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Scar Endometriosis in the Abdominal Wall : a Predictable Condition for Experienced Surgeons

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Key words. Abdominal wall ; endometriosis ; Caesarean section.

Abstract. *Purpose :* Endometriosis in surgical scars develops in 0.1% of those women who undergo Caesarean section or other obstetric surgery. Herein we analyse and discuss the clinico-pathological characteristics of 15 patients with scar endometriosis in the abdominal wall.
Methods : Fifteen cases of scar endometriosis in the abdominal wall that were treated surgically in our department between 2003 and 2009 were examined retrospectively. Age, parity, complaint, medical or surgical history, pre/post-operative hormonotherapy, size of the mass, surgical procedure, follow-up and disease recurrence were analysed.
Results : This retrospective study included 15 patients presenting with 17 postoperative abdominal wall masses. The mean age of the patients was 32.1 ± 6.0 years (range, 23-48). Eleven of the patients had a painful mass that became bigger before menstruation, two had palpable masses only, and two were hospitalised because of a mass with persistent pain. The locations of the masses were as follows : eight were close to the right side and three were close to the left side ; two were in the middle of the Pfanenstiel incision and two were in trocar tracts. The patients' surgical histories included Caesarean section in thirteen, bilateral laparoscopic ovarian cyst excision in one, and laparoscopic appendectomy in one.
Conclusions : If a patient presents with incision pain and a palpable mass after gynaecologic surgery, an incisional endometrioma should be considered. Surgical excision and hormone therapy are effective treatment approaches in these patients.

Introduction

Classically, endometriosis is defined as the presence of functional endometrial glands and stromal tissues outside the uterine cavity (1, 2). The term endometriosis was first coined by Sampson in 1921. Endometriosis occurs in the abdominal wall in 0.03% to 1.08% of women with a history of gynaecologic or pelvic procedures (3). Extrauterine endometrial lesions are commonly found in the genital organs and pelvic peritoneum, although they may be seen in the gastrointestinal system, the greater omentum, in surgical scars, and the mesentery, and occasionally in the kidney, lung, skin, and rectus abdominis muscle (4-6). Scar endometriosis is extremely rare, typically occurring in women with a history of Caesarean section (7, 8). In this study, we review and share our experience of fifteen cases of scar endometriosis, emphasizing its clinical presentation.

Material and methods

Between November 2003 and July 2009, 15 patients underwent excision of abdominal wall endometriosis in the Department of Surgery, Diyarbakir Education and Research Hospital, Turkey. These were evaluated retrospectively with a review of the medical records and pathology reports to obtain clinical data, including age, size of the mass, previous surgical procedures, recurrences, operating time, symptoms, follow-up time, and hormone therapy. The histological diagnosis of all patients was confirmed by the members of the pathology department at our hospital.

Results

This retrospective study included 15 patients presenting with 17 postoperative abdominal wall masses. The histopathologic diagnoses of all of the masses were consistent with endometriosis. The mean age of the patients was 32.1 ± 6.0 years (range, 23-48). The initial symptoms began an average of 10.8 ± 6.0 months postoperatively (range 4-27 months). The average interval from the onset of symptoms until seeing a doctor was 6.4 ± 9.1 months (range 1-38 months). Eleven of the patients (73.3%) had a painful mass that became bigger before menstruation, two had palpable masses only, and two were hospitalised because of a mass with persistent pain. The locations of the masses were as follows : eight (53.3%) were close to the right side and three (20%) were close to the left side ; two (13.3%) were in the

Fig. 1
Endometrial glands, stroma, and haemosiderin-laden macrophages in the rectus muscle (×40, H&E staining).

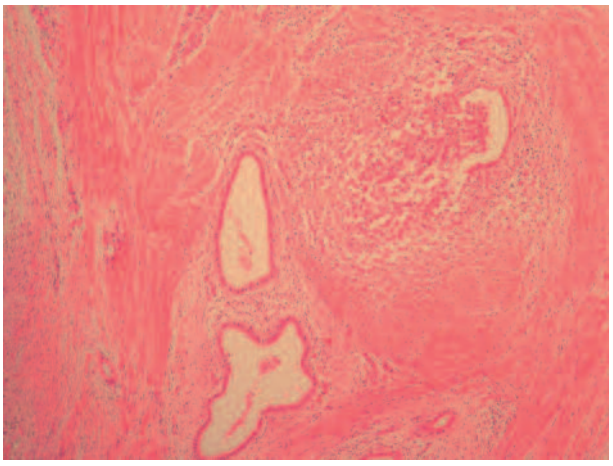

Fig. 2
Endometrial glands and haemosiderin-laden macrophages (×100, H&E staining).

