

Symptomatology and Surgical Perspective of Scar Endometriosis: A Case Series of 16 Women

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Abstract

Aim The prevalence of scar endometriosis is increasing with the increasing caesarean deliveries and laparoscopic procedures done for pelvic endometriosis. To analyse the symptomatology and surgical perspective of scar endometriosis.

Materials and methods Retrospective review of 16 women who underwent surgery for scar endometriosis in the period of 4 years in Amrita institute of medical sciences.

Results Mean age of the patients is 35.19 years. Mean interval from the index surgery to the presentation is 4.56 years. Mean size of the swelling is 2.84 cm. In 68.8% of the patients, caesarean section was the inciting surgery. 18.7% had port site endometriosis. Cyclical pain and swelling at the scar site was present in 93.8% of the

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women. 18.9% had concurrent pelvic endometriosis. All women had involvement of the subcutaneous tissue followed by 11 women with the involvement of rectus sheath. There was no recurrence of the lesion in the operated patients in the mean follow-up period of 11.91 months.

Conclusion In all women presenting with cyclical scar site pain and swelling, scar endometriosis should be considered. It commonly follows caesarean section and laparoscopic surgeries done for endometriosis. Wide local excision with or without reconstruction is the method of choice for this condition. Role of tumescent solution during surgery and postoperative medical management to reduce recurrence needs further prospective studies.

Keywords Scar endometriosis · Abdominal wall endometriosis · Scar site pain · Tumescent solution

Introduction

Endometriosis is the presence of functioning endometrial tissue outside the uterine cavity. Pelvic endometriosis is nowadays a common condition encountered by gynaecologists and infertility specialists. But extra pelvic endometriosis in distant sites such as urinary bladder, umbilicus, gastrointestinal tract and thoracic cavity is a rare condition. Even rarer condition is the scar endometriosis and the pathology behind the development of this condition is different from other types of endometriosis. Scar endometriosis occurs due to iatrogenic implantation of endometrial tissue during uterine procedures and very rarely after nonuterine procedures also. The incidence of scar endometriosis after caesarean section has been reported to be 0.03–0.4% [1]. There are case reports of scar endometriosis following vaginal delivery in episiotomy site, laparotomy for hysterectomy, tubectomy, ectopic pregnancy surgeries, appendectomy, hernia repair sites, and even in the needle tract after amniocentesis [1]. As it can happen following abdominal surgeries, the problem can be presented to general surgeons, plastic surgeon or gastrosurgeons apart from gynaecologists. The association of clinical symptoms with the menstrual cycles should clinch the diagnosis, and the knowledge about the disease and strong clinical suspicion are needed to diagnose this condition.

Aim

To evaluate the symptomatology of scar endometriosis and surgical perspective of this condition.

Materials and Methods

A retrospective review was performed to search the women who had undergone surgery for scar endometriosis from the prospectively maintained surgical database. Total of 16 women who have undergone excision of scar endometriosis from the period of November 2011 to November 2015 were included. The data about age at diagnosis, parity, mode of delivery, interval from the index surgery to the onset of symptoms, symptoms and presence of swelling at scar site, mean diameter of the swelling, other site endometriosis if any, prior medical treatment history, imaging findings, surgical findings, histopathology and the symptomatic outcome during the follow-up period were collected from the electronic medical records.

The data were analysed using SPSS version 2.0—Frequencies for categorical variables and Descriptives for numerical variables were used.

Results

Our search identified 16 women who underwent pathologically confirmed scar endometriosis surgery. The procedures were done by not only gynaecologists, but also by general surgeons, plastic surgeons and gastrosurgeons. Demographic features were analysed. The mean age of the patients was 35.19 years (range 25–49). The symptomatology varied from scar site cyclical pain, noncyclical pain, purplish or brownish coloured swelling or tender swelling at the scar site, bleeding from the swelling and dysmenorrhoea. The 49-year-old lady who underwent lower segment caesarean section (LSCS) 10 years before had cyclical pain for 5 years at scar site. After she attained menopause, she continued to have pain without cyclicity. Majority of the patients (93.8%) had cyclical pain and swelling at the scar site. Bleeding from the scar site swelling is typical of the scar endometriosis. Four women had bleeding from the lesion, of which one was a midline vertical scar with umbilical involvement, another with umbilical port site endometriosis, one woman had an endometriotic lesion involving the appendectomy scar, and one with suprapubic transverse scar. Pain at the scar site had started as early as 2 months from the antecedent surgery and as late as 17–20 years. Other patient characteristics and clinical symptoms are detailed in Tables 1 and 2.

