

# Surgical removal of an isolated femoral metastasis of uterine cervical squamous cell carcinoma: a case report and review of the literature

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## Summary

A bone metastasis from uterine cervical cancer normally indicates short life expectancy. Resection of the lesion is therefore palliative. The authors consider herein whether surgical resection can promote disease control while improving quality of life. A 33-year-old woman presenting FIGO Stage IB1 uterine cervical squamous cell carcinoma underwent a radical hysterectomy and pelvic irradiation. Twenty-two-months later, a solitary femoral metastasis was detected. Given the pain, imminent bone fracture, the patient's relative youth, absence of other metastases, and complete control of the primary lesion, wide excision of the lesion, and reconstruction were performed. Sixteen months later, she was disease-free and ambulatory using a cane. The findings of both the present case and the review showed that patients were disease-free for over one year after surgery, suggesting that resection may assist disease control as well as improve patients' quality of life.

*Key words:* Bone metastasis; Cervical cancer; Femur; Tumor resection.

## Introduction

Bones are the third most common metastatic site of uterine cervical cancer after the lung and liver [1]. Bone metastases of cervical cancer usually occur in the advanced stage, with multiple metastases to the spine and the pelvis being common clinical features. Generally speaking, a bone metastasis indicates a short life expectancy. Accordingly, palliative radiotherapy is usually considered, and surgical intervention is rarely undertaken [2, 3].

The authors report herein a case of solitary femoral metastasis in a patient with FIGO Stage IB1 cervical squamous cell carcinoma following a radical hysterectomy and adjuvant radiotherapy. Wide excision of the lesion with reconstruction was performed. The patient remained disease-free for 16 months, raising the possibility that surgery for bone metastasis may be of greater service to the patient than as a mere palliative treatment.

## Case Report

A 33-year-old woman, gravid 2, parity 2, presented with abnormal genital bleeding. A pelvic examination revealed a 2.4-cm cervical mass and a biopsy revealed squamous cell carcinoma. After a staging work-up, the diagnosis was confirmed as FIGO Stage IB1 cervical cancer. An abdominal radical hysterectomy was per-

formed. Histopathological examination revealed non-keratinizing squamous cell carcinoma with marked lymphatic, mild venous, and deep stromal invasion (Figure 1a). No lymph node metastasis was present. As adjuvant therapy, 48.6 Gy of whole pelvic radiation was performed.

Nineteen months after the primary surgery, the patient experienced slight pain in the right inguinal region. Twenty-two months after the surgery, she complained of a strong pain radiating from the right inguinal area to the right knee. Plain radiography revealed a tumor mixed with osteolytic and osteosclerotic lesions in the trochanteric region of the right femur (Figure 2a). Magnetic resonance imaging revealed an irregular mass 8.5×5.4×4.0 cm in size (Figure 2b). The serum SCC level was within normal limits (1.3 ng/ml). A needle biopsy of the bone tumor revealed squamous cell carcinoma. No other metastasis was detected by computed tomography or bone scintigraphy. The diagnosis was confirmed as a solitary femoral metastasis of the cervical cancer. Wide excision of the lesion and reconstruction with an endoprosthesis were performed (Figure 2c). Histopathological examination of the resected specimen confirmed preoperative diagnosis of the femoral lesion and revealed that the surgical margin was negative (Figure 1b). The patient underwent no adjuvant therapy, has been disease-free for sixteen months, and has been ambulatory using a cane since discharge.

## Discussion

The solitary bone metastasis at the proximal femur occurred 22 months after the initial treatment for cervical squa-

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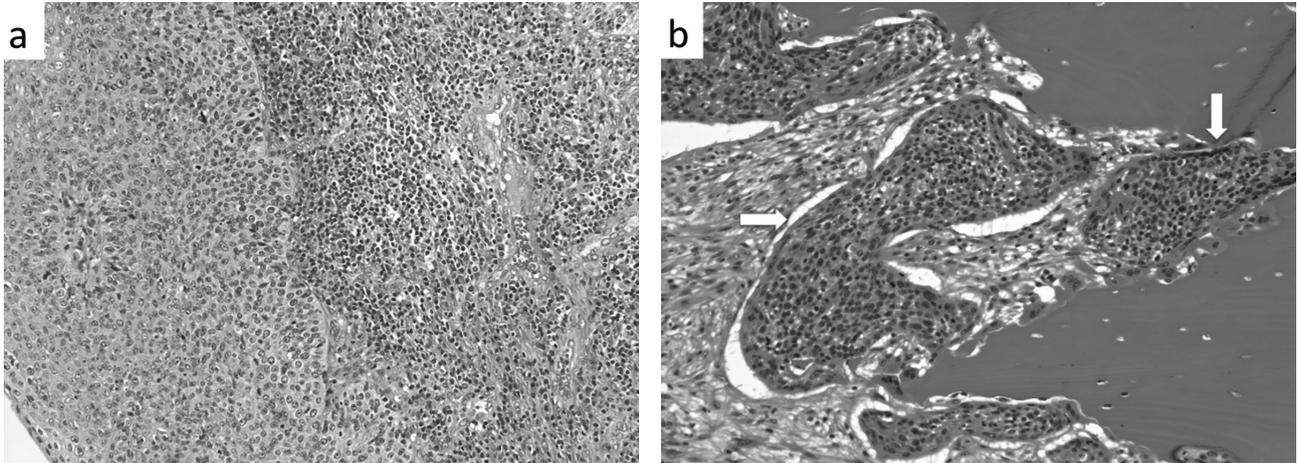


