



Case report

Use of wire guided localization for resection of recurrent, oligometastatic gynecologic clear cell carcinoma to anterior abdominal wall

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ABSTRACT

We present the case of apparent oligometastatic, recurrent clear cell carcinoma in the abdominal wall. Due to central obesity, previous abdominal wall surgeries, and previous radiotherapy, the mass was non-identifiable by conventional surgical dissection. A wire guided localization technique placed preoperatively facilitated the identification and resection of the malignant nodule with negative surgical margins.

1. Introduction

Clear cell carcinoma arising from probable endometriotic implants within a cesarean section scar is rare, with only a few cases reported in current literature (Mihailovici et al., 2017). Primary therapies include radical resection of the abdominal wall disease, which is usually accompanied by total hysterectomy, bilateral salpingo-oophorectomy and intrabdominal surgical cytoreduction. Adjuvant cytotoxic therapies commonly include platinum-based chemotherapy, most often combined with taxanes. Chemo-resistant clear cell recurrences occur frequently and are usually fatal. However, isolated recurrences can have favorable locoregional response when treated with localized radiotherapy. Apparent local disease recurrences have also been treated with surgical resection in attempts to obtain negative margins.

Radical resection of abdominal wall disease can be technically challenging, particularly in populations that are heavily pretreated with prior surgeries and/or radiation therapy. Difficulty can arise in identification of disease due to presence of dense fibrotic tissue, which arises from prior interventions. In pretreated populations, morbidity is high with complications such as wound disruption, infection, and subsequent hernia formation (Horvath et al., 2013). Furthermore, complex abdominal wall reconstruction including fascial release and use of mesh are often necessary and associated with significant post-operative complications. Thus, there exists a space for creative repurposing of commonly used techniques to better treat this complex population in efforts to achieve more favorable outcomes. Image guided wire localization is a widely recognized method to help identify surgical sites of

interest, improve accuracy of resection, and lessen the need for excessive removal of normal tissue. It is for these very reasons that this method has become the standard of care in modern breast surgery. Wire guided localization results in significantly less anatomical disfigurement and decreased post operative morbidity. (Franceschini et al.).

2. Case report

We report a case of a 37-year-old female who initially presented with a painful abdominal mass and abnormal CT scan which showed an irregular heterogenous mass measuring 5.0 × 4.0 × 5.2 cm in the anterior abdominal wall and a 1.6 cm cyst in the right ovary. The patient underwent loco-regional resection including excision of soft tissue, and a portion of necrotic right rectus muscle. Pathology revealed a papillary proliferative lesion with immunostaining positive for PAX8 and AE1/3 and negative for RCC, findings consistent with clear cell carcinoma arising in endometriosis. Subsequent hysterectomy, bilateral salpingo-oophorectomy, washings, staging and wound re-exploration revealed no evidence of disease. The patient was then treated with five cycles of Carboplatin/Paclitaxel and subsequent abdominal wall radiation at a dose of 50 Gy with her last treatment finishing in September of 2012.

The patient was then followed with office visits every six months, for physical examinations, surveying of symptoms, and serial CT scans of the abdomen and pelvis. In 2015 and 2016 the patient underwent two separate abdominal wall resections of painful masses both showing fibro-adipose tissue on pathology and no malignancy. In 2017, the patient presented with abdominal pain, her physical exam was limited by

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body habitus (BMI 39.5) thus she underwent a PET/CT scan. Imaging scans revealed a hypermetabolic nodule measuring 14×16 mm with an SUV of 2.5. The nodule was located in the inferior pelvis in the region of the surgical site between the rectus abdominus muscle groups. No other lesions were identified. A CT biopsy revealed atypical glandular cells consistent with recurrent clear cell carcinoma in suprafascial abdominal wall. Immunohistochemistry of tumor cells positive for napsin A, MOC-31 and p53 supported the diagnosis.

Given the localized recurrence and the absence of distant metastasis, the decision to proceed with surgical resection of the recurrent disease in the abdominal wall was made. A large resection of the anterior abdominal wall was first considered and then rejected due to requirements of extensive post-operative reconstruction and the high risk of morbidity. Localization of the lesion was complicated by factors such as the patient's habitus, the small size of the lesion and the fibrotic indurated abdominal wall. Thus, wire guided localization technique was used to achieve accurate localization of the lesion and complete resection through a relatively small incision.

3. Case procedure

After appropriate discussion and consent, the patient was taken for CT imaging and radiologic placement of the localizing wire. (Fig. 1) The wire was placed in the center of the abdominal wall nodule and the patient was then transferred to the operating room for surgery. (Fig. 2) A vertical incision on the anterior abdominal wall above and below the wire tract at the level of the mass was made. After reaching the subcutaneous layer, an elliptical incision was made around the wire with a minimum distance of 3 cm from the wire through subcutaneous fat, abdominal wall muscles, fascia, and peritoneum. (Fig. 3) The entire localized lesion, including abdominal wall fascia and the palpably normal surrounding adipose tissue, were widely resected using electrocautery. The specimen removed measured $9.0 \times 8.5 \times 6.5$ cm. An 8.0×4.0 cm biological mesh was placed to aid in abdominal wall closure. The final pathology report showed clear-cell carcinoma consistent with gynecologic origin measuring 1.5 cm. The margins were free of tumor, with the closest margin being 7 mm. Post-operatively, the patient recovered uneventfully and suffered no associated wound complications. No adjuvant therapy was added. As of this writing she remains clinically and radiographically without evidence of disease with a recurrence free interval of greater than 4 years.