As part of diagnostic and preoperative evaluation, ultrasonography was done for 11 women and MRI was done for 5 women. The choice of imaging was decided by the treating consultant. Ill-defined hypoechoic or heteroechoic lesions were found in the USG whereas mixed signals or high intense signals in T2-weighted images were shown in

Table 1 Demographic characteristics and clinical data of study patients

Mean age at diagnosis (years)	35.19 ± 6.72
Interval from the index surgery to the onset of symptoms (years)	4.56 ± 4.92
Mean duration of symptoms (years)	1.70 ± 1.61
Mean size of the swelling (cm)	2.84 ± 1.07
Parity	
One	9 (56.3%)
Two and above	7 (43.8%)
Mode of delivery	
Vaginal delivery	4 (25%)
One LSCS	7 (43.8%)
Two LSCS and above	5 (31.3%)
Index surgery	
Episiotomy	1 (6.3%)
Caesarean section	11 (68.8%)
Laparoscopy	3 (18.7%)
Appendectomy	1 (6.3%)
Dysmenorrhoea	14 (87.5%)
Cyclical pain	15 (93.8%)
Continuous scar site pain	1 (6.3%)
Swelling	15 (93.8%)
Bleeding from the swelling	4 (25%)
Concurrent pelvic endometriosis	3 (18.9%)

MRI (Figs. 1, 2). There was enhancement with contrast in one lesion. MRI showed the involvement of muscle and sheath in four patients. Fine needle aspiration cytology had not been tried as a diagnostic procedure in the studied patients. For one woman, CT scan of the lesion showed soft tissue lesion involving rectus sheath. Wide local excision of the lesion with at least 1 cm margin was done for all the patients. For one woman with the left-sided lesion in the pfannenstiell scar, separate left-sided infraumbilical transverse incision was made, as the lesion extended more upwards. Three women needed mesh repair for closure of the defect after wide excision. Perineal endometriosis was a recurrent lesion with the previous surgery done elsewhere. The lesion was excised completely without damaging the anal sphincter. After laparoscopy done for pelvic endometriosis, two umbilical port site and one left lateral port site endometriosis were found in the study. Among the postcaesarean cases, only one patient had a midline vertical scar and all other caesarean scar endometriosis were after pfannenstiell scar. Left side of the pfannenstiell scar was involved slightly more than right side. Subcutaneous tissue was part of the lesion in 100% of the patients followed by 73% involvement of rectus sheath (excluding perineal endometriosis). Intraabdominal extension of the lesion up to anterior uterine wall was seen in two women.

Table 2 Descriptive statistics of the surgical findings

Mean size of the lesion (cm)	2.84 ± 1.07
Site of the lesion	
Transverse scar of LSCS	10
Vertical scar of LSCS	1
Episiotomy	1
Port site	3
Appendectomy scar	1
Side of the lesion in transverse scar	
Right	4
Left	6
Layers involved	
Skin	5 (31%)
Subcutaneous tissue	16 (100%)
Rectus sheath	11 (68.8%)
Rectus muscle	3 (18.8%)
Peritoneum	2 (12.5%)
Preoperative medical management	5
Postoperative medical management	5

Regarding preoperative medical management, five women received hormonal suppression by oral and injectable medroxyprogesterone acetate, GnRH analogues. As long as the therapy was given, they remained asymptomatic and once the treatment was stopped, symptoms reappeared leading them to surgery. Postoperatively five women were given hormone suppression by oral contraceptives, oral and injectable medroxy progesterone acetate for 6-month period. In the mean follow-up period of 11.91 ± 1.73 months, there was no recurrence.

Discussion

Scar endometriosis is said to occur by direct inoculation of endometrial tissue most commonly following caesarean section than any other surgical procedures, although isolated cases of primary abdominal wall endometriosis has also been reported. Whether it is due to the rising number of caesareans performed or due to a faulty technique is unknown. It can be hypothesised that the popularisation of single layer closure of uterus and nonclosure of parietal and visceral peritoneum may be an attributing factor. But no definite conclusion can be said regarding the same as only 4 out of the 16 cases (25%), the caesarean was done in our institute. As pelvic endometriosis is efficiently tackled laparoscopically, port site endometriosis is also being reported [2].

