

# Successful Local Control of Recurrent Penile Cancer Treated with a Combination of Systemic Chemotherapy, Irradiation, and Mohs' Paste: A Case Report

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## Key Words

Penile cancer · Recurrence · Chemotherapy · Mohs' paste · Inguinal metastasis · Squamous cell carcinoma

## Abstract

Penile squamous cell carcinoma (pSCC) is a rare disease, making it difficult to establish a standard of care, particularly in the advanced stage. We report a case of pSCC with advanced lymph node metastasis treated with multimodal therapy consisting of combination chemotherapy, irradiation, and chemosurgery using Mohs' zinc chloride-containing paste. An 80-year-old male with a past history of local treatment for penile cancer presented with a large painful inguinal mass with an ulcer and exudates. The patient underwent multimodal treatment with combination chemotherapy, irradiation, and Mohs' paste. The combination chemotherapy consisted of cisplatin, 5-fluorouracil, and docetaxel. The patient received 50-Gy external-beam radiation therapy to the left inguinal region along with daily local treatment with Mohs' paste. After the initiation of treatment, the pain and bleeding in the inguinal region considerably ameliorated. The wound became dry and flattened 20 days after the initiation of chemotherapy. A CT scan showed that the tumor had decreased 70% in diameter 1 month after the initiation of chemotherapy. After the first course of chemothera-

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py, the patient and his family decided not to continue treatment because of socio-economic reasons. The patient underwent no additional treatments; nevertheless, he had no local progression of the inguinal tumors for 8 months. We report a case of successful local control of recurrent inguinal pSCC treated with multimodal therapy. Combination treatment with taxane-based chemotherapy, external-beam radiation therapy, and Mohs' paste is an option for the management of recurrent pSCC.

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## Introduction

Penile squamous cell carcinoma (pSCC), the predominant histological type (>95%) of penile cancer, is a relatively rare malignant tumor in Western countries and Japan [1]. pSCC is a rare disease, making it difficult to establish a standard of care in any of the clinical stages, particularly in advanced disease.

Multimodal treatments, including surgery, chemotherapy, and radiation therapy, should be considered for patients with advanced pSCC. However, the optimal chemotherapeutic regimen is unknown, although cisplatin-containing chemotherapy is the mainstay of combination chemotherapy. Recent studies have suggested that taxanes in combination with cisplatin and fluorouracil (5-FU) have a significant effect on unresectable and recurrent penile cancer [2].

Unresectable locally advanced SCC, called a 'malignant wound', results in a decline in the quality of life because of the presence of bleeding, exudates, and/or strong odor. Mohs' chemosurgery is a technique of chemical fixation of a cutaneous tumor and subsequent excision [3]. Several studies have shown the efficacy of Mohs' paste for maintaining malignant wounds in advanced squamous cell carcinoma of the breast, skin, head, and neck [4, 5]. However, it remains unknown whether Mohs' paste is effective for pSCC. We report a case of a pSCC with advanced lymph node metastasis treated with combination therapy consisting of taxane-based chemotherapy, irradiation, and Mohs' paste.

## Case Report

An 80-year-old male presented to a community hospital with pain and redness in his left inguinal region. He had undergone penectomy and bilateral inguinal lymphadenectomy 1 year ago because of primary pSCC (pT1pN0). A large solid mass with bleeding and a smelly exudate was observed in his left inguinal region. He was diagnosed with metastasis of pSCC by a wedge biopsy (fig. 1). After pathological diagnosis, he was referred to our hospital for the treatment of the metastatic pSCC. Macroscopically, the tumor mass of the left inguinal region was 7.0 cm in diameter with an ulcer, redness, and exudate (fig. 2a). He also complained of severe pain in this region. A CT scan revealed a huge mass (5.9 × 5.8 cm) in the left inguinal region along with his left femoral vessels (fig. 3a). No other metastases were observed on the CT scan. He was administered combination therapy consisting of a taxane-based chemotherapy, irradiation, and Mohs' chemosurgery. The chemotherapy regimen consisted of 60 mg/m<sup>2</sup> docetaxel administered over 3 h on day 1; 750 mg/m<sup>2</sup> 5-FU on days 1–5; and 70 mg/m<sup>2</sup> cisplatin on day 4. The patient also received 50-Gy external-beam radiation therapy to the left inguinal region, initiated on the same day of chemotherapy. Mohs' paste was applied every morning with a surrounding gauze to avoid attaching with normal skin (as previously reported) [4]. Mohs' paste included 50 ml of zinc chloride-saturated aqueous solution, 10 g of zinc powder, and 15 ml of glycerin [4]. Radiation therapy

was temporarily deferred for 12 days beginning on day 9 because of neutropenia and general fatigue. After the initiation of multimodal treatment, the pain and bleeding considerably ameliorated. The necrotic tissue fell off and the wound flattened on day 20 after starting chemotherapy. The pain, bleeding, and the exudate disappeared (fig. 2b), and a CT scan showed that the tumor had decreased by 70% in diameter at 1 month after the first course of chemotherapy (fig. 3b). Because of socio-economic reasons, the patient declined additional treatment. There was no progression or metastasis on the chest and abdominal CT for 8 months. However, the wound grew and became erosive again 10 months after discharge, and the patient died because of the progression of local recurrence 1 year after chemotherapy treatment.

