Hemipelvectomy and Reconstruction in a Patient With Advanced Marjolin's Ulcer: A Case Report

Bruno Carlesimo, Cristiano Monarca, Maria Ida Rizzo, Francesca Tariciotti and Sabina Staccioli

International Journal of Lower Extremity Wounds 2009 8: 162
DOI: 10.1177/1534764609344130

The International Journal of Lower Extremity Wounds
8(3) 162–164

DOI: 10.1177/1534734609344130
http://ijlew.sagepub.com
SAGE

Hemipelvectomy and Reconstruction in a Patient With Advanced Marjolin's Ulcer: A Case Report

Bruno Carlesimo,[1] Cristiano Monarca,[1] Maria Ida Rizzo,[1] Francesca Tariciotti,[2] and Sabina Staccioli[2]

Abstract

Patients with squamous cell carcinoma of the lower limb may exhibit locally advanced or metastatic disease. Surgical resection to control the primary tumor is often extensive. The case of a 51-year-old man with squamous cell carcinoma on Marjolin's ulcer affected, rapidly growing, and involving soft and bone tissues is described. Treatment required performing a hemipelvectomy. Immediate reconstruction was chosen as surgical procedure planning the harvest of 4 superficial muscles and 1 deep muscle of the abdomen to protect the pelvic content and to eliminate the dead spaces. The chosen technique minimized postoperative complications, and at 7 years follow-up, the patient is disease free.

Keywords

squamous cell carcinoma, malignant pelvic tumor, Marjolin's ulcer, hemipelvectomy

Patients with squamous cell carcinoma (SCC) of the lower limb may exhibit locally advanced or metastatic disease and are a surgical challenge. Extensive surgical resection to control the primary tumor is often necessary. Amputation, hemipelvectomy, and hemicorporectomy may also be required. Major extremity amputation may be the only way to achieve freedom from disease, especially in the presence of nodal metastasis from SCC.[1] When a tumor grows toward the soft tissue quickly, a hemipelvectomy is carried out.[2] The reported median survival is 28 months, and survival at 5 years is 43%. Clinical and pathologic factors influence clinical outcomes. North et al[3] investigated clinical and pathologic factors affecting clinical outcomes in cases of advanced skin SCC of the trunk and the extremities and reported that the stage and paraneoplastic syndrome are poor prognostic factors. Surgical treatment should be wide excision with uninvolved margins. Because extensive surgical resections are often required, this may lead to amputations in some cases.[3] Furthermore, the complication rate after surgery of large pelvic tumors is high, and reconstructive procedures are very difficult especially when acetabular resection is carried out. Knox et al[4] reported that soft tissue defects can be wide and usually bone and/or joint remain exposed. This article reports the case of a patient diagnosed with cutaneous SCC, with soft tissue and bone involvement, in whom custom-made hemipelvectomy and immediate reconstructive procedure were carried out.

Methods and Materials

The patient was a Caucasian 51-year-old man, managed at Department of Plastic and Reconstructive Surgery of "La Sapienza" University, Rome and Paraplegic Centre of Ostia, Rome in January 2004.

In 1969, following a road accident, the patient suffered serious medullary injuries that left him paraplegic. In 2001, the patient was treated for trochanter decubitis ulcer and an infection of the left femoral head. The pressure ulcer became chronic and the patient was admitted to our department for chronic wound management, and an incisional biopsy highlighted SCC in 2004. Because the pelvic bony and the soft tissues were involved, a neo-adjuvant radiotherapy was done with poor results.

At preoperative evaluation it was observed that the SCC had developed on the preexisting scar and it was ulcerated (see Figure 1). The SCC was localized on the left proximal thigh. Metastatic disease was evident on clinical evaluation,

[1]Department of Plastic and Reconstructive Surgery, La Sapienza University of Rome, Italy
[2]Unit of Plastic Surgery–CPO, Paraplegic Centre of Ostia, Rome, Italy

Corresponding Author:
Cristiano Monarca, Via Bracco 3, 00137 Rome, Italy.
Email: mariaidarizzo@libero.it

Figure 1. Advanced Marjolin's ulcer of the lower limb

Figure 2. Lower limb amputation

Figure 3. Reconstruction based on pedicle abdominal flaps

Figure 4. X-ray of the pelvis after hemipelvectomy

including regional lymph nodes, subcutaneous in-transit and contiguous metastases. Bone biopsies of the pelvis showed SCC involvement. As the SCC had quickly grown toward the soft and bone tissues, hemipelvectomy with immediate reconstruction wase planned (see Figures 2, 3, and 4).

The tumor needed to be removed with wide disease-free margins. This necessitated the sacrifice of a wide homolateral pelvis area and the lower limb neurovascular bundles. The patient underwent, under general anesthesia, radical extended left-hemipelvectomy with leg amputation, including the sacroiliac joint, lymph nodes dissection, and reconstructive procedure under general anesthesia.

Our surgical procedure was conducted by an anterior incision between Colles's fascia and Scarpa's fascia up to the left iliac anterior–superior spine; posterior incision along the left iliac crest up to the gluteus maximum muscle; disarticulation with opposite pelvic bone by amputation of the synphysis pubis; and disarticulation with the sacrum. Reconstructive procedure was performed to provide an adequate soft tissue in order to eliminate dead spaces, to suitably cover the wound, and to secure the peritoneal defect. We therefore harvested local pedicled muscle-based flaps of 4 superficial muscles and a deep muscle of the abdomen. The superficial muscles were obliquus externus abdominis, obliquus internus, transversalis, and rectus. The deep muscle was quadratus lumborum. So, we avoided dead spaces, covering the exposed tissues, and reconstructing residual wound.