middle of the Pfanenstiel incision and two (13.3%) were in trocar tracts. Scar endometriosis relapse developed at the same location in two patients postoperatively. Five of the 15 patients were taking oral contraceptives (OCs) : three for contraception and the other two for endometriosis therapy. The patients' surgical histories included Caesarean section in thirteen, bilateral laparoscopic ovarian cyst excision in one, and laparoscopic appendectomy in one. Two of the patients underwent Caesarean section twice. One of the patients was nulliparous and the diagnosis of endometriosis was confirmed after a laparoscopic ovarian cyst excision. The masses were excised with a 2-cm margin in ten (66.6%) of the patients, while local excision was performed in five (33.3%) patients because of the relatively small sizes of the masses. In the patients who underwent wide excisions, polypropylene (Prolene ; Ethicon, Edinburgh, United Kingdom) mesh was used in four and polyglactin 910 + polypropylene (Vypro-II ; Ethicon, Edinburgh, United Kingdom) composite mesh was used in two. The follow-up time after mass excision averaged 21.7 ± 14.4 months (range 5-47 months). In two patients, mass relapse occurred at the same location, 4 and 8 months after local excision, respectively. Wide excision with polypropylene mesh was performed in these patients.

After the histopathological diagnosis of scar endometriosis, All of the patients were placed on oral contraceptive (OCS) (n = 13), danazol (Danasin® 200 mg ; Kocak, Istanbul, Turkey) (n = 1) and buserelin acetate nasal spray (Suprefact® 0.105 mg ; Sanofi Aventis, Frankfurt-Main, Germany) (n = 1) therapy. Despite this therapy, however, relapse occurred in two of the patients, and buserelin 200 µg/day in one dose was administered for 6 months after the second operation in these patients. No further relapse was observed in these patients. One nulliparous patient took OCS for 9 months and buserelin 200 µg/day one-dose therapy for 6 months and then became pregnant 8 months after this therapy. All of the patients were treated by an obstetrician/gynaecologist after the histopathological diagnosis of scar endometriosis. Routine testing for CA-125, pelvic ultrasonography (USG), and physical examinations were performed postoperatively. The surgical and medical characteristics of the patients are summarized in Tables I and II.

Discussion

Endometriosis is a relatively common gynaecologic problem in women of reproductive age. It is defined as an ectopic implantation of endometrial gland and stroma outside the uterine musculature (4). The most common locations are within the pelvis, including the ovaries, cul-de-sac and fallopian tubes. The abdominal wall is an uncommon site of extrapelvic endometriosis, where it usually develops in old surgical scars (9-11). Two main hypotheses are invoked to explain its cause : one suggests that multipotential mesenchymal cells may undergo metaplasia into endometriosis under the proper circumstances ; the other theory states that endometrial cells may be transported to ectopic sites, forming an endometrioma (12, 13).

Diagnosis of scar endometriosis is usually highly suggestive from patient history and examination alone. It is generally not difficult to reach in patients with the classic presentation of a palpable mass, cyclic pain and a previous incision, especially a Caesarean delivery or a gynaecologic procedure. Between 90.9% and 100% of the patients in three different studies saw a physician to complain of cyclic pain (3, 14, 15), while in three other

Table I

Characteristics of those patients with scar endometriosis

No.	Age	Parity	Complaint	Endometriosis history	Hormonotherapy history	Previous operation and incision	Time interval between the first operation and complaints (months)	Time interval between complaints and admission to physician (months)
1	33	3	palpable mass	No	No	Two sectio with Pfannenstiel	21	2
2	27	1	cyclic painful mass	No	No	Sectio with Pfannenstiel	27	3
3	37	2	cyclic painful mass	Yes	OCS	Laparoscopic appendectomy	8	3
4	30	0	cyclic painful mass	No	OCS	Bilateral laparoscopic ovarian cyst excision	4	1
5	35	2	cyclic painful mass	Yes	OCS	Sectio with Pfannenstiel	6	4
6	29	2	cyclic painful mass	No	No	Sectio with Pfannenstiel	11	3
7	34	1	painful mass	No	No	Sectio with Pfannenstiel	13	4
8	26	2	cyclic painful mass	No	OCS	Sectio with Pfannenstiel	11	2
9	31	1	painful mass	No	No	Sectio with Pfannenstiel	14	1
10	38	1	palpable mass	No	No	Sectio with Pfannenstiel	6	2
11	35	3	cyclic painful mass	No	No	Two sectio with Pfannenstiel	5	2
12	26	3	cyclic painful mass	No	No	Sectio with Pfannenstiel	8	9
13	48	6	cyclic painful mass	No	No	Myomectomy with Pfannenstiel	7	38
14	23	4	cyclic painful mass	No	OCS	Sectio with Pfannenstiel	12	13
15	29	3	cyclic painful mass	No	No	Sectio with Pfannenstiel	9	9

studies, the main symptom in 58% to 100% of the patients was non-cyclic pain (16-18). These six studies constitute the largest reported series. In our study, 73.3% of the patients complained of cyclic pain.

