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(CASE REPORT)

Wide surgical excision and directed healing in forearm Leiomyosarcoma: Case report

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Abstract

Background: Leiomyosarcoma is a rare malignant tumor originating from smooth muscle cells and represents a small subset of soft-tissue sarcomas. Standard treatment relies on wide surgical excision with negative margins. However, oncologic resections may lead to extensive soft-tissue defects requiring complex reconstruction. Directed secondary intention healing remains an underreported yet valuable option in selected clinical scenarios.

Case Presentation: We report the case of a 63-year-old woman presenting with a slowly enlarging multilobulated tumor of the ulnar border of the right forearm evolving over five years. Histopathological analysis confirmed a well-differentiated leiomyosarcoma. After multidisciplinary discussion, wide surgical excision was performed, resulting in a large musculo-cutaneous defect measuring approximately 20 cm. Directed healing with daily dressing changes and close monitoring was adopted.

Results: Progressive granulation tissue formation and epithelialization occurred over several weeks. At four months follow-up, complete coverage was obtained with a stable, trophic and sensitive scar.

Conclusion: Directed healing represents a simple, safe and cost-effective strategy for selected large post-oncologic defects when immediate reconstruction is not mandatory.

Keywords: Leiomyosarcoma; Soft tissue sarcoma; Forearm tumor; Surgical excision; Directed healing; Secondary intention healing; Soft-tissue reconstruction

1. Introduction

Soft-tissue sarcomas represent less than 1% of adult malignancies but encompass a wide spectrum of histological subtypes with heterogeneous biological behavior. Leiomyosarcoma is one of the most frequent subtypes among adult soft-tissue sarcomas and arises from smooth muscle differentiation. These tumors are characterized by aggressive local behavior and a propensity for distant metastasis, particularly to the lungs and liver [1–3].

The cornerstone of treatment for localized leiomyosarcoma remains wide surgical excision with negative margins, often combined with adjuvant radiotherapy depending on tumor grade, size, and anatomical location [4,5]. Nevertheless, wide oncologic resection may result in significant soft-tissue defects, particularly in the extremities.

Reconstructive options include primary closure, skin grafts, local or free flaps. However, in selected cases, directed healing—also known as healing by secondary intention—may provide a reliable alternative when reconstructive surgery is not immediately feasible or when preservation of surrounding structures is prioritized [6,7].

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This report describes a case of forearm leiomyosarcoma treated by wide surgical excision followed by directed healing of a large post-operative soft-tissue defect, highlighting its potential advantages and indications.

2. Case Presentation

A 63-year-old female patient with no significant medical history presented with a progressively enlarging mass located on the ulnar border of the right forearm. The lesion had been evolving over a period of approximately five years without associated trauma.

Clinical examination revealed a multilobulated soft-tissue mass. A surgical biopsy was performed. Histopathological examination demonstrated a spindle-cell proliferation arranged in intersecting fascicles. The tumor cells exhibited elongated nuclei with eosinophilic cytoplasm and focal pleomorphism. Mitotic activity reached 12 mitoses per 2 mm^2, associated with focal tumor necrosis. These findings were consistent with a diagnosis of leiomyosarcoma.

Radiological assessment demonstrated a soft-tissue tumor in contact with the muscular compartment of the forearm without evidence of cortical bone invasion. Staging investigations did not reveal distant metastatic disease.

The case was discussed in a multidisciplinary tumor board, and wide surgical excision was recommended.

Figure 1 Preoperative clinical appearance of the forearm leiomyosarcoma

3. Surgical Management and Directed Healing

Wide tumor excision was performed according to oncologic principles. The procedure resulted in a substantial musculo-cutaneous defect measuring approximately 20 cm in length.

Considering the defect configuration and the absence of exposure of critical structures, a strategy of directed secondary intention healing was adopted. Daily wound care consisted of gentle cleansing, maintenance of a moist wound environment and application of petrolatum-based dressings.

Close clinical monitoring allowed evaluation of the physiological phases of wound healing, including inflammatory response, granulation tissue formation and progressive epithelialization.

Figure 2 Post-excisional soft-tissue defect following tumor resection

Figure 3 Resected tumor specimen following wide surgical excision

4. Results

Progressive granulation tissue formation was observed within the first weeks following surgery. Subsequently, gradual epithelialization occurred from the wound edges.

At four months follow-up, complete wound coverage was achieved. The final scar was stable, trophic and sensitive, without evidence of local complications.

Figure 4 Early granulation tissue formation during directed healing

Figure 5 Advanced epithelialization during the late phase of directed healing

Figure 6 Final clinical aspect after complete directed healing with stable skin coverage

5. Discussion

Leiomyosarcoma of the extremities remains a rare entity, and optimal management relies on multidisciplinary collaboration involving surgeons, pathologists, radiologists and oncologists [3,8]. Wide surgical resection with adequate margins remains the most important prognostic factor for local control and survival.

However, the management of post-excisional soft-tissue defects represents a major challenge. While reconstructive procedures using skin grafts or flaps are often advocated, these techniques may require additional operative time, specialized expertise and may carry donor-site morbidity [9,10].

Directed healing provides an alternative strategy that relies on the intrinsic regenerative capacity of the tissue. When properly monitored, it may offer satisfactory functional and aesthetic outcomes with minimal surgical burden [11].

Several authors have highlighted the advantages of this approach, including simplicity, low cost, and avoidance of additional surgical procedures. Nevertheless, careful patient selection and strict follow-up remain essential to ensure optimal outcomes [12].

6. Conclusion

This case highlights that directed healing can represent a reliable and effective option in the management of selected large post-oncologic soft-tissue defects. When carefully monitored, it may provide satisfactory coverage and functional outcomes while avoiding complex reconstructive procedures.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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