

# Ultrasound-guided wired localisation for resection of impalpable anterior abdominal wall scar endometriomas

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**Abstract** The identification and subsequent complete excision of abdominal scar endometriosis is particularly challenging due to the difficulty in defining the endometriotic deposit from the surrounding scar tissue. This case demonstrates a technique to precisely identify the lesion using ultrasound, and by the use of wire localisation, guide the surgeon to the disease location. This allowed precise and complete wide local incision of the lesion.

**Keywords** Caesarean section · Scar · Endometriosis · Ultrasound · Localisation · Resection

## Introduction

Abdominal wall scar endometriosis is defined as endometrial tissue deposited in abdominal surgical scar which is superficial to peritoneum [1, 2]. It represents between 0.03% and 3.5% [3] of all endometriosis. This is significant when parietal, appendiceal, pleuropulmonary and diaphragmatic endometriosis represent 5% of endometriosis cases [4].

Post-Caesarean section endometriosis represents 57% [1] of all abdominal scar endometriosis with an overall incidence between 0.03% and 0.47% [3, 5, 6]. Scar endometriosis can

also occur after hysterectomies, laparotomy and even laparoscopy for ovarian cystectomy or appendectomy [7, 8].

Diagnosing abdominal wall scar endometriosis can be difficult. Only 47.5–70% of all diagnosis is correct pre-operatively [5, 9]. Symptoms include a mass in abdomen in up to 96% [1], abdominal pain in 87% [1], and pain which can be cyclical in 40% [9] or non-cyclical in 45% [9]. Other differential diagnoses include incisional hernias, late abscesses or suture granulomas [10].

Radiological techniques including power doppler, ultrasound, 3D ultrasound, magnetic resonance imaging can all assist diagnosing and identify the extent of the lesion [10, 11]. The definitive diagnosis, however, remains through histology which can be obtained by either after resection or via ultrasound-guided biopsy [12].

The management of choice is wide local excision of lesion, with recurrence only occurring in between 4.3% and 9.1% of cases [1, 9]. This surgery however can be complex as the lesion is, by definition, embedded within scar tissue, and thus clear identification of the lesion within this abnormal tissue can be difficult. As such, lesions may be missed or incompletely excised making recurrent surgery necessary

The case below demonstrates a simple technique to exactly mark the location of the lesions prior to surgery, thereby optimising the surgical procedure.

## Case

A 31-year-old obese (BMI 43) patient presented with a history of pain in the suprapubic area just above and to the left of a previous Caesarean scar. This worsened on a cyclical basis and was exacerbated by exercise and on sitting from a lying position. She had history of endometriosis and

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had previously undergone surgery to excise endometriosis from this incision around 7 years earlier. Examination revealed tethering over the area but no mass was palpable. Subsequently, she had chronic abdominal pain in the same area causing significant discomfort for many years. Her pain mainly involved the suprapubic area just above and to the left in relation to her previous Caesarean scar. This was worst whenever she does any exercise and when she is trying to sit up from lying. She does also note her pain worsens during her cycle. However on examination, no mass was palpable.

Steroid injections to the scar had been ineffective. The progesterone pill provided some improvement in pain, however, this was not complete and the symptoms increased on cessation.

Ultrasound of the anterior abdominal using a Philips IU22 (Philips Medical Systems) machine and both a curved sector 5 MHz and a linear 12.5 MHz transducer revealed a 24×40 mm relatively well-defined hypoechoic heterogeneous echotextural mass with internal hyperechoic echoes on greyscale imaging in the subcutaneous tissues in the midline below the Pfannenstiel scar (Fig. 1). Although a variety of ultrasound features of endometriomas have been described, including cystic masses [13], solid appearances as here have also been described [14], and in the correct clinical setting would be consistent with an endometrial nodule.

In view of the previous surgery to excise this lesion and the difficulty in locating these lesions, it was decided to use ultrasound imaging to mark the lesion prior to surgery.

