# Marjolin's ulcer: a twelve-case report*
# *Úlcera de Marjolin: relato de 12 casos**

Vanessa O. Zagne Bauk[1] Aline Mesquita Assunção[2] Renata Ferreira Domingues[3]
Nurimar C. Fernandes[4] Tullia Cuzzi Maya[5] Juan Piñeiro Maceira[6]

**Abstract:** The authors report twelve cases of Marjolin's ulcer that have been diagnosed between 1990 and 2003 at HUCFF-UFRJ. Five females and seven males, aged 38 to 86 years old, formed the group. Evolution time from scar to squamous cell carcinoma onset ranged from 10 to 50 years. Amputation was performed in eight cases and in one of them radiation therapy was associated. Two patients underwent local excision. One patient who already had spinal metastasis was submitted to palliative local excision. Finally, one case had no therapeutic possibilities. Early biopsy was concluded to be essential in chronic ulcers, to establish the difference between squamous cell carcinoma and pseudoepitheliomatous hyperplasia.
Keywords: Carcinoma, squamous cell; Cicatrix; Ulcer

***Resumo:*** *Relato de 12 casos de úlcera de Marjolin observados de 1990 a 2003 no HUCFF-UFRJ. Cinco pacientes do sexo feminino e sete do masculino, com idade variando de 38 a 86 anos. Tempo de evolução de 10 a 50 anos, da cicatriz até surgimento do carcinoma espinocelular. Ressecção da lesão em dois casos e amputação terapêutica em oito. Em um caso realizada exérese paliativa da lesão por apresentar metástase para coluna sacrococcígea. Um caso de impossibilidade terapêutica. Concluiu-se que a biópsia é essencial em úlceras crônicas, para diferenciar carcinoma espinocelular de hiperplasia pseudoepiteliomatosa.*
*Palavras-chave: Carcinoma de células escamosas; Cicatriz; Úlcera*

## INTRODUCTION

Malignant transformation in burn scars was described by Jean-Nicholas Marjolin in 1828.[1,2] Nowadays, the expression "Marjolin's ulcer" is used when malignant neoplasias, especially squamous cell carcinomas, occur on chronic ulcers, fistulas and scars of various etiologies, burn scars being the most common cause.[2-4]

Clinical findings that suggest malignant transformation included ulcers that do not heal, increase in lesion consistency, vegetation, unpleasant odor, elevated borders and formation of nodules on the scar.[1]

In the majority of times, patient seeks the physician too late, when significant alterations have

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[1] Master's student at the Department of Dermatology at the Hospital Universitário Clementino Fraga Filho da Universidade Federal do Rio de Janeiro - UFRJ; Graduate Studies on Dermatology at the Faculdade de Medicina da Universidade Federal do Rio de Janeiro - UFRJ - Rio de Janeiro (RJ), Brazil. Dermatologist of the Brazilian Society of Dermatology.
[2] Graduate Studies on Dermatology at the Faculdade de Medicina da Universidade Federal do Rio de Janeiro - UFRJ - Rio de Janeiro (RJ), Brazil. Dermatologist of the Brazilian Society of Dermatology.
[3] Graduate Studies on Dermatology at the Faculdade de Medicina da Universidade Federal do Rio de Janeiro - UFRJ - Rio de Janeiro (RJ), Brazil. Dermatologist of the Brazilian Society of Dermatology.
[4] Associate Professor of Dermatology, Faculdade de Medicina da Universidade Federal do Rio de Janeiro - UFRJ - Rio de Janeiro (RJ), Brazil.
[5] Associate Professor at the Department of Pathological Anatomy, Faculdade de Medicina da Universidade Federal do Rio de Janeiro - UFRJ - Rio de Janeiro (RJ), Brazil.
[6] Associate Professor at the Department of Pathological Anatomy, Faculdade de Medicina da Universidade Federal do Rio de Janeiro - UFRJ - Rio de Janeiro (RJ), Brazil.

already occurred. It is not rare for the physician to underestimate the cases, when once more precious time is lost.

Considering the importance of early diagnosis, the mutilations a late diagnosis can generate and the scarcity of references on the matter, cases observed in the Clementino Fraga Filho University Hospital over a period of 13 years are reported.