The differential diagnosis for abdominal wall endometrioma is quite large. It is often confused with other pathologic conditions such as suture granuloma, abscess, inguinal or incisional hernia, soft-tissue sarcoma, desmoids tumour, lipoma, metastatic tumour and sebaceous cysts. Therefore the pathological diagnosis of endometriosis should be confirmed.

Abdominal wall endometriomas arising within a Caesarean section scar can be detected using computed tomography, USG, US-guided fine-needle aspiration and magnetic resonance imaging (19). Although useful, CT, USG and MR cannot provide a definitive pre-operative diagnosis. We did not perform radiological confirmation, since all of our patients were referred with palpable masses. Routine USG was performed for pelvic endometriosis after the diagnosis of endometriosis only. Intrapelvic foci of endometriosis were found in three patients.

The initial symptoms are reported to occur between 6 months and 12 years postoperatively (3, 14). In our study, this period was between 4 and 27 months. Teng *et al*. (3) reported that 59.9% of the endometriosis foci were on the right side of the incision ; our results were similar.

Although endometriosis does occur in laparatomy scars, abdominal wall endometrioma is most frequently seen after operations in which the uterine cavity is opened (20). In our series, 13 of the patients had a history of uterine surgery.

In a series of ten cases, Agarwal *et al*. (21) used polypropylene mesh in two cases when primary closure

Table II

Surgical procedures and treatment of scar endometriosis

No.	Size (cm)	Location	Surgical procedure	Repair of defect	Anaesthesia	Follow-up (months)	Hormonotherapy postoperative	Recurrence	CA-125 level (IU/mL)
1	6 × 5	Right lateral margin	wide excision	vicryl mesh	spinal	38	OCS	No	Normal
2	6 × 4	Mid-wound	wide excision	prolene mesh	spinal	27	OCS	No	Normal
3	4 × 4	Right trocar tract	local excision	primary	local	45	OCS, Buserelin	Yes, wide excision, mesh	Upper
4	4 × 2	Right trocar tract	wide excision	primary	local	47	OCS, Buserelin	No	Normal
5	3 × 2	Left lateral margin	local excision	primary	local	37	Danazol	No	Normal
6	4 × 5	Left lateral margin	wide excision	prolene mesh	local	34	OCS	No	Normal
7	5 × 5	Left lateral margin	wide excision	prolene mesh	spinal	16	OCS	No	Normal
8	4 × 3	Right lateral margin	local excision	primary	local	17	OCS, Buserelin	Yes, wide excision, mesh	Normal
9	4 × 3	Mid-wound	wide excision	primary	local	13	OCS	No	Normal
10	3 × 3	Right lateral margin	local excision	primary	local	15	OCS	No	Normal
11	5 × 2	Right lateral margin	wide excision	primary	local	13	OCS	No	Normal
12	5 × 3	Right lateral margin	wide excision	prolene mesh	local	7	OCS	No	Normal
13	9 × 7	Right lateral margin	wide excision	vicryl mesh	spinal	6	Buserelin	No	Normal
14	4 × 4	Right lateral margin	wide excision	primary	local	6	OCS	No	Normal
15	3 × 2	Right lateral margin	local excision	primary	local	5	OCS	No	Normal

was difficult after a wide excision. Similarly, KOCAKUSAK *et al*. (22) used mesh in all three of their patients because of the width of the defects. We used mesh repair in 6 of the 15 patients initially, and also in both cases that developed relapses.

To our knowledge, HEALY *et al*. (23) reported the first case of endometriosis in a trocar wound in the English literature in 1995. Subsequently, a few similar cases were reported (24-27). This was hypothesized to result from the implantation of cells due to pneumoperitoneum. In our study, two patients developed postoperative scar endometriosis in the trocar tract.

The treatment of choice for scar endometriosis is wide local excision of the lesion with negative margins, even for recurrent diseases. Medical therapies are also used in the treatment of scar endometriosis and include non-steroidal anti-inflammatory agents, oral contraceptives, analogues of GnRH (3), aromatase inhibitors (Letrazole), and radio-frequency ablation therapy (28). WANG *et al*. (1) compared excision alone with therapy combining excision and gonadotropin-releasing hormone (GnRH) agonists and reported that this combined therapy decreased the incidence of relapse from 42.9% to 11%. They also found that prior obstetrics surgery was a risk factor. DING *et al*. (7) reported that hormone suppression therapy with surgery is a good treatment choice.

We placed thirteen of our patients on OCS therapy after surgical excision, while one patient took danazol because she had a history of endometriosis. In the two patients with relapse, the OCS was stopped and buserelin was started. Since no further relapse occurred after long follow-up periods, the combination of excision and hormone therapy appears to be a good treatment choice.

PITTAWAY (29) showed that the serum CA125 level is a helpful marker when following patients with endometriosis. We measured the serum CA125 levels at

1 week and 3 months postoperatively, and found that all patients were within the normal limits.

In conclusion, although rare, if a painful mass in the scar tissue is found in women of reproductive age with a history of pelvic or obstetric surgery, the physician should consider endometriosis.

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