The mean age of the patient population at the time of diagnosis, the mean size of the mass, duration of symptoms are comparable with other larger series studies. Interval

Table 3 Comparison of our study with other larger series

	Our study (16)	Ding and Zhu [3] (227)	Khamechian et al. [9] (36)	Ecker [8] (65)
Mean age (years)	35.19±6.72	31.7 ± 3.8	32.5 ± 8.24	35 ± 8
Mean interval from the index surgery to the presentation (years)	4.56 ± 4.92	2.3 ± 2.2	2.5 ± 1.01	Median 7
Index surgery—caesarean section	68.75% (11)	99.6% (226)	73.3%	81.5%
Perineal	6.3% (1)	0.4% (1)	–	–
Symptoms—cyclical pain	93.8%	65.2%	46.7%	–
Swelling	93.8%	65.2%	100%	63.1%
Bleeding	25%	0.4%	3.3%	–
Concurrent pelvic endometriosis	18.8%	5.3%	–	–
Mean duration of symptoms (years)	1.7 ± 1.6	2.5 ± 2.2	12.7 ± 10.44 months	–

between the index surgery and onset of symptoms is 4.56 years. Cyclical pain and painful mass at the scar site with or without bleeding from the site are the clinching features of scar endometriosis. Dysmenorrhoea was present in 87.5% of patients but evidence of concurrent pelvic endometriosis was seen only in three patients (18.75%). Concurrent pelvic endometriosis was present in 5.3% in a study by Yan Ding et al. [3], though the incidence of concomitant pelvic endometriosis is reported to be 14.2–26%. Results of our study has been compared with other larger series in Table 3.

Ultrasound helps in the diagnosis of the subcutaneous lesion by detecting the presence of a hypoechoic mass which may at times show internal hyperechoic areas [4]. It also helps to rule out other differential diagnosis like an abdominal wall hernia. Doppler may show increased vascularity. An MRI is a necessity to assess the extent of the lesion beyond the subcutaneous plane and to detect any intraabdominal extension. FNAC may be helpful in differentiating between desmoid tumour, fibrosis, suture granuloma, lipoma, fat necrosis and metastatic disease but it may be harmful in case of abdominal wall hernia. FNAC is helpful in ruling out malignant transformation of abdominal wall endometriosis [5]. The limited amount of sample material as well as presence of fibrotic tissue in the old lesions of endometriosis may obscure diagnosis by FNAC. In the study by Zhao et al. [6] FNAC was inconclusive in 75% of cases. CT is less preferred because of lack of contrast resolution and radiation exposure.

Scar endometriosis is best tackled by complete excision of the lesion with wide margins of about 1 cm and reconstruction of the abdominal wall if needed with mesh. The endometriotic tissue will appear as pinkish mass of firm consistency, sometimes with bluish black or brownish cystic spaces that can be clearly distinguished from the surrounding yellowish subcutaneous fat. In the rectus sheath and muscle also the abnormal areas can be clearly

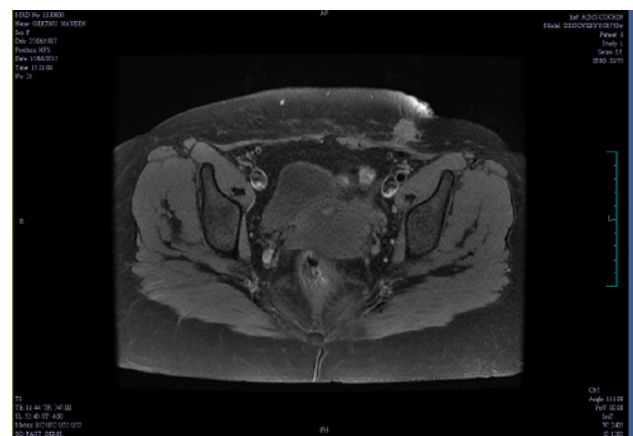


Fig. 1 MRI of the lower abdomen T2 weighted image showing-scar endometriosis of It corner of the caesarean scar—hyperintense areas involving soft tissue, skin extending to rectus

