

CASE REPORT

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# Microsurgical neck reconstruction in an elderly patient

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## ABSTRACT

**Introduction:** The incidence of dermatological malignancies increases with age and a considerable percentage of older adults will require radical surgeries and adjuvant treatments, microsurgery allows repair and coverage of major defects with success rates of up to 90%.

**Case Report:** We present the case of an elderly patient with an ulcer in the left clavicular region without evidence of healing. Histological and imaging studies were performed, a basal cell carcinoma subtype morphea was found. A wide excision and axillary lymph node dissection were performed, subsequently covering the defect with a free flap. There is an 11-year follow-up.

**Conclusion:** Complications in microsurgical reconstructions are more associated with comorbidities than with the age of the patient. The same success rates can be obtained in elderly patients.

**Keywords:** Aged, Basal cell, Microsurgery, Reconstruction

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## INTRODUCTION

Nowadays human's life expectancy has increased. Therefore, the percentage of elderly people has increased over the past decade from 5.7% to 29.9% [1, 2]. However, death rate associated with cancer has increased proportionally with age and a significant percentage will require radical surgical procedures in order to achieve free margins [1].

Basal cell carcinoma is the most common type of skin cancer, less than 10% are morphea type. These have aggressive behaviors with local destruction and high local recurrence rate. Lymphatic metastasis are rare, less than 0.005%. The standard treatment is the resection with wide margins and immediate or delayed reconstruction [3].

Historically, it has been considered that age was a contraindication for major surgeries because of the increased death. However, recent improvements in techniques have reduced morbidity and death rates. Thus, allowing major and more complex surgeries in a safer manner [4].

Microsurgery has allowed access to extensive surgeries and complex defects reconstruction. Nowadays flaps are

the most popular treatment for complex defects and have reached a success rate above 90%, thus becoming an attractive procedure on the reconstruction field [2, 5].

## CASE REPORT

We present the case of an 82-year-old male who arrived with a painless ulcer located on the left supraclavicular region which presented progressive growth over the last 6 weeks (Figure 1A). An ulcerated injury was found on the left supraclavicular region; of approximately  $10 \times 13$  cm<sup>2</sup>; the edges were erythematous, pearly, and well defined (Figure 1B).

A thorax radiograph (Figure 2) showed a clavicle irregularity among the left edge, suggesting oncological infiltration. A biopsy of the edge and bottom of the injury was performed which resulted in basal cell carcinoma. A positron emission tomography/computed tomography (PET/CT) was requested (Figure 3) in which it was observed that the supraclavicular lesion extended to deep planes. A preauricular lesion was also found, corresponding to a neoplasm in the left parotid region and left axillary adenopathy, all with an increased metabolism. It was classified as a T4N1Mo (Stage IV).

After the above data the need for surgical intervention was decided, American Society of Anesthesiologists (ASA) II risk was assigned. A wide resection was performed in both the lesions (Figure 4) which included left clavicular resection, total left parotidectomy with facial nerve sparing, level II modified radical neck dissection, and a level I axillary dissection.

A  $40 \times 14$  cm defect was reconstructed with a skin flap from rectus abdominis muscles dependent on the deep inferior epigastric artery with a termino-terminal anastomosis to the transverse cervical and a latero-terminal anastomosis to the external jugular under microscope. A  $5 \times 5$  cm deltopectoral graft was used to cover the residual defect in the deltoid zone (Figure 5).

The histological diagnosis (Figure 6) of the supraclavicular and the preauricular lesion was basal cell carcinoma morphea subtype, the margins of the resected tumors were free of disease. The axillary tissue also showed basal cell carcinoma with morphea subtype.

The patient was discharged on the fifth postoperative day. During the postoperative follow-up, there was necrosis of the medial border (approximately  $1 \times 9$  cm) and an island in the deltoid region ( $3 \times 2.4$  cm), the probable cause was that these areas were outside the angiosome. The patient required debridement of the injured regions and healing for 2 months until tertiary closure with a full-thickness skin graft (Figure 7A).