Figure 1. — Histology of primary cervical cancer lesion (a) and femoral metastatic lesion (b). Hematoxylin & eosin stain, original magnification of  $\times 200$ . a) The primary cervical cancer was diagnosed as non-keratinizing squamous cell carcinoma. b) Similar squamous cell carcinoma was evident in the femoral lesion (arrows).

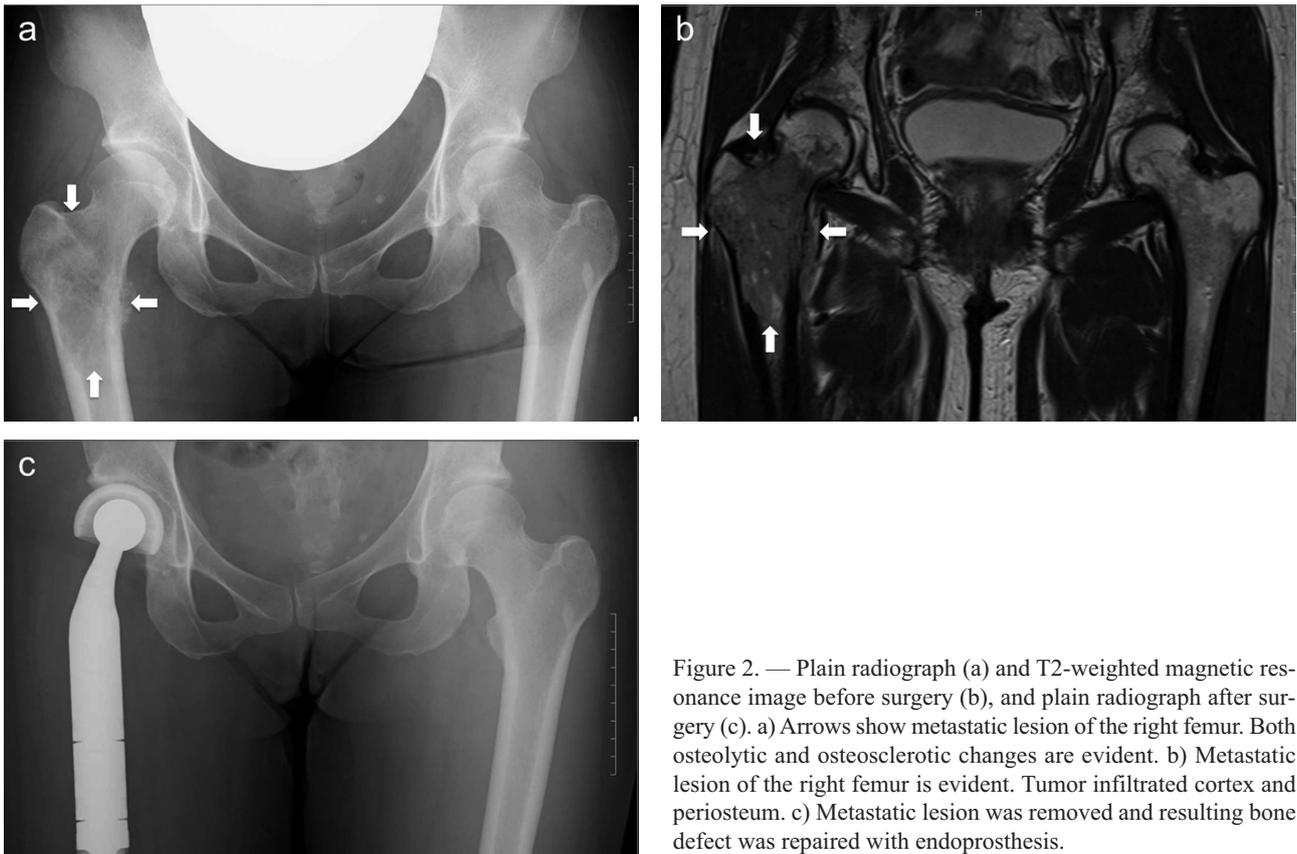


Figure 2. — Plain radiograph (a) and T2-weighted magnetic resonance image before surgery (b), and plain radiograph after surgery (c). a) Arrows show metastatic lesion of the right femur. Both osteolytic and osteosclerotic changes are evident. b) Metastatic lesion of the right femur is evident. Tumor infiltrated cortex and periosteum. c) Metastatic lesion was removed and resulting bone defect was repaired with endoprosthesis.

mous cell carcinoma. Wide resection of the lesion was performed, relieving the patient's pain. Importantly, the patient continued to be disease-free, suggesting that the surgery not only relieved local pain due to the lesion, but also may have contributed to controlling the disease.