Surgical specimen examination pointed out mainly undifferentiated cells with scattered foci of SCC with keratin pearls. Histolgical analysis of locoregional nodes confirmed metastatic spread. Both chronic wound and scar were neoplastic, describing a Marjolin's ulcer. Tumor margins were classified as being disease free.

Postoperative time was uneventful and no additional therapy was required. Follow-up time was 84 months. At 3 years' follow-up, patient showed a developing subcutaneous nodule in the sacral area. A biopsy excluded any local recurrence of the cancer. During this check-up, a uretheric bladder calculus was diagnosed. A bladder cutaneous fistula had also developed. Therefore, the patient had the calculus removed. The postoperative course was uneventful without flap loss, infection, local cellulites, locoregional recurrence. At 7 years' follow-up, the patient is disease free, has a satisfactory job, and is happy with his quality of life. He has not experienced phantom limb syndrome.

Discussion

Marjolin's ulcer describes the neoplastic changes of a chronic ulcer. Squamous cell carcinoma developing from Marjolin's ulcers shows a more invasive biological behavior than SCC developing by itself.[5] Chronic ulcer and scars were the main predisposing factors.[6] This report describes a skin SCC of the left proximal thigh developed on a Marjolin's ulcers evolved from a pressure sore and scar. The neoplasm was rapidly growing and involving the soft and bone tissues; its treatment required hemipelvectomy that has offered the patient a disease-free life.

Tumor stage is reported to influence survival: The 5-year survival rate was 100%, 50%, 48%, and 18% for stages I, II, III and IV, respectively. The margin of resection was found to be important. Patients with margins >1 mm had a 100% 5-year survival compared with 0% for patients with tumor at or within 1 mm of the margin of resection.[3] Shiu et al[7] reported that depth of invasion was important: The 5-year survival was 18% in patients with bone invasion. In these patients, the poor prognosis may justify aggressive resection, including amputation.[7] Aust and Absolon reported the first successful hemicorporectomy that was carried out for the treatment of a SCC arising in a sacral decubitis.[8] Unfortunately, aggressive surgical resection is associated with frequent postoperative complications (42%, frequently wound infection and flap necrosis) and mortality up to 11% with a median survival of 28.0 months (range 0-144 months).[3] We consider our choice of treatment of an advanced SCC of the lower limb involving the pelvis, that is, a hemipelvectomy with wide margins resection to be the correct one not only technically but also because the patient is alive 7 years after surgery and is happy.

In summary, tumors of the proximal thigh, groin, and periacetabular region were routinely treated with hindquarter amputation, the classic hemipelvectomy. This resulted in a high complication rates and discouraging functional and psychological outcomes.[9] Modifications over the past few decades have altered the surgical approach.

Declaration of Conflicting Interests

None of the authors has a financial interest in any of the products, device, or drugs mentioned in this article. The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

References

1. Johnston EA, Namm JP, Reeves ME. Major extremity amputation for nodal metastasis from squamous cell carcinoma. *J Surg Oncol*. 2006;93:76-78.
2. Shiraishi J, Mukai M, Yabe H, et al. Primary bone carcinosarcoma: chondrosarcoma and squamous cell carcinoma with keratin pearl formation. *Pathol Int.* 2005;55:504-509.
3. North JH Jr, Spellman JE, Driscoll D, Velez A, Kraybill WG, Petrelli NJ. Advanced cutaneous squamous cell carcinoma of the trunk and extremity: analysis of prognostic factors. *J Surg Oncol.* 1997;64:212-217.
4. Knox K, Bitzos I, Granick M, Datiashvili R, Benevenia J, Patterson F. Immediate reconstruction of oncologic hemipelvectomy defects. *Ann Plast Surg.* 2006;57:184-189.
5. Ratliff J. Two case studies of Marjolin's ulcers in patients referred for management of chronic pressure ulcers. *J Wound Ostomy Continence Nurs*. 2002;29:266-268.
6. Yakubu A, Mabogunje O. Skin cancer of the head and neck in Zaria, Nigeria. *Acta Oncol*. 1995;34:469-471.
7. Shiu MH, Chu F, Fortner JG. Treatment of regionally advanced epidermoid carcinoma of the extremity and trunk. *Surg Gynecol Obstet.* 1980;150:558-562.
8. Aust JB, Absolon KB. A successful lumbosacral amputation, hemicorporectomy. *Surgery.* 1962;52:756-759.
9. Paz IB, Wagman LD, Terz JJ, et al. Extended indications for functional limb-sparing surgery in extremity sarcoma using complex reconstruction. *Arch Surg*. 1992;127:1278-1281.

Bios

Bruno Carlesimo, MD, MSC, Plastic Surgery Specialist. Medical Director for the Unit of Plastic Surgery of the Paraplegic Centre of Ostia for more then 10 years. Professor of Plastic Surgery at La Sapienza University of Rome.

Cristiano Monarca, MD, Plastic Surgery Specialist. Researcher on the Depatment of Plastic and Reconstructive Surgery at La Sapienza University of Rome.

Maria Ida Rizzo, MD, Plastic Surgery Resident on the Depatment of Plastic and Reconstructive Surgery at La Sapienza University of Rome.

Francesca Tariciotti, MD, Plastic Surgery Specialist at the Paraplegic Centre of Ostia.

Sabina Staccioli, MD, Plastic Surgery Specialist at the Paraplegic Centre of Ostia.