

## Case Report

# Rotation flap for closure of surgical defect on the dorsum of the hand

## *Retalho de rotação para fechamento de defeitos cirúrgicos nos dorsos das mãos*

### Authors:

Paulo Morais Cardoso<sup>1</sup>  
Paulo Santos<sup>2</sup>  
Filomena Azevedo<sup>3</sup>

<sup>1</sup> Dermatology and Venereology Assistant, Hospital de São João and Medical School of the Universidade Porto – Porto, Portugal

<sup>2</sup> Dermatology and Venereology Assistant, Hospital de São João and Medical School of the Universidade Porto – Porto, Portugal

<sup>3</sup> Director, Dermatology and Venereology Department, Hospital de São João – Porto, Portugal

### Correspondence:

Paulo Morais  
R. Largo da Igreja – 143  
04.500-474 – Espinho – Portugal  
E-mail: paulomoraiscardoso@gmail.com

Received on: 17 November 2011

Approved on: 6 December 2011

This study was carried out at the Dermatology and Venereology Department of the Hospital de São João – Porto, Portugal.

Conflicts of interest: None  
Financial support: None

### ABSTRACT

Malignant tumors are relatively common on the dorsum of the hand. Excision of such lesions may result in a large defect not suitable for direct closure, and its reconstruction often represents a challenge for the hand surgeon. Several reconstructive techniques can be used to close this defect. We herein describe the application of a rotation flap for closure of a defect on the dorsum of the hand secondary to excision of a keratoacanthoma, and explain the principles and advantages of this technique.

**Keywords:** hand; surgical flaps; skin neoplasms.

### RESUMO

*Os tumores malignos são relativamente frequentes no dorso da mão. A excisão destas lesões pode resultar num defeito cirúrgico de grandes dimensões não passível de encerramento directo, pelo que, a sua reconstrução pode constituir um desafio para o cirurgião. Podem ser utilizadas várias técnicas reconstitutivas para este efeito. Descrevemos a aplicação de um retalho de rotação para encerramento de um defeito do dorso da mão secundário à exérese de um queratoacantoma e explicamos os princípios e as vantagens desta técnica.*

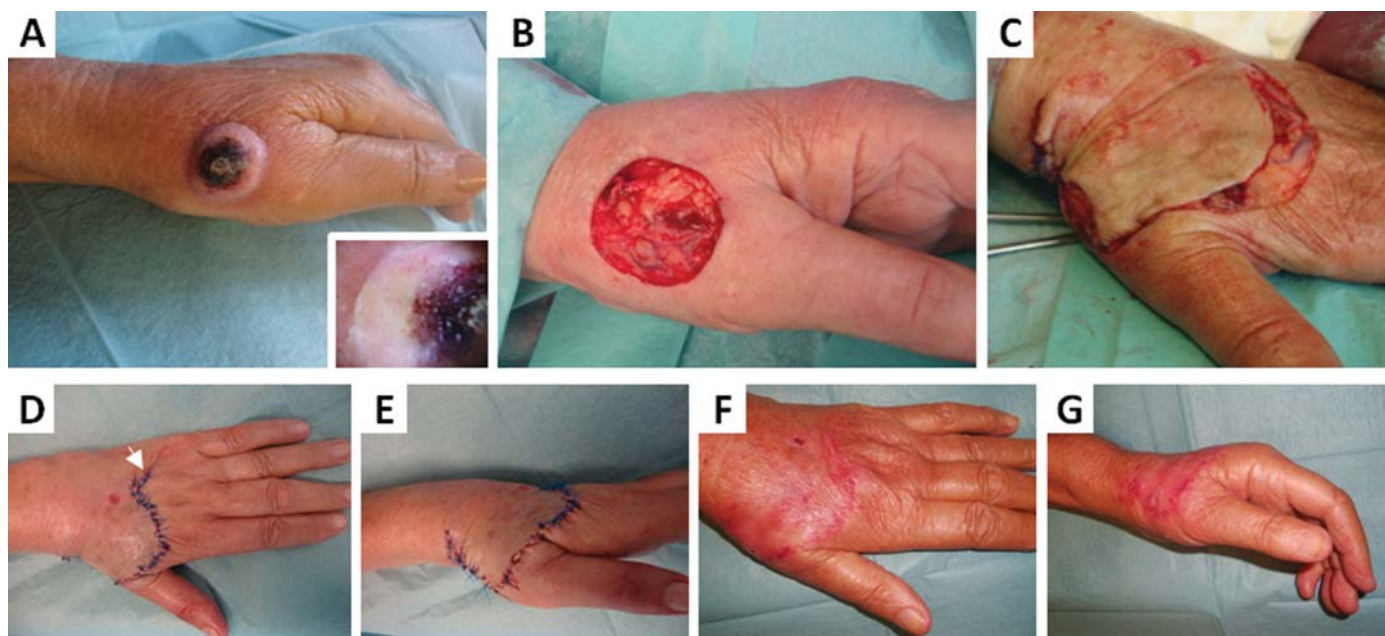
**Palavras-chave:** mão; retalhos cirúrgicos; neoplasias cutâneas.