In the period between 1990 and 2003, 12 cases of squamous cell carcinoma that had developed on scars or chronic ulcers were diagnosed. Patients were evaluated according to age, gender, skin color, profession, location of the lesion and its time evolution from primary lesion. Patients underwent the following laboratorial tests: blood count, velocity of hemosedimentation, seric sodium, potassium and creatinine, blood urea nitrogen, radiograph of bones in the affected area, and lesion histopathological examination. Computerized tomography of the lesion site was performed in two cases. Two other cases were submitted to bone biopsy. Follow-up was made in 11 of the 12 patients over a period lasting from five months to two years.

## CASE REPORTS

Cases happened in five females and seven males aged between 38 and 86 years. Evolution time from scar to squamous cell carcinoma onset ranged from 10 to 50 years (Chart 1).

Diagnosis of squamous cell carcinoma was established on a clinical-laboratorial basis. Areas of carcinomatous transformation were ulcerated-vegetated, painful, brittle and many times had purulent secretion and foul smell.

Clinical hypothesis of squamous cell carcinoma was confirmed by means of biopsy of specimens of vegetating lesions suspected because of the presence of irregular, anastomosed strings of polygonal epithelial cells with variable proportions of atypical mitoses invading dermis. In the more differentiated forms, there was keratinization in the shape of horny pearls.

Radiograph revealed lytic lesions in the bones of four patients, and chronic osteomyelitis in one, characterized by images of sequestration, involucres, lytic and sclerotic lesions. Cases 5 and 7 underwent computerized tomography of lesion site. Cases 1 and 2 underwent bone biopsy.

Amputation was carried out eight times: cases 1, 2, 3, 4, 6, 8, 11 and 12. case 5 was treated with lesion exeresis. Case 7 was considered beyond therapeutic possibilities. Cases 9 and 10 underwent local resection with self-grafting and patch rotation, respectively (Chart 1).

## DISCUSSION

Development of a squamous cell carcinoma (SCC) in a chronic ulcer or a scar is a relatively rare event. Estimated percentage of scars that will suffer malignant degeneration is 2%.[5] Mean latency between injury time and documentation of neoplasia is 30 years,[6] even though there is a possibility of acute evolution, with a maximal time of one year, especially in cases occurring on burn scars.[5,7] Patient age

**CHART 1:** Marjolin's ulcer - Casuistry

| Cases | Skin color | Age (years) | Gender | Profession time | Evolution lesion | Primary | Location | Bone X-ray | Node chain | Therapy | *Follow up* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | nw | 79 | F | housewife | 10 years | AU | RLL | m | N | A | 12 months |
| 2 | w | 86 | F | housewife | 50 years | trauma | RLL | m | N | A | 6 months |
| 3 | nw | 68 | M | Eletrician | 18 years | BS | R foot | N | N | A | 5 months |
| 4 | w | 38 | M | Mechanic | 32 years | BS | L foot | N | m | AR | 4 years |
| 5 | nw | 54 | M | Public employee | 15 years | LUS | SR | m | N | R | 9 months |
| 6 | nw | 52 | F | Street vendor | 40 years | BS | RUL | N | N | A | 5 months |
| 7 | nw | 86 | M | Brick layer | 17 years | FS | RGR | m | m | BPT | – |
| 8 | w | 71 | M | Fireman | 13 years | AU | LLL | N | N | A | 48 months |
| 9 | nw | 39 | F | housewife | 39 years | BE | RLL | N | N | R | 24 months |
| 10 | nw | 44 | M | Truck driver | 30 years | trauma | RLL | N | N | R | 6 months |
| 11 | w | 61 | F | housewife | 20 years | VU | RLL | CO | N | A | 6 months |
| 12 | nw | 58 | M | nickeling | 3 months | VHD | RLL | N | N | A | 4 months |