4. Discussion

Wire localization techniques have been described and used extensively for preoperative marking of nonpalpable breast lesions to

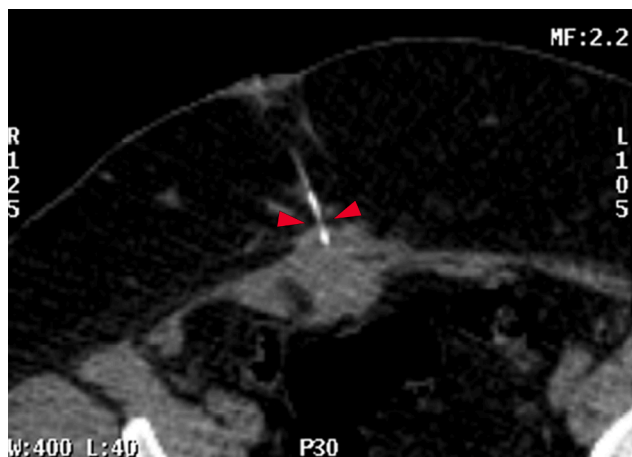


Fig. 1. CT guided placement of localization wire.



Fig. 2. Preoperative wire in abdominal wall.

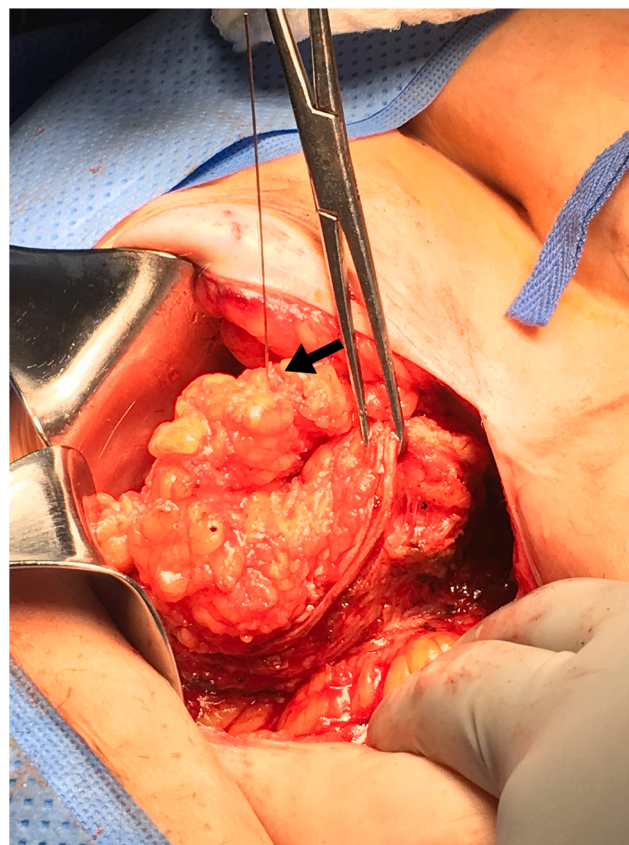


Fig. 3. Three-centimeter elliptical incision surrounding wire (black arrow).

facilitate the identification and complete resection of these lesions through small incisions. (Franceschini et al.) It has also been used to localize axillary sentinel lymph nodes or radiologically suspicious lymph nodes as part of the surgical management of breast cancer (Caudle et al., 2015). The second most common reported use is the wire localization of small lung nodules to facilitate excision through a VATS procedures (Park et al., 2017; Chao et al., 2006).

A scoping literature review was performed using search terminology such as “wire-guided localization”, “computer tomography-guided”, “ultrasound-guided”, “cancer”, “malignancy”, “resection margins” and “gynecology.” Results from our search suggests that this is the first reported case of using wire localization to facilitate precise and complete resection of oligometastatic recurrent gynecologic cancer (Mihailovici et al., 2017). This case suggests a unique application of a previously described technique which allowed for an optimal surgical approach with limited resultant morbidity. We suggest that this similar approach may be applicable in other clinically difficult, non-palpable, locoregional recurrent disease and may facilitate resection with improved rates of lesion identification including intramuscular, subcutaneous, hepatic and possibly cranial or spinal disease (Quinn et al., 2001; Rutten et al., 1997; Rodrigues et al., 1999; Chang et al., 2017; Thompson et al., 2017; Thomas et al., 2011; Kasugai et al., 1993; Slotty et al., 2010).

5. Disclosures

The authors have no financial conflicts of interest to disclose.

6. Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

CRedit authorship contribution statement

Hayley Womack: Data curation, Writing – review & editing. **Fadi Abu Shahin:** Conceptualization, Methodology, Data curation, Writing – original draft. **Edward Grendys:** Conceptualization, Methodology, Data curation, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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