distinguished from the normal muscle tissue from its irregular appearance and hard consistency. If the intraoperative bleeding is less, the extent of the lesion can be delineated properly and completely excised. In three of the cases, to reduce the blood loss, tumescent solution had been used which helped in demarcation of the margins of the lesion, so that no amount of endometriotic tissue left out. This technique was implemented by plastic surgeon. This solution is a mixture of 1% lidocaine and 1:1 million adrenalin in 1l of saline [7]. Complete removal of all the abnormal looking tissue is essential to prevent recurrence. Long-term follow-up of these cases may provide us the feedback whether this technique helped in prevention of recurrence. The mass need not be on the scar site completely, which may necessitate separate incision for en bloc excision. Caesarean section is the commonest surgery in which inoculation at the incision site occurs, commonly in the transverse incision, slightly more on the left side without statistical significance. Even in the midline

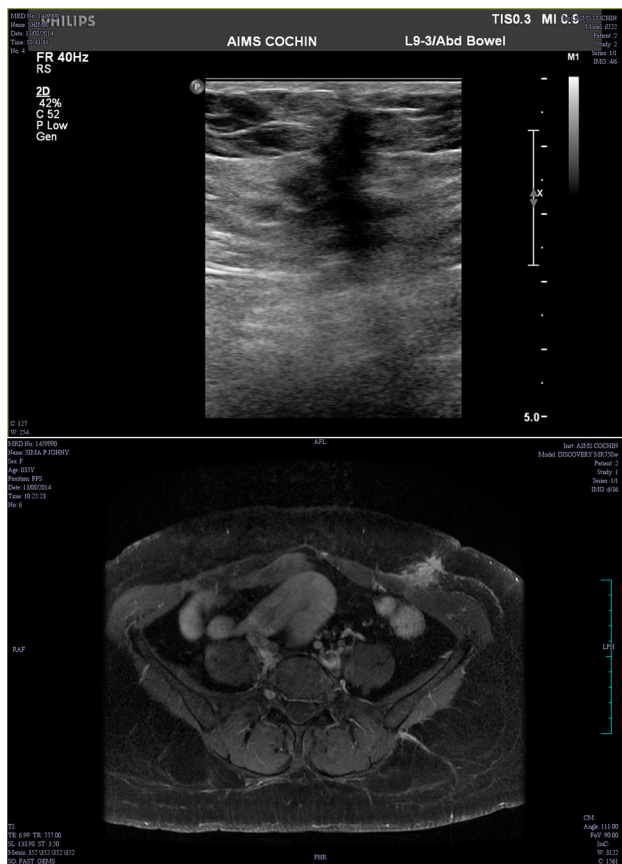


Fig. 2 Scar endometriosis of the left port site T2-weighted image showing hyperintense areas involving skin, subcutaneous tissue with suspicious extension to left rectus and USG correlation of the same

incision, the lower part is affected commonly [3]. Subcutaneous layer and rectus sheath were involved more than muscle, peritoneum and skin in larger series studies [3, 8] except in the study by Khamechian et al. [9], muscle was involved in 46.7% cases.

Medical management of this condition by oral contraceptives, oral or parenteral progestogens were used both pre- and postoperatively. According to the literature, pre-operatively it can be given for temporary symptomatic relief. Once the drugs were stopped, symptoms promptly recurred. Some may not respond to the hormonal suppression also. Postoperatively it may be given in the patients with concurrent pelvic endometriosis. In a study by Zhang and Liu [10] postoperative medication group had significantly lesser recurrence. Histopathologically, endometriosis can be diagnosed by the presence of endometrial glands, stroma or hemosiderin pigment (Figure 3).

