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CASE REPORT

Clear Cell Adenocarcinoma Arising from Endometriosis in Abdominal Wall Cesarean Section Scar: A Case Report and Literature Review

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Background: Endometriosis developing in a cesarean section (CS) scar is an unusual event. Malignant transformation arising on the background of scar endometriosis in the abdominal wall is extremely rare. Herein we report a case of clear cell carcinoma (CCC) arising in the abdominal wall from endometriosis tissues following CS and review previous literature.

Case Presentation: A 48-year-old gravida 2 para 1 female presented with an abdominal wall mass at her CS scar, which increased in size and became painful in the last 2 years. Physical examination showed a multilocular solid mass of about 13 cm, at the previous CS scar. Computed tomography (CT) and magnetic resonance imaging (MRI) revealed a 12.8cm × 7.7cm multi-septate cystic lesion on the anterior abdominal wall, and histological examination showed that CCC was caused by the transformation of abdominal wall endometriosis (AWE).

Conclusion: An endometriosis-associated malignancy should be considered in the differential with any enlarging mass in the abdominal wall scar.

Keywords: cesarean section, abdominal wall endometriosis, case report

Introduction

Endometriosis is an inflammatory disorder featured by the existence of normal endometrial glands and extrauterine matrix.[1] These pathological changes usually involve the ovaries and, more rarely, ureter, intestine, lung, and abdominal wall.[1,2] AWE patients usually have a history of gynecological operation with open uterine cavity.

The incidence rate of abdominal surgical scar endometriosis ranges from 0.03% to 1.08% of women undergoing pelvic surgery.[2–4] Women usually account of a periodic menstrual pain, which refers to abdominal wall.

Endometriosis is supposed to a benign disease, and malignant transformation is rare. About 80% of endometriosis-related malignant tumors occur in the ovary, while 20% are limited to extragonadal sites.[5] CCC arising from malignant transformation of endometriosis in the abdominal wall after CS is a very rare clinical condition, and the published literature about this subject is frail. Here, we report a case of CCC arising from the abdominal wall at the previous CS scar. In addition, we reviewed the literature on this unusual event.

Case Presentation

A 48-year-old gravida 2 para 1 female presented with progressively growing mass of cesarean scar, regular pain with menstruation for 15 years. She had a caesarean delivery 22 years ago. Seven years after the operation, she noticed a 2cm × 2cm nodule beside the abdominal scar, red, with slight pain during menstruation. The nodule grew rapidly, and the pain became more serious in the previous 2 years. She complained her troubles of severe dysmenorrhea on the first day of the menstrual period, accompanied by

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abdominal pain and deep pain in the site of uterine scar, with an intensity of six on the pain scale (6/10). There were no gynecological malignancies in her family history, and she had never received hormone therapy.

Physical examination indicated a 13cm mass with multilocular originating from the previous surgical scar without tenderness, red, ulcer with bloody secretions, surrounded by erythema.

Abdomino-pelvic CT scan and MRI confirmed a lobular, peripherally enhancing lesion in the rectus muscle sheath, extending to the skin surface within the abdominal wall, with images suggestive of internal septation. It measured around 12.8cm × 7.7cm along the major transverse, anteroposterior and longitudinal axes, respectively (Figures 1 and 2), without any abnormalities in the abdominal cavity.

Laboratory findings: tumor marker CA 125 was 164.7 U/mL (the reference range: 0–35 U/mL); her cancer antigen 19–9, α-fetoprotein, and carcinoembryonic antigen were within the reference range.

A punch biopsy of the mass showed CCC, without benign endometriosis presented (Figure 3) (Immunophenotype: CK+, CK7+, CK20-, CD99-, HNF1b+, Napsin A (+)). Suggesting, CCC arising from endometriosis of the abdominal wall.

The patient underwent exploratory laparotomy, and found an irregular, cystic and solid mass deep in the rectus muscle of the midline. Extensive resection of the abdominal wall mass was performed with mesh reconstruction of the abdominal wall. The resected specimen was a lobulated mass with a maximum size of 13cm, accompanied by focal hemorrhage and necrosis. It was composed of microcystic spaces, involving the dermis, subcutaneous and skeletal muscle. The pathologic results of the uterus and bilateral accessories (ovary and fallopian tube) were negative.