## Discussion

In our patient with inguinal recurrence of pSCC, multimodal treatment, consisting of combination chemotherapy, irradiation, and Mohs' chemosurgery, was responsible for the tumor shrinkage and the successful local control of a malignant wound.

Cisplatin is known to be a promising chemotherapeutic agent for pSCC [2]. Although this field is limited by a paucity of clinical trials or prospective data, the available single institutional retrospective reviews indicate that multiagent cisplatin-based chemotherapy regimens fight significantly against pSCC [6]. In 1991, Dexeus et al. [7] reported a triple-drug chemotherapy regimen, which soon became a standard regimen for pSCC with tolerable adverse effects. The regimen consisted of 20 mg/m<sup>2</sup> cisplatin on days 2–6, 200 mg/m<sup>2</sup> methotrexate on days 1 and 15, and 10 mg/m<sup>2</sup> bleomycin on days 2–6. They reported a response in 10 of 14 (71%) patients (with moderate side effects). In their follow-up studies, a lower rate of complete responses with severe toxicities was reported [8, 9]. With respect to SCC of the head and neck, in which pSCC is historically similar, a randomized trial revealed that the addition of docetaxel significantly improved progression-free, and overall survival in patients with unresectable SCC compared to the standard regimen of cisplatin and 5-FU; therefore, docetaxel, cisplatin and 5-FU have become the current standard induction regimen for advanced SCC of the head and neck [10]. In pSCC, Pizzocaro et al. [2] combined paclitaxel with cisplatin and 5-FU. They reported a high activity of this regimen, with 5 of 6 treated patients showing a response. Based on these findings, we chose docetaxel for taxane-based combination therapy for the patient, although there are few reports demonstrating its efficacy against pSCC. Further studies are needed to determine which taxane has a better response and less toxicity in patients with pSCC.

Radiation therapy has been used for many years in the treatment of pSCC for the primary tumor, inguinal metastases and distal metastases. It may also play a role in the treatment of locally advanced penile cancer, particularly when inguinal adenopathy is initially unresectable [11]. There are no randomized trials that have evaluated the impact of radiation on the prognosis and the local control of patients with inguinal metastasis originating from pSCC. However, Ravi et al. [12] revealed that palliative radiation therapy showed an amelioration of symptoms in 56% of patients with inguinal metastasis in growing pSCC. In addition, the radiosensitizing effect of cisplatin, 5-FU, and docetaxel has been demonstrated in several types of cancers [13–15]. Therefore, it is plausible that radiation in combination with cisplatin, 5-FU, and the docetaxel regimen is a promising option for multimodal treatment of pSCC [11].

Malignant wounds from primary or metastatic carcinoma are generally incurable, and palliative methods to manage the wounds are needed. Frederic E. Mohs developed and

published a technique for the chemical fixation of a cutaneous tumor in 1941. Mohs' paste is effective for the hemostasis of bleeding, odors, and exudates, thereby contributing to the patient's quality of life. In Japan, Kakimoto et al. [4] reported on 5 patients with breast cancer who were successfully treated with Mohs' paste. Tsukuda et al. [5] showed the efficacy of radical surgery followed by systematic therapy and Mohs' paste in patients with breast cancer. In our case, the tumor started to decrease in size after treatment and the necrotic tumor fell off by day 20, without any resection. To the best of our knowledge, this is the first report demonstrating the advantage of Mohs' paste for inguinal recurrence of pSCC. Our result shows that Mohs' paste may be an effective and reliable option for multimodal treatment of inguinal recurrence.

This case report has some limitations. It is difficult to define which treatment modality was the most effective for the patient, because we used a combination of 3 different modalities. Although our result suggests that each treatment was synergistically effective, it is also important to delineate which modality is the most effective and then choose a suitable modality for each patient with pSCC. Secondly, the socio-economic background of the patient did not allow him to continue systemic treatment and/or maintenance therapy. The study showed that paclitaxel was well tolerated, with a moderate activity against pSCC. Therefore, the patient may have been able to avoid cancer progression for a much longer time if he had received additional maintenance chemotherapy.