**Conventions**
A: amputation; AR: amputation + radiation therapy; w: white; LUS: lying ulcer scar; FS: fistula scar; BS: burn scar; R: right; L: left; BE: bullous epidermolysis; F: female; BTP: beyond therapeutic possibilities; m: metastasis; M: male; VHD: Virshowian Hansen's Disease; LL: lower limb; UP: upper limb; N: normal; nw: non-white; RGR: right gluteus region; CO: chronic osteomyelitis; R: ressection; SR: sacral region; AU: angiodermic ulcer; VU: venous ulcer.

at the time of injury influences latency time, which is inversely proportional to patient's age at the time of burn.[5]

These tumors have a more aggressive evolution, higher possibility of local relapse and of node metastasis.[6] Rate of metastases originating from squamous cell carcinomas on scars is 35% to 50%, much higher than the possibility of metastasis from a SCC originated from actinic damage (2 to 6%).[5,7]

Most patients are already in advanced stages of disease at the time of diagnosis of Marjolin's ulcer, which has been proven both in the present work and in literature (Charts 1 and 2).[8-11] This happens as a consequence of both clinical and histopathological difficulties in diagnosing a squamous cell carcinoma on a scared or ulcerated lesion. In cases of Marjolin's ulcer, tumor is usually well differentiated and may emerge over an area of previous pseudo-epitheliomatous hyperplasia, making diagnosis even more difficult. Pseudo-epitheliomatous hyperplasia corresponds to an increase in epidermal thickness, with proliferation of irregular strings of squamous cells, minimal or absent cytological atypy, associated to mononuclear inflammatory infiltrate.[4,12]

Even with the aid of differentiation criteria, distinction between these two entities can be of Paramount difficulty when only a single histological slice is examined. Multiple biopsies from different sites should be carried out in the suspected lesion, due to the difficulty in distinction between pseudo-epitheliomatous hyperplasia and squamous cell carcinoma.[4,10]

A variety of factor have been observed to predispose to malignant transformation of a chronic lesion, among them, prolonged duration, trauma and constant irritation, chronic infection with or without osteomyelitis, inadequate hygiene, environmental factors and genetic predisposition.[10]

Defining factor for therapy were primary location, lesion extension, patient's age and whether metastasis was present or not. Amputation was carried out in eight cases: in cases 1 and 2 because of infralesional bone metastasis, confirmed by bone biopsy; in case 3,6,8,11 and 12 because non-resectability owing to great lesion extension. In case 4, left foot amputation was performed, associated to radiation therapy at the site of metastasis, due to great lesion extension and presence of lymph node metastasis, as confirmed histologically. Case 5 was treated with lesion exeresis, since it presented an infralesional metastasis extending to sacral vertebrae, coccyx and sacroiliac joints. Metastases were demonstrated by computerized tomography of the sacrococcygeal region. Case 7 was considered to be beyond therapeutic possibilities in virtue of advanced age associated to the presence of bone and soft tissue metastasis, as confirmed by panoramic hip radiograph and computerized tomography of the gluteus region, besides the presence of node metastasis in the right inguinal chain, as confirmed by thick-needle puncture. Cases 9 and 10 underwent local resection with self-grafting and resection with patch rotation, respectively (Chart 1).

The present casuistry exhibits a balance in gender distribution, predominant age range above 40 years, evolution time over 10 years and main location in lower limb. Results are similar to those of a previous casuistry from the same department.[13]

In the consulted literature, profile is of female gender predominance, age range between 27 and 82 years, evolution time from 4.5 months to 25.4 years, main location in lower limb, and primary location varying between scar and ulcer. Therapy included lesion

**CHART 2:** Marjolin's ulcer – World Casuistry

| Author, year | N. of cases | Age (mean) | Gender F / M | Evolution time | Primary lesion | Location | Therapy | *Follow up* |
|---|---|---|---|---|---|---|---|---|
| Baldursson B et al, 1995.[9] | 23 | 82 years | | 25,4 years | VU | LL | A + RT | 8,5 years |
| Baldursson B et al, 1999.[8] | 25 | 78,5 years | 9/16 | 22,1 years | UVVU | LL | A + RT | 3 years |
| Bosch RJ et al, 1999.[11] | 4 | 27 years | 3/1 | 6 months | RDBE | LL and UL | A + E | 2 years |
| Kontochristopoulos G et al, 2000.[10] | 2 | 73 years | 1/1 | 12,5 years | VHD | LLL | E + RT | 1 year |

**Conventions**
A: amputation; E: exeresis; RDBE: recessive distrophic bullous epidermolysis;
VHD: Virchowian Hansen's Disease
LL: lower limb; LLL: left lower limb; UL: upper limb; RT: radiation therapy
VU: venous ulcer

excision, excision with grafting, amputation and radiation therapy (Chart 2).