Microscopic examination of the tumor showed similar histopathology to the biopsy.

The patient underwent six cycles of cisplatinum-based chemotherapy and adjuvant radiotherapy to the abdomen. Twelve months of follow-up, there was no further evidence of disease by imaging or clinical examination.

Discussion

Malignancy arising in association with endometriosis is quite rare. The incidence of abdominal surgical scar endometriosis in women undergoing pelvic surgery ranges between 0.3% and 1% (5), and these cases include endometrioid carcinoma (70%), sarcoma (25%) and CCC (5%), of which abdominal wall CCC due to endometriosis is a rare disease reported in the literature (6).

CCC caused by malignant transformation of AWE after CS is a rare clinical condition. Although rare, the number of reported cases has increased in recent years (7), possibly owing to the increased rates of CS and conservative uterine surgery worldwide (7).

Sampson and John[6] proposed three diagnostic criteria for the malignant tumors arising in endometriosis as follows: (i) demonstration of benign and malignant endometrial tissues in the tumor, (ii) the histological type consistent with the origin of endometrium, and (iii) no other primary tumor sites were found. Moreover, Mostoufizadeh et al[7] stated that the plain coexistence of tumor and endometriotic tissue is enough to prove the derivation of the endometriosis. According to the literature, even if the presence of endometriosis is the pathological diagnosis of the disease, only 36–42% of cases detected in the transition zone.[8]

To the best of our knowledge, to date, there are limited literature studies on CCC caused by abdominal wall scarring, and we retrospectively listed and analyzed 12 typical ones (including the present case) (Table 1). In these studies, the

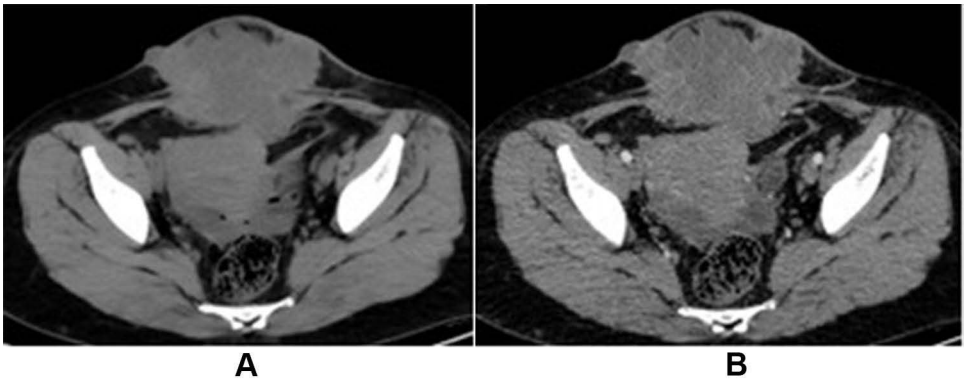

Figure 1 CT image of the abdominal mass shows a heterogeneous tumor associated with cesarean section scar: plain scan (**A**) and contrast enhancement (**B**). (**A**) Plain scan showed a lobulated cystic mass at the previous cesarean section scar. (**B**) The solid components showed mild enhancement after contrast.

