

Endometriosis in a post-laparoscopic scar – case report and literature review

Endometrioza w bliźnie po laparoskopii – analiza sytuacji i przegląd piśmiennictwa

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Abstract

Endometriosis is an estrogen-dependent, chronic disease consisting in implantation and hyperplasia of the endometrium outside of the uterine cavity. Endometriosis in post-laparoscopic scars applies to approx. 0.5-1% of the extraorganic locations of the disease.

The purpose of the paper was to describe medical management and literature review for endometriosis in a post-laparoscopic scar. Two lesions located near the insertion site for the lower trocars were removed along with the border of healthy tissue. At the time of publication of this paper the patient did not report any complaints.

In conclusion, each limited lesion in the subcutaneous tissue, with pain intensifying during menstruation, should suggest an initial diagnosis of scar endometriosis, regardless of patient age and type of surgery.

Key words: **endometriosis / scar endometriosis / laparoscopy / homeostasis /**

Streszczenie

Endometrioza jest estrogenozależną, chorobą przewlekłą, polegającą na implantacji i rozroście endometrium poza jamą macicy. Endometrioza w bliźnie po operacjach laparoskopowych dotyczy około 0,5-1% zewnętrznie umiejscowionej lokalizacji choroby.

Celem pracy był opis postępowania medycznego i przeglądu piśmiennictwa w sytuacji występowania endometriozy w bliźnie po laparoskopii. Dwie zmiany, zlokalizowane w okolicy wklucia dolnych troakarów, zostały usunięte w granicach zdrowych tkanek. W chwili obecnej pacjentka nie zgłasza żadnych dolegliwości.

Podsumowując, każda ograniczona zmiana w tkance podskórnej, której ból nasila się w trakcie miesiączki, powinna sugerować wstępne rozpoznanie endometriozy w bliźnie, niezależnie od wieku pacjentki i rodzaju wykonanej operacji.

Słowa kluczowe: **endometrioza / endometrioza w bliźnie / laparoscopia / hemostaza /**

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Introduction

Endometriosis is a chronic, estrogen-dependent disease consisting in implantation and hyperplasia of the endometrium outside the uterine cavity [1]. In the general population the disease is observed in 6-15% of women, with peak incidence in the age group between 30-40 years [2, 3]. The incidence is higher among patients treated for pain of the pelvis minor and infertility (40-60% and 30-50%, respectively) [3]. Obviously, the disease also affects young women, as well as between 2-5% of postmenopausal women [2]. Currently, a correlation between endometrial lesions in climacteric women and hormonal therapy or obesity (fat tissue as a source of estrogens) has been suggested. The presence or absence of estrogens are not the only factors responsible for the development of the disease. Other factors promoting the incidence of endometriosis include for example angiogenic proteins or chemokines [4]. High concentrations of the MCP-1 chemokine (monocyte chemotactic protein, CCL2 chemokine) in the peritoneal fluid of endometriotic women have been noted to be linked with disease stage [5]. Possibly, estradiol (E₂), even indirectly, enhances MCP-1 and RANTES (regulated upon activation normal T cell expressed and secreted) expression in the ectopic endometrium [6]. However, serum concentrations of these chemokines do not show any statistically significant differences in case of endometrial cysts and mature teratomas [7]. There are several risk factors for endometriosis, including early sexual maturity, short menstrual cycles, history of heavy menstrual bleeding, and use of vaginal tampons during menstruation [8,9,10]. Endometriosis develops predominantly in Caucasian women, with normal or low BMI, of higher socioeconomic status, while a burdened obstetric history is of no significance [1, 8, 9, 10, 11].

Three basic types of the disease have been described: peritoneal, deep infiltrating and ovarian, which occurs most often on the surface of the ovaries, sacral ligaments and the pouch of Douglas [2, 12]. Endometriosis of the intestines and lesser omentum is observed less frequently [13]. Involvement of the gastrointestinal tract is observed in 3-37% of patients reporting a history of endometriosis in the pelvis minor. If an intestine is involved, the lesions are located mostly in the rectum and sigmoid (72% of intestinal locations), small intestine (7%), cecum (4%) and appendix (3%) [14]. The disease affects the urinary tract and kidneys very infrequent. Rare cases of endometriosis in the Bartholin's gland have been reported. On the other hand, superficial endometriosis develops relatively often on the uterine cervix after resection of an erosion [11, 15]. Endometriosis is also found in a scar after a perineotomy performed during vaginal

deliveries. There have been isolated reports of endometrial tumors in the scars after appendectomies, resections of inguinal hernia and amniocentesis [16,17].