The patient completed a hypofractionated radiotherapy scheme in 10 sessions. The 8-months follow-up shows the absence of local and lymph node disease, the flap with adequate vascular permeability and no facial palsy (Figure 7B).

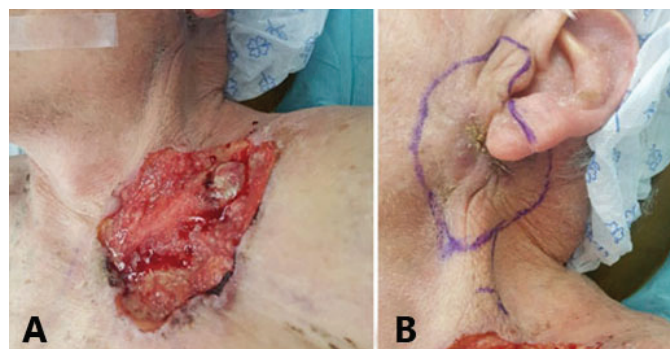


Figure 1: (A) Ulcer in the left supraclavicular region of  $10 \times 13$  cm. (B) Asymmetric left preauricular and retroauricular lesion of  $2 \times 1$  cm.

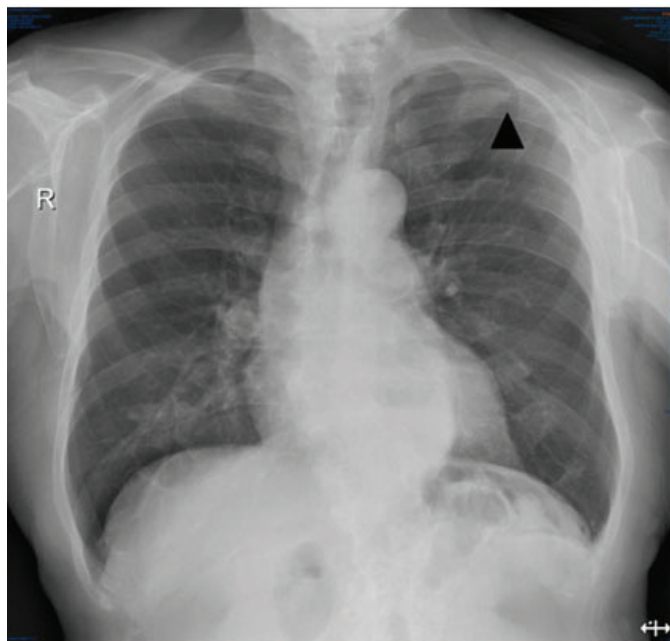


Figure 2: Chest X-ray with irregularity in the contours of the left clavicle and data suggestive of fracture (arrowhead).

## DISCUSSION

Cancer is a prevalent disease in elderly populations, head and neck cancer represents 5% of all cancer reported [4]. Morphea type basal cell skin cancer is an aggressive variant, standard treatment is excision with wide margins and reconstruction of skin defects [3].

The success rate in microvascular procedures in elderly is 95.9% average, the general complication rate is between 17.9% and 22.3% [6, 7]. Surgical complication rates are 20.72% also comparable to younger patients [2, 6–8] and medical complications are more frequent, occurring in 26.85% of reconstruction [5, 6, 8].

The most widely used skin flaps for defects in head and neck are the anterolateral thigh (ALT), radial forearm, and rectus abdominis [6, 9]. In elderly a large percentage have peripheral arterial disease which diminishes the blood flow of the perforating blood vessels in lower limbs which decreases the performance of the ALT [9].