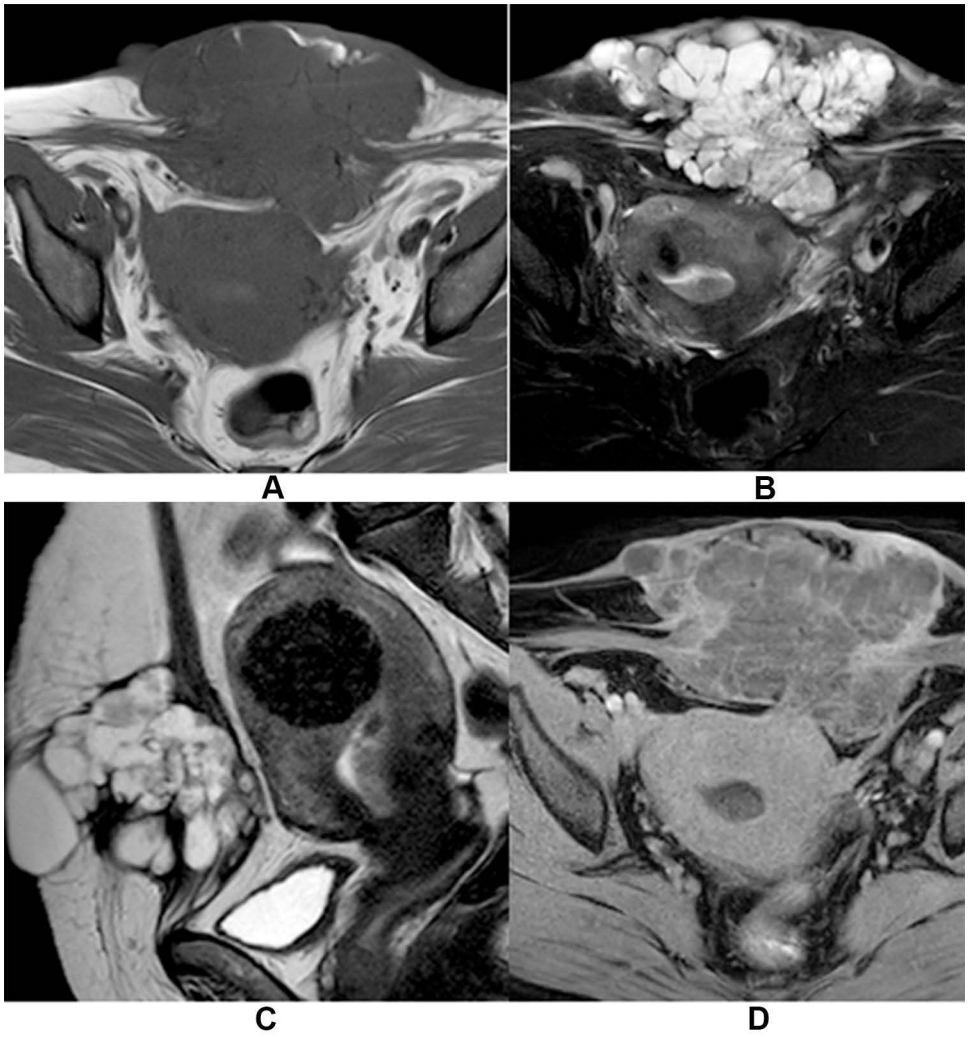

Figure 2 The MRI show the extensive lobulated cystic components of the mass with low signal on T1WI (**A**) and high signal intensity on T2WI (**B**–**D**). Axial post-contrast image showed the solid septal component was significantly enhanced.

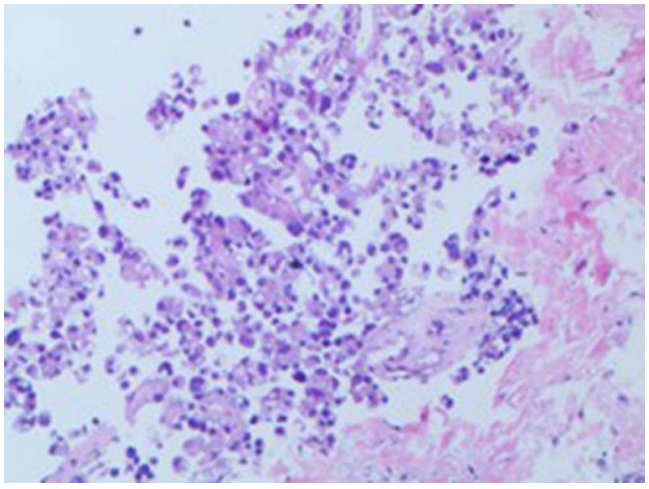

Figure 3 Histologically, Hematoxylin and eosin stain, magnification×200 shows typical clear-cell carcinoma with typical tubulocystic and papillary architectures.

