriomas.<sup>10</sup> None of the patients in the present study exhibited evidence of multiple endometriomas. Development of SE following CS may occur over several years, and a case report has described the development of SE 15 years after CS.<sup>11</sup> In our study group the average time to mass development was 32.9 (range, 0–174) months after CS.

A previous study reported mean symptom duration of 24.5 months.<sup>12</sup> However, some reports suggest that symptoms may develop over 10 years or more.<sup>4,10</sup> In our study the average duration of

symptoms was 25.3 (range, 1–69) months. In many cases early symptoms may have been attributed to premenstrual syndrome by attending physicians or the patients themselves. During this period none of the patients were given medication pertaining to their symptoms. Previous studies have suggested that diagnosis of SE is delayed and the duration of symptoms extended as a result of these nonspecific symptoms.<sup>3,4,13</sup>

Endometrial cells transplanted subcutaneously during CS proliferate under the influence of circulating estrogen. During each premenstrual period, swelling of the mass may cause pain. However, SE masses do not grow to excessive sizes, despite their longevity, and are typically <50 mm in diameter.<sup>6,10</sup> In our patient group the average size of the SE mass was 30 mm (range, 14–48). One study reported a positive correlation between mass size and the duration of symptoms.<sup>13</sup> We found no evidence in the present study of a correlation between mass size and the time between CS and the onset of the complaints or with the duration of symptoms.

Patients with SE usually report the presence of a sensitive mass on scar tissue and pain during menstruation. In the study by Francica<sup>13</sup> cyclic pain occurred in 80% of patients. All 21 patients in the present study reported cyclic pain.

Endometrial masses occur more frequently on the right side of the incision.<sup>10</sup> Assuming that the surgeon stands on the right side of the patient

during the CS, this observation supports the hypothesis that endometrioma has an iatrogenic etiology.<sup>1,14</sup> Among the patients in the present study the SE mass was located on the right side of the incision in 13 patients (61.9%).

Due to the rarity of the condition, many physicians may be unfamiliar with SE. However, the presence of a mass associated with scar tissue and sensitivity during menstruation in patients who have undergone gynecologic surgery is strongly indicative of SE.<sup>3</sup> In our study all 21 patients reported symptoms of swelling, and 17 patients also experienced pain during menstruation. The SE mass may recede in size and pain may subside in the postmenstrual period.

Radiological methods clearly demonstrating the presence, size, and location of an SE mass may also facilitate accurate diagnosis. Among the methods that may be applied in this manner are US, CT, and MRI.<sup>15,16</sup> Characteristic US features of SE include heterogeneous hypoechoic rounding, peripheral hyperechoic tissue, specular contours, and a vascular pedicle entering the mass.<sup>13</sup> MRI is considered superior to other methods due to the ability to evaluate bleeding within the SE mass.<sup>17</sup> The most frequently used imaging method in our study group was US, while MRI was used in only 2 patients. The imaging method was selected according to the preferences of the surgeon. Ultrasound is sufficient in the majority of cases, while CT and MRI are associated with increased cost and yield little additional information. Although fine needle aspiration biopsy (FNAB) may be used diagnostically,<sup>18</sup> this method is not widely used.

True-cut biopsy may be superior to FNAB; however, the most reliable method of diagnosis is excisional biopsy, which also serves as the curative treatment. Total excision can also reveal the presence of malignancy. Only 1 patient in the present study was diagnosed using the true-cut needle biopsy. Excision was later performed on this patient. In our opinion total excision of an SE mass without prior biopsy is appropriate since confirmation of diagnosis by biopsy does not circumvent the need for subsequent excision. Disruption of the SE tissue during biopsy may result in further transplantation of endometrial cells, possibly resulting in recurrence following excision of the mass.

Although associated with gynecologic surgery, SE is more often diagnosed by a general surgeon, as the nonspecific symptoms associated with the

condition are common in cases of incisional hernia or other surgical pathologies.<sup>11</sup> Therefore, many SE patients are seen by general surgeons rather than gynecologists.<sup>6,19</sup> In many cases a gynecologist may refer a suspected case of SE to a general surgeon for diagnosis and treatment.<sup>11</sup> Therefore, obstetricians, gynecologists, and surgeons should be aware of the features of SE.

The differential diagnosis of SE includes conditions such as hematoma, sebaceous cysts, lipoma, abscesses, hernia, malignancy, and lymphoma. The most valuable diagnostic evidence includes past history of CS, cyclical nature of symptoms, and specific imaging findings.

Medical treatment with danazole is not sufficient.<sup>20</sup> Curative treatment is the total excision of the mass together with the adjacent healthy adipose tissue. During excision surgery, the surgeon must ensure total removal of the mass and be careful to avoid any incidence of rupture. Recurrence may occur in cases where excision is unsuccessful.<sup>21,22</sup> Excision may be performed under local<sup>23</sup> or general anesthesia. All patients in the present study underwent surgical excision with general anesthesia. During postoperative recovery the use of danazole or gonadotropin-releasing hormone analogues is recommended to discourage recurrence.<sup>21</sup> The patients in the present study were not offered postsurgical medical treatment, and no recurrence was observed during an extended follow-up period. This may indicate that prescribing medication is unnecessary to avoid recurrence. To prevent SE, surgeons must avoid reuse of gauze, bandages, and sutures from the uterus within the subcutaneous tissue, and the incision line should be rinsed thoroughly during CS.<sup>24</sup>

During the excision of the mass, defects in the fascia may occur. Primary suturing of the fascia may prevent herniation. In cases of larger defects, mesh techniques can be applied as an alternative.<sup>6,20</sup> A primary suture of the anatomic structures was used to close a fascial defect that occurred in 1 patient in the present study group. In the remaining patients no fascial defects were observed after the excision of the endometrial mass due to anatomic location above the fascia.

Malignant transformation of SE has been reported.<sup>25</sup> Therefore, total excision and pathological examination must be performed with the utmost care. Pelvic endometrioma and SE may arise simultaneously, and the possibility of concurrent pelvic endometrioma must be taken into consid-

eration and the relevant analyses performed in patients with dysmenorrhea, infertility, or dyspareunia.

Scar endometrioma is a condition resulting from the growth of an endometrial mass on the abdominal wall following uterine surgery. Although the condition is a complication of a gynecologic operation, surgical treatment is typically performed by a general surgeon. The results of this study suggest that diagnosis of SE is often delayed as a result of nonspecific symptoms. Diagnosis of SE should be considered in patients with a history of CS presenting with a palpable mass in the previous incision and symptoms of cyclical pain.

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