Marjolin’s Ulcer Complicating A Pressure Sore

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ABSTRACT
Malignancy in a chronic pressure sore is rare among Marjolin’s ulcers. Carcinomas arising in pressure sores are highly aggressive and usually fatal and therefore, they need to be treated more aggressively. We report a case of squamous carcinoma arising in a pressure sore of a 33-year-old paraplegic man who developed a sacral pressure sore with unstable healing for 10 years and a steady increase in size in the past 6 months was noted. The biopsy result showed a well differentiated invasive squamous cell carcinoma. A high index of suspicion is necessary for long standing pressure ulcer in this frequently neglected group of people to enable early diagnosis and treatment.

Key words: Marjolin’s ulcer, squamous cell carcinoma, pressure sore

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INTRODUCTION
Marjolin’s ulcer is a rare and an aggressive ulcerating cutaneous malignancy that arises on previously trau-
mattized and chronically inflamed skin, especially after
burns. It can be insidious and often leads to a poor prog-
nosis. Deaths from Marjolin’s ulcer are not uncommon.
Meticulous wound care is a crucial step in prevention of
these lesions (1). The majority of Marjolin’s ulcers occur
in wounds of the upper and lower extremities. Marjolin’s
ulcer appears to be preventable if early wound coverage
is undertaken. Countries with limited access to medical
treatment report a higher incidence of Marjolin’s ulcers
compared with more developed regions (2). A carcinoma
resulting from a pressure sore is a very rare condition
with an incidence of 0.5% (3).

CASE
We report a case of Marjolin’s ulcer complicating a pres-
sure sore. A 33-year-old man, who had been paraplegic
for 13 years following a motor vehicle accident, had de-
veloped a sacral pressure sore with unstable healing for
10 years which necessitated repeated hospitalization for
wound infection. The sore had been left open for years with
epithelialization. The patient had the lim-
ited intact skin area due to right hip disarticulation and
left above knee amputation. The wound had increased
in size within 6 months prior to admission to our hos-
pital in 2008 for non-healing infected pressure sore.
Examination revealed a sacral ulcer measuring 20 cm ×
17 cm with foul smell discharge. The edges were un-
dermined and filled with necrotic tissue. Although the
patient had been prescribed broad spectrum antibiotics
for infected wound, the infection was uncontrolled and
continued to spread. The surrounding skin became hy-
perpigmented and developed nodules around the pres-
sure sore within a week (Figure 1). The patient then
was transferred to a Plastic Unit in another hospital for
further management. A biopsy was taken from the sacral
sore, showed a well differentiated invasive squamous
cell carcinoma (Figure 2). CT scan of thorax, abdomen
and pelvis showed multiple liver and lung metastases.
Because of the patient’s critical condition, by then no
further surgery was done and the patient passed away
6 weeks later.

DISCUSSION
Cutaneous squamous cell carcinoma (SCC) is the second
most common form of skin cancer and accounts for 20%
of cutaneous malignancies (4). One of the possible risk
factors for development of SCC is chronic inflammation
which may lead to the development of squamous cell
carcinoma irrespective of the underlying etiology. Both
noninfectious inflammatory diseases and chronic infec-
tions have been associated with squamous cell carcino-
ma eg; Marjolin’s ulcer. Burn scars are the best known
chronic wounds to develop carcinomas. However the
malignancy in chronic pressure sores is rare.

Figure 1. Photograph showing sacral sore with rapid progression to surrounding skin a week after admission

Figure 2. Photomicrograph of histo-pathological exam-
ination showing nest of malignant cells (Squamous Cell Carcinoma) - H&E staining (Magnification Power ×40)

Celus first noted, as early as the first century, the as-

identification between thermal burn scars and malignant
degeneration. Later, a French surgeon, Jean Nicolas
Marjolin, described a villous lesion that developed in
degenerating scar tissue in 1828. Although others had
previously described cancers developing in burn scar,
Marjolin’s name has been given to these malignancies
(5).

Mustoe et al reported squamous cell carcinoma
arising in chronic pressure sores in paraplegic and tet-
rapipelegic patients (6). It is not common and consequently
can easily be missed. It is said to have a worse prognosis
for de novo SCC due to its high rate of metastasis (7).

Fleming et al. stated that over 90% of Marjolin’s ulcers
degenerate into malignancies of epidermoid origin, such as
SCCs, basal cell carcinomas and malignant melano-
mas. Sarcomas can occur but are uncommon. Precise
estimates of the true risk of malignant degeneration
in a chronic wound or scar are difficult to obtain, as
the data are predominantly derived from retrospec-
tive case studies (8). The latent transformation period
of Marjolin’s ulcers ranges between 25 to 40 years (9).
Berkvists et al. reported squamous cell carcinoma in
a pressure ulcer that had been present for 14 years (10).