In conclusion, we report a case of successful local control of a recurrent inguinal mass of pSCC treated with multimodal therapy. To the best of our knowledge, this is the first report where Mohs' paste was used for recurrent pSCC. Combination treatment with taxane-based chemotherapy, external beam radiation therapy, and Mohs' paste is a reliable option for the induction therapy for recurrent pSCC. Further studies are needed to investigate maintenance treatment after effective induction therapy for recurrent pSCC.

## Disclosure Statement

The authors declare no conflicts of interest.

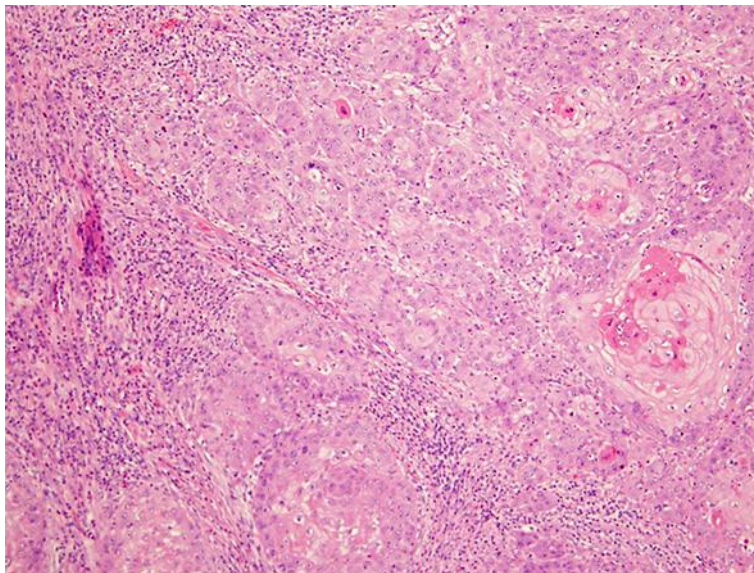
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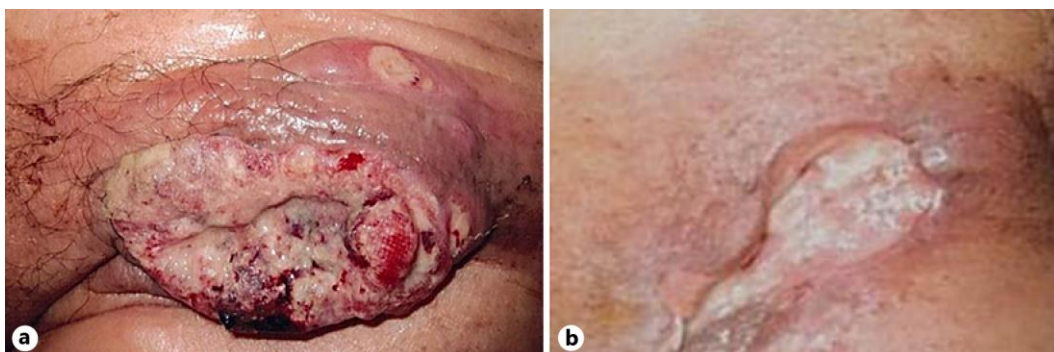


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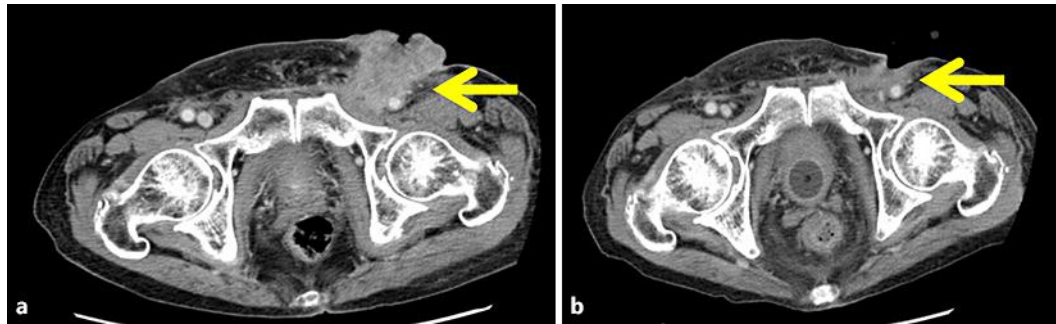


**Fig. 1.** Pathological examination following wedge biopsy of the left inguinal region. Lymph node metastasis of pSCC was found.



**Fig. 2.** Macroscopic findings of the left inguinal region. **a** A large inguinal mass with an ulcer, exudates, and bleeding was observed at the initial visit. **b** Macroscopic findings improved 39 days after the initiation of multimodal treatment.

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**Fig. 3.** Findings of an abdominal CT scan of the left inguinal region. **a** The CT scan revealed a huge inguinal mass (arrow) in the left inguinal region along with left femoral vessels. **b** The CT scan showed that the tumor (arrow) of left inguinal region decreased 1 month after the initiation of multimodal treatment.