In abdominal integuments, i.e. the postsurgical scar, the disease occurs most frequently after procedures performed involving uterotomy, on the fallopian tubes, or following a cesarean section in 0.03-0.4% of women [16]. Endometriosis in the umbilicus applies to approximately 0.5-1% of the extraorganic locations of the disease, while in about 30% of the cases it is the result of laparoscopic procedures [15].

The purpose of the paper was to describe medical management and the literature review for endometriosis in post-laparoscopic scars.

Case report

A 45-year old bipara was admitted to the Maternal and Child Health Department of the Obstetrics and Gynecology Hospital, Poznan University of Medical Sciences, due to uterine myoma and heavy menstrual bleeding requiring surgical treatment. A gynecological examination revealed a hard, ball-shaped lesion located on the posterior uterine wall, approximately 7 cm in diameter. Ultrasound imaging showed a lesion seemingly corresponding to a uterine myoma, measuring 6.3x4.5 cm on the posterior wall, and bilaterally normal ovaries. The patient had menorrhagia, regular cycles with blood clots from the age of 13 years. She had two cesarean sections (from surgical history – after an appendectomy) and reported no hormonal contraception. No deviation from the norm was observed in laboratory tests. A laparoscopic resection of approx. 7.0 cm of the uterine myoma and release of adhesions of the greater omentum from the parietal peritoneum in the projection of the scar after appendectomy and release of the intestinal adhesions from the pouch of Douglas and adhesion of the right appendage with the posterior uterine wall were performed on 21 February, 2013. The procedure was uneventful. Limited hematomas in the abdominal integuments, at insertion site of the lower trocars, on the median and left medial line of the hypogastrium, were observed during the post-surgical period. The lesions persisted for approx. 2 weeks after the procedure and underwent spontaneous resorption.

The patient was re-admitted to the hospital for limited lesions in the abdominal wall and strong, recurring pain of the hypogastrium during the menstruation. The pain was located mostly near the insertion site of the lower trocars, without any accompanying nausea or vomiting. The limited lesions were painful upon examination and the abdominal wall was slightly tense. Two lesions in the abdominal wall (3 cm in diameter on the

Table I. Review of the medical literature concerning complications following laparoscopic procedures.

| Author: | Year | Patient age | Previous surgery (laparoscopy) | Time interval (months) | Location of complication |
|-----------------------|------|-------------|--------------------------------|------------------------|--------------------------|
| Denton G [23] | 1990 | 37 | sterilization | 12 | Umbilical area |
| Healy J [27] | 1995 | 23 | diagnostic | 9 | Umbilical area |
| Martínez-Serna T [28] | 1998 | 35 | diagnostic/laparotomy | 11 | Suprapubic area |
| Majeski J [24] | 2004 | 44 | myomectomy | 84 | Umbilical area |
| Akbulut S [26] | 2010 | 30 | cyst resection | 4 | Right trocar |
| Song J [29] | 2011 | 45 | supracervical hysterectomy | 24 | Suprapubic area |

median line and 6 cm in diameter on the medial left line of the hypogastrium), were revealed in an ultrasound examination with a linear probe. Upon admission, a gynecological ultrasound with a vaginal probe showed no deviations from the norm. An initial diagnosis of endometriosis in the post-laparoscopic scar was made and the patient was deemed eligible for surgical removal of the endometrial foci. The procedure was performed on 25 July, 2013. Two endometrial foci, 3x3 cm and 6x3 cm (Figures 1, 2 and 3), were extirpated. The foci had grown to the fascia of the rectus abdominis muscles. During the preparation of tissues, the peritoneal cavity was opened and sewn; then a non-absorbable surgical mesh from a monofilament polypropylene yarn was fixed over the muscular fascia (Optomesh Thinlight, considered a ‘light’ mesh, with a minimum amount of implanted synthetic material). The surgical procedure and the recovery were uneventful. The patient was discharged home in a good condition. Until today the patient reported no pain or complaints.

Discussion

Endometriosis is a chronic, estrogen-dependent disease consisting in implantation and hyperplasia of the endometrium outside the uterine cavity, of immunological and inflammatory origin, with pain as the dominant symptom [1].