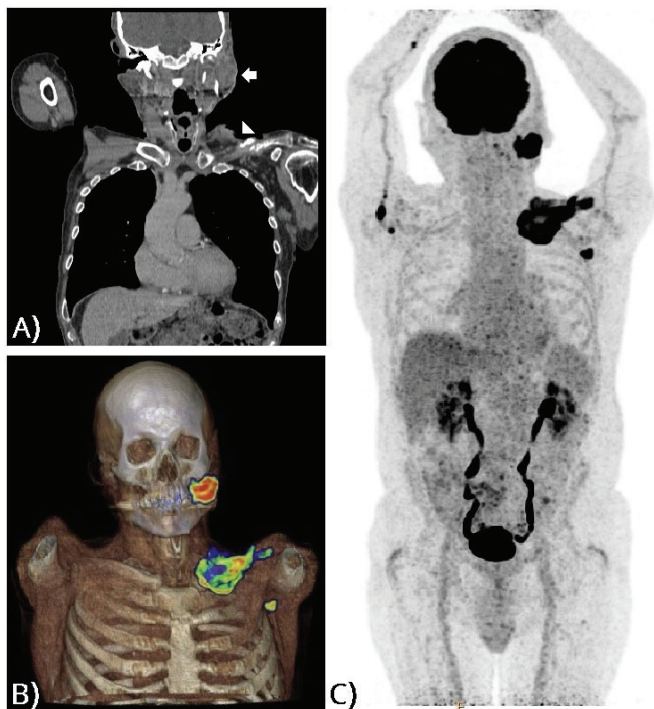


Figure 3: 18-FDG PET-CT. (A) CT showing injury replacing the left parotid gland (white arrow) with areas of necrosis, erosion of the cutaneous planes in the left supraclavicular region with striation of the tissue surrounding subcutaneous and significant bone erosion that causes loss of continuity of the clavicle (arrowhead), as well as short axis 13 mm axillary adenopathy, with irregular edges. (B) PET in maximum intensity projection, where it is observed that all the injuries described associate metabolic increase. (C) 3D fusion image.

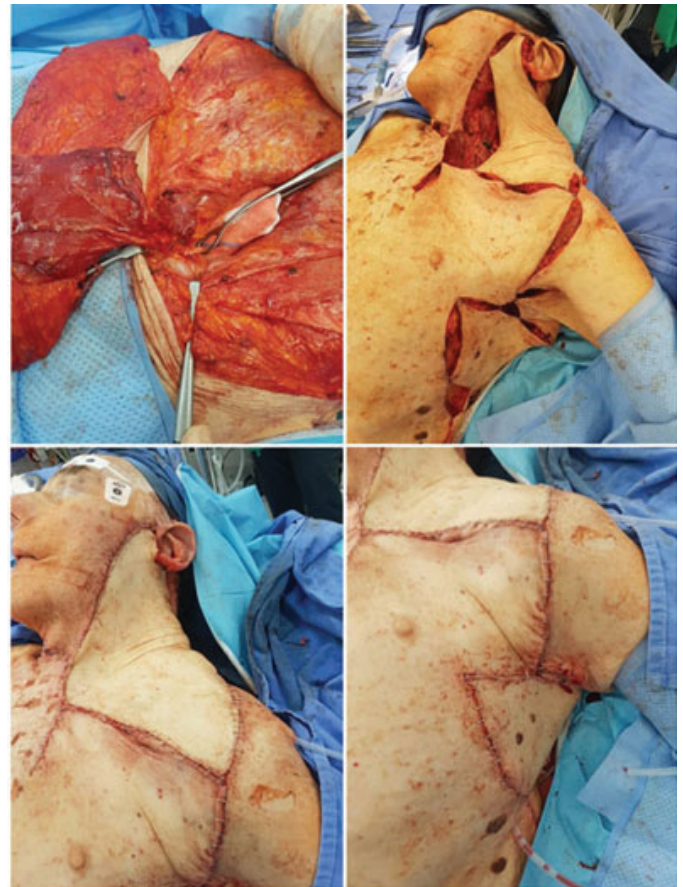


Figure 5: Reconstruction of the 40 × 14 cm defect using a free rectum flap of the free abdomen dependent on the deep inferior epigastric artery with anastomosis to the terminal transverse cervical artery and the end-lateral external jugular, as well as a deltopectoral flap for the residual deltoid defect of 5 × 5 cm.



Figure 4: Resection of the left clavicle, sternocleidomastoid, omohyoid muscle, and the superior portion of pectoralis major. In the upper portion shows the defect of total parathyroidectomy and modified radical neck resection II. In the lower portion, the level I axillary dissection area is observed. The deep cervical artery was exposed to perform the anastomosis.