Many preventive strategies have been hypothesised in the literature like exteriorisation of uterus for suturing, leaving away the endometrium while suturing, strict

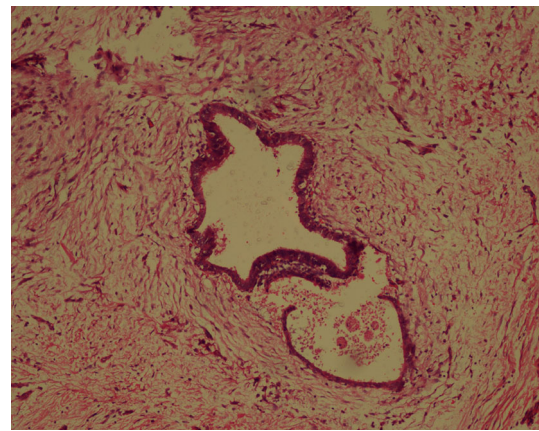


Fig. 3 Microscopic view of the lesion showing endometrial glands with stroma and squamous epithelium of the overlying skin

irrigation of abdominopelvic cavity, not using the mop to clean the uterine cavity, approximating the visceral and parietal peritoneum and using separate needles for uterine and abdominal wall suturing [11]. But there are no data to suggest that these strategies can prevent the occurrence of scar endometriosis.

Recurrence rate is from 1.5 to 7.5% in the previous studies [3]. In our study we did not find any recurrence during the follow-up period of 11.91 ± 1.73 months, though perineal endometriosis operated here was the recurrent lesion operated elsewhere.

Conclusion

The diagnosis of scar endometriosis should be considered in all women presenting with scar site pain with or without cyclicity and swelling. Scar endometriosis commonly follows caesarean section and nowadays laparoscopic port site endometriosis is on the rise. Imaging helps in planning the surgical management of the lesion. Wide local excision with or without reconstruction of abdominal wall is the management of choice. Role of tumescent solution during surgery and postoperative medical management in reducing the recurrence needs further prospective studies.

Compliance with Ethical Standards

Conflict of interest This is an original article based on a retrospective study performed at Amrita Institute of Medical Sciences, Kochi, Kerala, India. The authors, Sudha S, Janu Mangalakanthi, Kishore P, Deepthi Sharma, Chitra Remadevi and Sarala Sreedhar declare that there is no conflict of interest related to this work.

Informed Consent Informed consent has been taken from all patients and there are no ethical issues related to this study.

References

1. Oh EM, Lee WS, Kang JM, et al. A Surgeon's perspective of abdominal wall endometriosis at a caesarean section incision: nine cases in a single institution. *Surg Res Pract*. 2014;765372. (Epub 2014 Sep 22).
2. Emre A, Akbulut S, Yilaz M, et al. Laparoscopic trocar port site endometriosis: a case report and brief literature review. *Int Surg*. 2012;97:135–9.
3. Ding Y, Zhu J. A retrospective review of abdominal wall endometriosis in Shanghai, China. *Int J Gynecol Obstet*. 2013;121:41–4.
4. Gidwaney R, Badler RL, Yam BL, et al. Endometriosis of abdominal and pelvic wall scars: multimodality imaging findings, pathologic correlation, and radiologic mimics. *Radiographics*. 2012;32(7):2031–43. doi:10.1148/rg.327125024.
5. Pachori G, Sharma R, Sunaria R, et al. Scar endometriosis: diagnosis by fine needle aspiration. *J Cytol*. 2015;32(1):65–7.
6. Zhao X, Lang J, Leng J, et al. Abdominal wall endometriomas. *Int J Gynaecol Obstet*. 2015;90:218–22.
7. Bashir MM, Qayyum R, Saleem MH, et al. Effect of Time interval between tumescent local anesthesia infiltration and start of surgery on operative field visibility in hand surgery without tourniquet. *J Hand Surg Am*. 2015;40(8):1606–9. doi:10.1016/j.jhssa.2015.03.034 (Epub 2015 May 13).
8. Ecker AM, Bonnellan NM, Shepherd JP, et al. Abdominal wall endometriosis: 12 years experience at a large academic institution. *Am J Obstet Gynecol*. 2014;211:363.e1-5.
9. Khamechian T, Alizargar J, Mazoochi T. 5 year data analysis of patients following abdominal wall endometriosis surgery. *BMC Womens Health*. 2014;14:151.
10. Zhang J, Liu X. Clinicopathological features of endometriosis in abdominal wall-clinical analysis of 151 cases. *Clin Exp Obstet Gynecol*. 2016;43(3):379–83.
11. Uçar MG, Şanlıkan F, Göçmen A. Surgical treatment of scar endometriosis following cesarean section, a series of 12 cases. *Indian J Surg*. 2015;77(Suppl 2):S682–6.