### INTRODUCTION

Tumors are common on the back of the hand. Several options can be used for the closure of surgical wounds resulting from treating hand defects, including direct closure, grafts, local flaps, distant flaps, and free tissue transfers.<sup>1</sup> While many hand wounds can be closed using simple techniques, more complex defects that are not amenable to direct closure may occur; these usually represent a challenge for the surgeon. We describe the application of the rotation flap technique to cover a defect on the back of the hand.

### CASE REPORT

A fair-skinned female farmer, 74 years old, presented with a rapidly growing tumor located on the back of the left hand over the first metacarpal, which had been developing for 6 months. During the physical examination, a dome-shaped lesion with a keratotic center, 2.5 cm in diameter, was observed in the abovementioned location (Figure 1A). Dermoscopy revealed structureless white areas coalescing with enlarged, keratotic and targetoid-like hair follicle openings, and a central brownish mass of keratin (Figure 1A, inside box). Clinical and dermoscopic findings suggested a diagnosis of keratoacanthoma. The lesion was excised, resulting in a 4.5 cm wide defect (Figure 1B). We decided to use a rotation flap to close the surgical wound. A curved



**Figura 1:** Clinical appearance of the squamous cell carcinoma located on the back of the right hand over the first metacarpal (A), and dermoscopy of the lesion (inside box). Round defect following the excision of the tumor (B). The flap was then delineated with a semicircular curve and raised while preserving the dorsal nerves and veins (C). The flap was sutured in position (D, E); a Burow's triangle was excised to facilitate rotation and avoid a "dog-ear" defect (arrow head). The end result of the flap, 15 days after the removal of sutures (F, G).

incision extended from the defect to the ulnar border. The flap was raised at the level just superficial to the epitenon of the extensor tendons, and the underlying vessels and nerves were preserved as much as possible (Figure 1C). The flap was then rotated into the defect, opening up a secondary defect. To facilitate the sliding of the flap and avoid a "dog-ear" effect, a small triangle of skin was excised on the distal side of the secondary defect. The flap was sutured to the skin with 4/0 polyamide suture. The secondary defect was then closed by advancement using the laxity of the back of the hand (Figures 1D and 1E). The sutures were removed 2 weeks later, and the 1-month follow-up visit revealed both aesthetically and functionally excellent results. The histologic examination confirmed keratoacanthoma. The patient maintains regular follow-up visits with no recurrence of the tumor.

## DISCUSSION

We have described the application of the rotation flap on the back of the hand. This technique has proven useful for reconstructing defects created by the excision of actinic skin lesions overlying the distal half of the metacarpals on the back of the hand.<sup>2</sup> In this patient, direct closure was not possible. The best options to introduce new tissue to the defect were flap or skin graft. Although split skin grafts give good results on the back of the hand, they have the disadvantage of requiring a distal donor site.<sup>1,2</sup> A local flap, when available, is likely to be the most convenient reconstruction option and, as it uses local tissue to replace the defect, it adheres to the principle of replacing "like with like."<sup>2</sup> The rotation flap follows this principle and

yields excellent cosmetic results without compromising function. The preservation of the axial vascular elements of the flap theoretically makes it more robust and more resistant to infection.<sup>2</sup> This flap is drawn as a conventional rotation flap, but it actually transposes, leaving a secondary defect. This secondary defect, however, is closed by advancement of the laxity of skin of the back of the hand. The use of a small back cut or the creation of a Burow's triangle can help gain a bit more extra rotation.<sup>1</sup>

In conclusion, using a rotation flap on the back of the hand allows a surgical defect to be closed by dividing the tension of closure over a much larger surface area, repairs with local skin of similar color, texture and thickness (the "like with like" principle), and yields results that are both aesthetically and functionally excellent. ●

## REFERENCES

1. Chao JD, Huang JM, Wiedrich TA. Local hand flaps. *J Am Soc Surg.* 2001;1:25-44.
2. Hurren JS, Cormack GC. The application of the rotation flap to the dorsum of the hand. *Br J Plast Surg.* 2000; 53:491-4.