Tan et al reported a case of SCC in pressure sore with
a short latency period of 6 months (11). Very chronic,
simple ulcers are rarely tender or painful. In malignant
disease there is both induration and pain which is of
a hot, scalding, or burning character. Signs and symp-
toms associated with the development of the carcinoma
include a change in the scar with formation of a mass
or ulcer, possibly with an increase in pain, increasing
discharge, foul odor and bleeding (12).

Pressure ulcer is a common complication in patient with
spinal cord injury (SCI). Thirty percent of patients had
at least one pressure ulcer, of whom 13.6% had

stage 3 or 4 pressure ulcer according to a community-
based survey of SCI patients (13). One of the possible
causes of malignant degeneration of the wound is the
persistent stimulation of marginal epithelium in non-
healing wounds which in turn may lead to eventual loss
of growth and neoplastic changes (1). These are rare
tumours in which various aetiological factors have been
incriminated, including repeated irritation, poor lym-
phatic regeneration, antibodies, mutations, and local
toxins (14).

More recently, a theory of immunological isolation has
been suggested, whereby lymphatic channel obliteration
at the site of injury may decrease the delivery of
tumour antigens or specifically stimulated small lymphocytes to
the regional lymph nodes from that site. This renders
the site “immunologically privileged”, allowing the de-
velopment and progression of antigenically foreign tu-
mour cells to go unchecked. Such cells may initially arise
by spontaneous mutation or develop under the influence
of viral or chemical carcinogens. Tumour antigen rec-
ognition may then be delayed long enough for tumours
to reach “critical size”, when immune mechanisms are
no longer sufficient to prevent continued neoplastic
progression (15). A rare atypical cellular occurrence in
the wound healing process can also lead to malignancy.

Endogenous growth promoting factors produced in the
wound exudates which can act as co-carcinogens in ge-
netically susceptible individuals (16).

Tissue biopsy is a definitive diagnostic tool and should
include tissue specimens from both the centre and mar-
gins of suggestive lesions. Simple punch biopsy usually
provides adequate tissue for diagnosis. A negative punch
biopsy must be interpreted with caution because sam-
ping error can occur (17). The most important diagnos-
tic procedure for early diagnosis remains biopsy, which
should be done on any lesion with recent changes.

Dumurgier et al. advises biopsies of every pressure sore
after the first decade (10).

Awareness of the malignant potential associated with
chronic ulceration may allow early diagnosis and a de-
crease in the morbidity associated with advanced dis-
ease, such as radical node dissection or amputation.
Although some aspects of treatment of Marjolin’s ul-
cer remains controversial, several basic principles are
necessary to practise in the treatment of long standing
pressure sores. Preventive care is of greatest impor-
tance. In all wounds, infection should be treated early
and adequate drainage should be provided when neces-
sary. Infected wounds must be treated with appropri-
ate antibiotics. In general, recurring ulcers should be
excised even if they are not malignant and skin grafts or
flaps should be used for coverage to facilitate complete
healing as quickly as possible (18). There is a wide va-
riety of suggested treatment protocols for this disease.
A multitude of options and recommendations exists for
the management of both primary lesions and regional
nodal metastasis. However, early diagnosis and radical excision are essential requirements.

Aggressive surgical therapy for pressure sore carcinoma is warranted because of the poor prognosis. Wide excision of the cancer is mandatory (19). Once a burn or skin trauma has occurred, care must be taken to ensure rapid and stable healing by skin graft or flap coverage. The involved skin lesions will not heal in the presence of tumor cells. Wide local excision with a margin of at least 1 cm of healthy tissue should be done in cases of Marjolin’s ulcer. Amputation is indicated when wide local excision is prevented by deep invasion, bone or joint space involvement, infection or hemorrhage, or when excision would impair function and encumber the patient. Lifeso stated that wide local excision can be unreliable for grade II and grade III disease; therefore, amputation and prophylactic node irradiation is recommended (20). Long-term follow-up is recommended in all cases of Marjolin’s ulcer.

In conclusion, pressure sore carcinomas appear to be a highly lethal condition. They are more aggressive with a higher mortality rate. If there is any suspicion, a biopsy should be performed. A high index of suspicion is necessary for long standing pressure ulcer in this frequently neglected group of people to enable early diagnosis and treatment. Early wound coverage is mandatory for non-healing ulcers.

REFERENCES