## Procedure

Prior to surgery the radiologist identified the lesion with ultrasound using a linear 12.5 MHz transducer. Using an aseptic technique, approximately 2 ml of 2% lidocaine



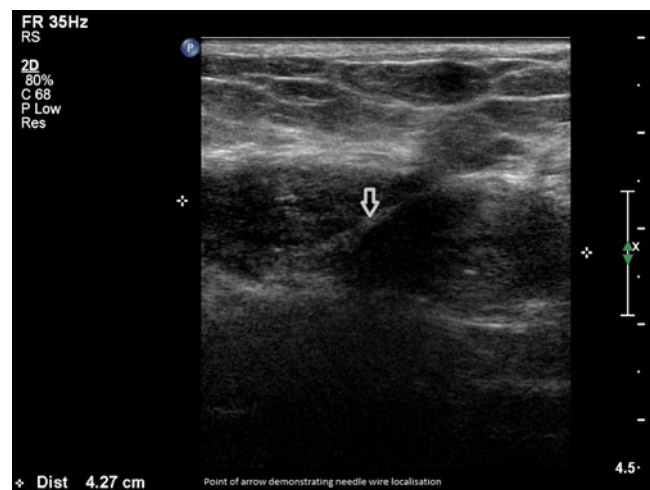
**Fig. 1** Ultrasound diagnosis of Caesarean scan endometrioma

hydrochloride were infiltrated into the skin and subcutaneous tissues a short distance from the left lateral border of the lesion. A Hawkins III Angiotech localisation needle (Medical Devices Technologies, USA) was then inserted through the anaesthetised tissue at 90° to the skin surface down to the level of the lesion and then pushed in a parallel oblique direction to the skin under ultrasound visualisation through the nodule (Fig. 2). The needle was then withdrawn leaving the central localisation wire behind. This opened the hook at the tip of the wire to secure it in position. The external wire was coiled and secured to the skin with tape under a gauze dressing.

The patient was subsequently transferred to the operating theatre. After routine aseptic preparation, a 6 cm incision was made through the low transverse scar. The subcutaneous fat, anterior rectus sheath and associated scar tissue was divided down to the tip of the guide wire. At this point, the endometrial tissue began leaking haemoserous fluid. Knowing the dimensions of the lesion, the appropriate margining laterally and inferiorly were defined and this was confirmed by the cessation of haemoserous leakage. The lesions were fully excised by cutting diathermy and the resultant defect in the rectus sheath was closed with continuous 1.0 vicryl (polyglaction 910) suture. A suction drain was cited in the superficial layer and the superficial fat/scar tissue was opposed using 2.0 Vicryl (polyglaction 910). The skin incision closed with 2.0 vicryl rapide (polyglaction 910).

The following day, the suction drain was removed and patient discharged. Histology confirmed endometriosis with clear margins.

The patient was reviewed 3 and 7 months post-operatively, patient was completely pain free with no residual symptoms.



**Fig. 2** Ultrasound image showing guidewire in the centre of the lesion

## Discussion

Ultrasound-guided guide wire localisation and resection of superficial impalpable masses is a well-established technique in surgery. Breast surgeons have been performing wire localisation and subsequent lumpectomy for breast cancers for years [15] and ear, nose and throat surgeons use such techniques for removal of impalpable deep lower cervical lymph nodes [16].

With the increasing rate of Caesarean section along and the increasing body mass index of the population, such lesion will become increasingly common and difficult to locate. This is particularly true of small, sometimes multiple lesions. This technique is simple and effective, utilising skills already available in most hospitals. With accurate, complete excision symptomatic improvement is highly likely and the need for subsequent surgery is minimised.

The authors are aware that longer follow-ups and further cases will be required to establish the efficacy of this treatment and eliminate the possible placebo effect of surgery. However, it is well-established that surgery improves symptoms in 80% at 6 months compared to 30% due to placebo effect surgery [17] and recurrence rate is low after complete excision.

**Declaration of interest** The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

**Conflict of interest** There is no actual or potential conflict of interest in relation to this article.

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