No single theory explains the etiopathogenesis of endometriosis. In 1927 Sampson [16], suggested that endometriosis was formed as a result of retrograde ovarian outflow of the menstrual blood to the peritoneal cavity [2, 18, 19]. The Lavender induction theory [20], mentioned transformation of the epithelium into endometrial cells under the influence of exfoliated endometrium and factors related to the uterine mucosa [20]. According to the Meyer metaplasia theory, the stem cells, e.g. of the peritoneal epithelium or genital epithelium of the ovary, are transformed under the influence of various factors stimulating, for example, infectious or hormonal factors [1,21]. Yet another theory, the transplantation theory (implantation theory), assumed the relocation with the consequential implantation and growth of live cells of the endometrial mucosa. The spreading of endometriosis may be performed by continuity, through blood and lymphatic vessels, through the fallopian tubes by retrograde menstruation, and iatrogenically during surgical procedures. The theory could explain the development of endometriosis in the abdominal wall in women after a caesarean section, on the perineum after vaginal deliveries and in the umbilicus after laparoscopic procedures [22].

Endometriosis in the umbilicus occurs relatively rarely (0.5-1% of the extraorganic locations of the disease). It is estimated that approx. 30% of the cases are a result of laparoscopic procedures, in patients with endometriosis diagnosed intraoperatively or after opening the uterine cavity, e.g. during the extirpation of uterine myomas [15]. Endometriosis in scars after other laparoscopic procedures, such as diagnostic laparoscopy or laparoscopic appendectomy in patients with a negative history of endometriosis, is diagnosed very rarely. The first endometriosis in a scar after laparoscopic sterilization was described in a 37-year old patient with an unknown history of endometriosis by Denton et al., in 1990 [23]. It was only in 2004 that Majewski et al. [24], described endometriosis in the umbilicus of a 44-year-old patient after laparoscopic resection of a myoma [24]. In our case, endometriosis in a scar after laparoscopic extirpation of



Figure 1. Two endometrial foci, measuring: 3x3 cm and 6x3 cm (Figs. 2 and 3).



Figure 2. Endometrial tumor in a scar after the lower trocar, on the median body line, measuring approx. 3x3 cm.



Figure 3. Endometrial tumor measuring approx. 6 cm in diameter, on the medial line of the hypogastrium, in a scar following the lower trocar.

the uterine myoma in the 45-year old patient was located near the insertion site of the two lower trocars. The patient had no previous history of endometriosis. However, after the surgery, limited hematomas in the abdominal integuments were observed at the site the lower trocar insertion, on the median and left medial line of the hypogastrium. The lesions persisted for approx. 2 weeks after the procedure and underwent spontaneous resorption. Table 1 presents a review of the medical literature with regard to the occurrence of endometriosis in the abdominal wall, following laparoscopic procedures, with a negative history of endometriosis.

Clinical symptoms of endometriosis are relatively unspecific. The most commonly reported gynecological problems include chronic pain complaints located mostly in the pelvis minor (30-50% of women), pain intensifying during menstruation (60-80%), and painful sexual intercourse (25-50%) [3]. Scar endometriosis is characterized by the occurrence of hard, subcutaneous lesions. A symptom characteristic for endometriosis, i.e. intensification of pain in the scar during the menstruation, can be distinguished in this case.

The outline of a diagnostic procedure which allows to make the initial diagnosis of the disease consists of three elements: analysis of the medical history, physical examination and imaging tests [2, 25]. In the presented case, the initial diagnosis of endometriosis was made on the basis of the medical history (condition following laparoscopic treatment of uterine myomas), occurrence of limited lesions in a location typical for laparoscopy, and pain during menstruation. Moreover, they were hyperechogenic, limited and well-vascularized lesions located in the subcutaneous tissue revealed with a linear 5-7.5 MHz probe in transabdominal imaging [2].

Laparotomic resection of endometrial foci along with the border of healthy tissue remains the method of choice in the treatment of scar endometriosis. A supplementary treatment, e.g. with the use of non-steroid anti-inflammatory drugs or oral contraceptives, may be considered for scar endometriosis in women of reproductive age [26]. In the described case, during the preparation of endometriosis within the borderlines of healthy tissues, a fragment of aponeurosis was removed. To decrease the risk of hernia, a surgical mesh was fixed over the fascia of the abdominal muscles. The risk of endometriosis in a post-laparoscopic scar, especially in patients with intraoperatively diagnosed endometriosis in the form of cysts, can be limited by using, for example, laparoscopic bags. However, homeostasis and prevention of subcutaneous hematomas seem to be the most important elements.

In conclusion, each limited lesion in the subcutaneous tissue, with pain intensifying during the menstruation, should suggest an initial diagnosis of scar endometriosis, regardless of patient age and type of surgery.

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