On this patient, a rectus abdominal flap, an axial flap, was used because of the size of the defect, the perfusion area is 151.6–196.1 cm<sup>2</sup>. In this flap most complications occur in Zone 4 of Schefflan and Dinner [10].

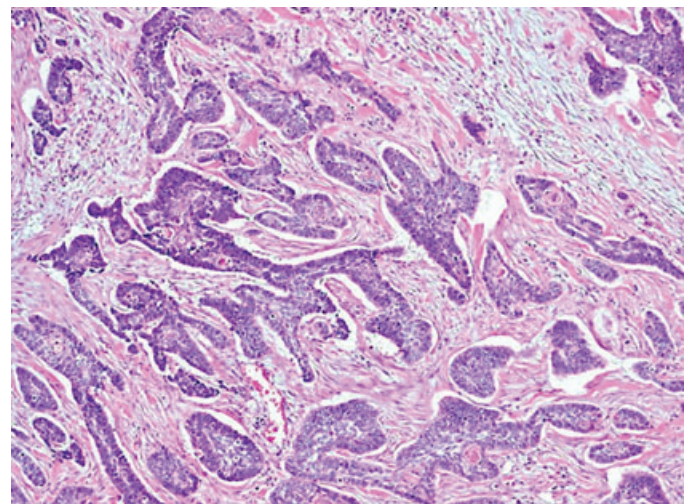


Figure 6: Morphea basal cell cancer histological section at 10×. The cuts show dermis with malignant neoplastic infiltration due to irregular, angled nests, and poorly defined edges. Composed of basaloid cells of little cytoplasm, hyperchromatic nuclei, and on the periphery they are arranged in a stockade, apoptotic bodies and mitotic figures are also identified. The surrounding stroma has desmoplastic reaction and cleft artifact around the neoplastic nests. Perineural invasion is observed in the central part of the image.





Figure 7: (A) Necrosis of the flap edges. (B) Result 8 months after surgery and radiotherapy, no evidence of radiodermatitis.

This patient had an ASA II risk which could have been the reason no major medical complications occurred in the postoperative period. No complications were present in the vascular pedicle and the reason for vascular congestion and necrosis of graft borders was probably due to the size of the graft exceeding the perfusion area of the angiosome.

Complications related to grafts are present in 12.5% of the cases and graft failure in 1.8% [8]. Major complications such as venous thrombosis (63.6%) and arterial thrombosis (3.6%) are present in 10.9% of patients in which 27.8% is rescued in re-exploration [2, 4, 5]. The factors associated with surgical complications are ASA  $\geq$  III (odds ratio (OR) 1.62), obesity (OR 1.03), prolonged surgical time (OR 1.0), and hospital stay (OR 1.03) [6, 7].

Significant associations between age and medical complications were found [1, 10]. Major complications were found in 10.7% and minor complications in 44%. The factors that demonstrated independent association are: renal disease (OR 10.13), ASA  $\geq$  III (OR 2.57), and prolonged hospital stay (OR 1.06) [6].

The relationship between age and mortality rate is controversial, Jubbal et al. [6] found that patients in the 6th decade of life have 0.6% mortality, in the 7th decade 1.8%, and that age is associated with 30-day mortality.

## CONCLUSION

Physical age and chronologic age may be independent parameters. Currently advanced age is not a contraindication to realize microsurgery. It is associated with an increase in medical complications, but it has the same success rates. Patient selection and perioperative management of comorbidities allow us to realize microsurgery in a safe way in elderly patients.

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## Author Contributions

De la Concha Tiznado Mauricio – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Telich Tarriba Jose – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Muerrieta Costeño Yehu Miguel – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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Lopez Mendoza Francisco Javier – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related

to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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### Consent Statement

Written informed consent was obtained from the patient for publication of this article.

### Conflict of Interest

Authors declare no conflict of interest.

### Data Availability

All relevant data are within the paper and its Supporting Information files.

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