A wide resection of the lesion was performed for a number of reasons: 1) the patient was young and the original lesion was completely under control, 2) there were no other metastatic lesions, 3) she complained of pain and was at risk of pathological fractures, and 4) there was some pos-

Table 1. — Clinical characteristics of the patients with uterine cervical cancer with a solitary bone metastasis in the extremities.

Author	Year	Age (years)	FIGO Stage	Histological type	Treatment of primary site	Interval to bone metastasis (months)	Site of bone metastasis	Treatment of bone metastasis	Follow-up from treatment of metastasis (months)	Follow-up from primary treatment (months)	Status
1 Pasricha <i>et al.</i> (6)	2006	36	IIB	SCC	RT	9	Fibula	Surgery	39	48	NED
2 Corrad <i>et al.</i> (7)	2010	40	IIB	Poorly differentiated	CCRT followed by surgery	During primary treatment	Femur	Surgery	3	3	Died due to PE
3 Malek <i>et al.</i> (8)	2012	56	IVA	SCC	Surgery	7	Humerus	Palliative radiation	NA	NA	NA
4 Ji <i>et al.</i> (5)	2014	55	IIB	NA	Surgery+CT	16	Femur	Surgery+RT	15	NA	DOD
5 Ji <i>et al.</i> (5)	2014	46	IIIB	NA	CCRT	20	Femur	Surgery+CT	20	NA	NED
6 Yuan <i>et al.</i> (9)	2014	43	IVB	SCC	Surgery +CT+RT	At diagnosis	Tibia	Surgery+CT	41	41	NED
7 Present case	2015	33	IB1	SCC	Surgery+RT	22	Femur	Surgery	16	40	NED

SCC: squamous cell carcinoma; RT: radiotherapy; NED: no evidence of disease; CCRT: concurrent chemoradiotherapy; PE: pulmonary embolism; NA: not available; CT: chemotherapy.

sibility that a complete resection of the metastatic lesion could contribute to disease control.

Bone metastases in cervical cancer, although less frequent than lung or liver metastases, are not uncommon: data showed that bone metastases occurred in 4.0, 6.6, 8.0, and 22.9% of patients with Stage I, II, III, and IV cervical cancer, respectively [4]. A previous report by Ji *et al.* [5] showed that surgical management of a bone metastasis originating in a gynecological cancer (including cervical cancer) is indicated as a palliative treatment, i.e., surgery should be considered in the presence of any one of the following: a potential or existing bone fracture, spinal cord compression, or pain. Surgical intervention is viewed in this way as a palliative measure due to the short life expectancy of the patient after the discovery of a bone metastasis. In fact, the median survival time following diagnosis of a bone metastasis was reportedly only six to ten months [2, 3, 5]. In this patient, surgery relieved pain and actually prevented pathological femoral fractures, thus exemplifying the efficacy of surgery when deployed in the manner recommended by Ji *et al.* [5].

The present authors searched PubMed using the key words, “uterine cervical carcinoma (or cancer)” AND “bone metastasis” [5-9]. The present review of the literature showed that besides the present instance, there were six cases of cervical cancer with a solitary bone metastasis in the extremities (Table 1). Of these seven cases, six underwent surgical treatment and four remained disease-free for over one year. Cervical cancer patients with a solitary bone metastasis in the extremities may have a better prognosis than cervical cancer patients with other types of bone metastases, whether single or multiple. The mean age of the previously reported six patients was 42.2 years. A report by Yoon *et al.* [2] showed a mean age of 52.5 years in 91 cases of cervical cancer with bone metastasis, which were

treated non-surgically. Younger patients may undergo surgical treatment in order to control their disease, despite the invasiveness of this procedure. A review of the literature showed that surgical treatment for a solitary bone metastasis in the extremities may contribute to improving the quality of life and rendering the patient disease-free for a longer time than otherwise possible. Therefore, surgical treatment for young patients who are otherwise healthy may be a worthwhile consideration.

Although the findings in the present case and the evidence from past studies favored surgical intervention, the small number of reported cases prevents the authors from arriving at any sure conclusions. Patients who underwent bone surgery but still had a bad prognosis may not have been reported. Such publication bias needs to be taken into consideration when evaluating the efficacy of the methods recommended here. However, the cumulative findings of this study suggest that the resection of a bone tumor may not only improve the patient’s quality of life but may also contribute to disease control. The present authors believe that this strategy may have more than palliative value although a further, larger-scale study is needed to confirm this hypothesis.

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