Table 1 Cases of CCC Arising from Abdominal Wall Scar (N = 39)

No.	Reference	Year Reported	Patient Age (y)	Size (cm)	Previous Surgery	Delay(y)*	Coexisting Endometriosis	Treatment	Follow-Up (mo)	Prognosis
1	Schnieb &Wagner-Kolb[12]	1986	40	-	1 CS	15	Yes	RT, TAH+BSO, RT progesterone	18	DOD
2	Hitti et al[13]	1990	46	6	1 CS	14	Yes	RT, TAH+BSO	30	NED
3	Miller et al[10]	1998	38	4	1 CS	9	Yes	Radical resection, TAH+BSO, RT	60	NED
4	Park et al[9]	1999	54	5	1 CS	26	Yes	Radical resection, RT	1.5	NED
5	Ishida et al[14]	2003	56	10	1 CS	24	No	Radical resection, RT	24	DOD
6	Sergent et al[15]	2006	45	20	2 CS	28	No	Radical resection, TAH+BSO, RT, CT	6	DOD
7	Alberto et al[16]	2006	38	6	1 CS	11	No	Radical resection, CT, RT	NA	NA
8	Razzouk et al[17]	2007	46	>20	2 CS	20	Yes	Radical resection, CT	6	DOD
9	Harry et al[11]	2007	55	4	Open tubal sterilization	30	Yes	Radical resection, RT	18	NED
10	Bats et al[18]	2008	38	10	1 CS	13	Yes	Radical resection, TAH+BSO CT	2	NED
11	Rust et al[19]	2008	42	5	TAH	5	Yes	Radical resection	NA	NA
12	Achach et al[20]	2008	49	9	Laparotomy myomectomy	20	Yes	Radical resection, CT	NA	NA
13	Matsuo et al[21]	2009	37	14	Laparotomy endometrioma	10	No	Radical resection, TAH+BSO pelvic lymph nodes dissection, omentectomy, CT	18	Recurrence
14	Williams et al[22]	2009	53	25	1 CS	17	No	Radical resection, TAH+BSO CT, RT	11	DOD
15	Bourdel et al[23]	2010	43	9	2 CS; scar endometriotic nodule excisions	5	Yes	Radical resection, CT, RT	22	DOD
16	Yan et al[24]	2011	41	9	2 CS; hysterectomy; scar endometriotic nodules excisions	1	No	Radical resection, Q-Ad	24	NED
17	Shalin et al[25]	2012	47	3	1 CS	NA	Yes	Radical resection, CT, RT	7	NED
18	Mert et al[26]	2012	42	15	2 CS +Tubal ligation; oophorectomy	NA	Yes	CT + Radical resection	1	NED
19	Mert et al[26]	2012	51	6	2 CS; TAH	NA	Yes	Radical resection + RT	31	NED
20	Sawazaki et al[27]	2012	41	4.8	2 CS	15	Yes	Radical resection +CT	NA	NA

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21	Li et al[28]	2012	49	9	1 CS	25	No	CT	8	NED
22	Dobrosz et al[29]	2014	42	8	1 CS	17	Yes	Radical resection	/	NED
23	Ijichi et al[30]	2014	60	4	2 CS	35	Yes	Radical resection	15	NED
24	Heller et al[31]	2014	37	18	3 CS	8	NA	Radical resection	5	Recurrence
25	Liu et al[32]	2014	39	6	1 CS; scar endometriotic nodule excision	10	Yes	Radical resection +CT	12	DOD
26	Aust et al[33]	2015	47	10	1 CS; hysterectomy	10	No	Radical resection +CT	10	NED
27	Ruiz et al[34]	2015	41	15	1 CS	20	Yes	Radical resection+ CT+ RT	6	Recurrence
28	Ruiz et al[34]	2015	57	19	3 CS	30	Yes	Radical resection+ CT + RT	NA	NED
29	Sosa-Duran et al[35]	2015	45	9	3 CS	6	Yes	Radical resection	16	NED
30	Ferrandina et al[36]	2016	44	22	1 CS	8	Yes	Radical resection+ CT	6	DOD
31	Graur et al[37]	2017	43	5.9	1 CS	22	No	Radical resection+ CT	NA	NED
32	Wei & Huang[38]	2017	46	5.3/ 6.3	1 CS	18	Yes	Radical resection + RT	3	NED
33	Marques et al[39]	2017	47	11	3 CS, Tubal ligation	17	Yes	Radical resection+ CT	45	NED
34	Gentile et al[40]	2017	42	10	1 CS	7	Yes	Radical resection+ CT	8	NED
35	Lopes et al[41]	2019	48	12	1 CS	30	Yes	Radical resection+ CT	4	NED
36	Behbehani et al[42]	2019	48	7	1 CS + cervical hysterectomy	5	Yes	Radical resection+ CT	2	NED
37	Rolon M et al[43]	2019	48	7	3 CS + scar endometriotic nodule excision + hysterectomy, BSO	4	No	Radical resection+ CT	NA	NA
38	Giannella et al[44]	2020	45	20	2 CS	13	No	CT + RT	7	DOD
39	Dong Liu et al (the present case)	2022	48	12.8	1 CS	22	No	Radical resection +TAH-BSO+ CT	12	NED