It should be highlighted that: 1. When a scar or chronic ulcer undergoes modification in its clinical evolutional aspect, becoming painful, infiltrated, hardened, vegetating or secreting, the presence of a malignant transformation should be thoroughly investigated.

2. Therapy should be decided on a individual basis, because it involves multiple clinical and laboratorial aspects. ❑

**REFERENCES**


1. Mackil MR. Epidermal skin tumours. In: Champion RH, Burton JL, Burns DA, Breathnack SM. Rook/Wilkinson/Ebling Textbook of Dermatology. 6 ed. London: Blackwell Science; 1988. p.1651-93.
2. Schwartz AR, Stoll Jr LH. Squamous Cell Carcinoma. In: Freedberg IM, Eisen AZ, Wolff K. Fitzpatrick's dermatology in general medicine. 5 ed. New York: Mc Graw-Hill; 1999. p.840-56.
3. Odom RB, James WD, Berger TG. Epidermal nevi, neoplasms, and cysts. In: Andrew's diseases of the skin clinical dermatology. 9 ed. Philadelphia: Saunders; 2000. p.800-6.
4. Kirkham N. Tumours and cysts of the epidermis. In: Lever WF, Lever GS. Lever´s histopathology of the skin. 8 ed. Philadelphia: Lippincott-Raven; 1997. p. 685-746.
5. Duncan KO, Leffell DJ. Epithelial precancerous lesions. In: Freedberg IM, Eisen AZ, Wolff K. Fitzpatrick's dermatology in general medicine. 6 ed. New York: Mc Graw-Hill; 2003. p.719-36.
6. Esther RJ, Lamps L, Schwartz HS. Marjolin ulcers: secondary carcinomas in chronic wounds. J South Orthop Assoc. 1999;8:181-7.
7. Dupree MT, Boyer JD, Cobb MW. Marjolin`s ulcer arising in a burn scar. Cutis. 1998;62:49-51.
8. Baldursson BT, Hedblad MA, Beitner H, Lindelöf B. Squamous cell carcinoma complicating chronic venous leg ulceration: a study of the histopathology, course and survival in 25 patients. Br J Dermatol. 1999;140:1148-52.
9. Baldursson B, Sigurgeirsson B, Lindelöf B. Venous leg ulcers and squamous cell carcinoma: a large-scale epidemiological study. Br J Dermatol. 1995;133:571-4.
10. Kontochristopoulos G, Kyriakis K, Symeonidou S, Katsiboulas V, Aroni K, Panteleos D, et al. Squamous cell carcinoma in chronic trophic ulcers of leprosy patients. J Eur Acad Dermatol Venerol. 2000;14:222-36.
11. Bosch RJ, Gallardo MA, Ruiz Del Portal G, Sanchez P, Arce MF, Herrera E. Squamous cell carcinoma secondary to recessive dystrophic epidermolysis bullosa: report of eight tumours in four patients. J Eur Acad Dermatol Venerol. 1999;13:198-204.
12. Maya TC, Maceira RP. Tumores e cistos da epiderme. Dermatopatologia: bases para o diagnóstico morfológico. São Paulo: Roca; 2001. p.130-44.
13. Wanke Nurimar CF, Ave Beatriz RC, Maceira Juan. Carcinoma epidermóide em úlcera angiodérmica: relato de nove casos. An Bras Dermatol. 1990;65:59-62.



*MAILING ADDRESS:*
*Vanessa Oliveira Zagne Bauk*
*Av. Sete de Setembro, 207 - apto 1302 - Icaraí*
*24230-251 – Niterói - RJ - Brazil*
*Tel.: +55 (21) 2703-9981 / Fax: +55 (21) 2704-5623*
*E-mail: vzagne@urbi.com.br*