Note: *Delay between the latest Previous Surgery.

Abbreviations: CCC, clear cell carcinoma; CS, cesarean section; CT, chemotherapy; RT, radiotherapy; NA, no data in; NED, no evidence of disease; TAH, total abdominal hysterectomy; BSO, bilateral salpingo-oophorectomy; LH, laparoscopic hysterectomy; DOD, died of disease.

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average reported age at diagnosis was 45.7 years old, while the mean size of the lesion was 10.9 cm. The literature review showed that 91.7% of cases had a history of CS. The average follow-up time was around 15 months, and about 25% of women died within 15 months of diagnosis. The great majority (our case was included) of cases arose from CS scars, with some exceptions: one case followed myomectomy,[9] one case followed hysterotomy,[10] and one followed open sterilization.[11] All of these procedures would allow endometrium to implant at the surgical incision site. Histological examination showed that more than 66.7% of cases revealed endometriotic tissue. But in our tissue sampling, there was no histological evidence of coexisting endometriosis, either in the peritoneal cavity or in the previous surgical-scar tissue. There are two explanations: 1) all endometrial lesions or ectopic endometrial tissues have been transformed into CCC; 2) primary CCC originated from the abdominal wall scar. In our case, the mass localized to the area of the cesarean scar, which was accompanied by regular pain with menstruation for 15 years, suggesting endometriosis. Therefore, we presumed that CCC was transformed by the pre-existing abdominal-wall endometriosis.

The available case reports in the literature differ in terms of disease-free survival and mortality, which may be related to the timing of diagnosis, the extent of tumor burden and its resectability at the time of diagnosis, as well as different therapeutic effects. Reported cases have been treated with radical resection of the tumor with or without the addition of variable chemotherapeutic and radiotherapy regimens. Due to the low incidence rate, it is difficult to generalize the outcomes or to conduct randomized controlled trials to standardize treatment protocols.

Conclusion

Malignant transformation to CCC on the abdominal wall from a focus of endometriosis is a very rare case. For middle-aged women with a history of gynecologic or obstetric surgery, developing an abdominal wall mass, the possibility of a primary malignancy arising from endometriosis should be considered. Due to its rarity, there is no published treatment guideline at present. From the perspective of prevention, it must be stressed that every gynecological operation should be carried out with great care not to leave visible tissue residues on the abdominal wall.

Abbreviations

CS, cesarean section; CCC, clear cell carcinoma; CT, computed tomography; MRI, magnetic resonance imaging; AWE, abdominal wall endometriosis.

Data Sharing Statement

This case report contains clinical data from the medical records in the First Affiliated Hospital of Soochow University. Additional information is available from the first author upon reasonable request.

Ethics Approval and Informed Consent

Writing and publishing this case report was approved by First Affiliated Hospital of Soochow University.

Consent Statement

Written informed consent for publication of details was obtained from the patient.

Disclosure

The authors report no conflicts of interest in this work.

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