Case Report

Reverse Turnover Pedicled Latissimus Dorsi Muscle Flap for the Repair of Radiation Ulcer in the Back: A Case Report

Lu Fang[1], Huaisheng Wang[2*]

1. Day Surgery center, General Practice Medical Center, West China Hospital, Sichuan University, Chengdu, Sichuan 610041, China
2. Department of Plastic and Burn Surgery, West China School of Medicine, West China Hospital, Sichuan University, No.37, Guoxue Alley, Chengdu, Sichuan Province 610041, China

ABSTRACT

Cases of radioactive back ulcers caused by radiation therapy have not been reported. This paper reports a matter of a 55-year-old male patient suffering from chronic back radiation ulcer after coronary stent implantation. Through the repeated and complete expansion of the rear radiation ulcer wound, the back radiation ulcer wound was successfully repaired with the reverse turnover pedicled latissimus dorsi muscle flap, and the clinical effect was satisfactory.

KEYWORDS
Chronic back radiation ulcer; Turnover pedicled latissimus dorsi; Muscle

Please cite this paper as:
Fang L, Wang H. Reverse Turnover Pedicled Latissimus Dorsi Muscle Flap for the Repair of Radiation Ulcer in the Back: A Case Report. World J Plast Surg. 2024;13(2):87-91.
doi: 10.61186/wjps.13.2.87

INTRODUCTION

Radiation ulcer is caused by radiotherapy, interventional therapy, nuclear accident, and nuclear explosion in war, which can reach muscle and bone, even with blood vessels and nerve injury, often-prolonging wound healing and creating chronic ulcer wounds. Due to its repeated condition, poor sensitivity to drug treatment and even the possibility of cancer brings great pain to patients[1]. At the same time, regarding the current treatment methods, radiation ulcer is difficult to cure, whether it is medical treatment or surgical intervention. Therefore, treating and repairing radiation ulcer wounds have been a concern for plastic surgeons.

Repairing and reconstructing soft tissue defects in the back is also one of the most challenging operations in plastic surgery, especially when the patient's general condition is poor and the defect area is large, the simple skin graft cannot meet the needs of the wound repair. Currently, the commonly used methods for repairing back wounds include local flap transfer, pedicled flap or muscle flap transfer, perforator flap transfer, and even complicated free flap transfer repair[2-5]. The latissimus dorsi myocutaneous flap is the most significant latissimus dorsi muscle in the human body, Which is one of the most commonly used flaps for repairing back defects[6] due to its advantages (such as large cutting area, relatively constant anatomical position, and easy anatomical transfer)[7].

This paper reports a rare case of radiation ulcer on the back after coronary stent implantation was repaired with a reverse latissimus dorsi myocutaneous flap.

***Corresponding Author:**

Huaisheng Wang

MD, Department of Plastic and Burn Surgery, West China School of Medicine, West China Hospital, Sichuan University, No.37, Guoxue Alley, Chengdu, Sichuan Province 610041, China

Email:
wanghuaisheng600@sina.com

Received: 2/5/2024
Accepted: 5/2/2024

[Downloaded from wjps.ir on 2026-11-13]

[DOI: 10.61186/wjps.13.2.87]

CASE PRESENTATION

A 55-year-old man underwent a six-hour coronary stenting procedure at a local hospital one year before admission. Initially, the patient had two red lumps about the size of mung beans in the center of the back, approximately 6cm apart, with pruritus and painless ulcerative exudation. After scratching them, the mass repeatedly broke, bleeding, scabbed, and the surrounding skin appeared pigmentation. Before admission, the patients were treated with dressing changes, and the pathological examination report showed no cancer cells were found. After that, he went to our hospital, and the physical examination showed (Fig. 1): an irregular wound about 6 * 6 cm in the middle of the back, with a hollow center, adherent yellow-white pyogenic coating, and necrotic tissue. The ulcer edge was neat, and the skin around the wound was pigmented.

During the first operation, necrotic tissue and edema granulation were removed to the deep fascia layer about 2 cm away from the wound edge, and part of the spinal process was exposed (Fig. 2). After wound debridement, VAC negative pressure drainage device was placed. The operation was performed again one week later. The part of the spinal process was still exposed after removing the VAC and necrotic tissue. The injuries were treated with hydrogel after the second operation. One week later, the third operation was performed again. According to the wound defect size, the left latissimus dorsi myocutaneous flap was dissected to the vascular pedicle during the procedure and rotated to cover the skin defect. The patient was discharged after three operations. The patient was followed up for one year after discharge, no ulcer recurrence was found, and the back appearance was satisfactory (Fig. 3).

DISCUSSION

The current treatment effect of radiation ulcers is uncertain [8]. The late-stage skin injury usually occurs months or even years after radiotherapy, mainly as local skin necrosis, skin fibrosis around the wound, pigmentation, and delayed radiation ulcer formation[9, 10]. Therefore, for this kind of skin injury wound caused by unknown reasons, plastic surgeons should ask about the patient's history of



Figure 1: There was an irregular wound about 6 * 6cm in the middle of the back, with a hollow center, adherent yellow-white pyogenic coating, and necrotic tissue. Almost no granulation tissue was grown on the base, and no new tissue was found. The ulcer edge was neat, and the skin around the wound was pigmented.

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Figure 2: The necrotic tissue and edema granulation was removed to the deep fascia layer about 2cm away from the wound edge, and part of the spinal process was exposed



Figure 3: One year after discharge, no recurrence of the ulcer was found, and the appearance of back was satisfactory

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[DOI: 10.61186/wjps.13.2.87]

radiation therapy, which is essential for patients' etiological diagnosis and treatment.

In this case, we reported the damage of the ulcer wound was deep into the deep fascia layer with spinal process exposure. Therefore, the debridement of radiation ulcer should be as thorough as possible. If the surrounding expansion is not complete, it may lead to wound infection. It may be poor wound healing in the late stage of wound coverage and complications such as flap and wound edge dehiscence after suture removal. Multiple complete debridements were performed before the wound coverage. The first purpose of debridement was to obliterate the necrotic tissue; Secondly, the time interval of repeated debridement is conducive to reducing the wound's inflammatory reaction and providing good conditions for the later wound coverage, which is conducive to the recovery of the damage. At the same time, the skin flap with a good blood supply should be the first choice for radiation wound coverage. The clinical application shows that it is feasible to reconstruct the mild tissue defect of the back with multiple random flaps, local pedicled flaps, or pedicled myocutaneous flaps[11]. The latissimus dorsi myocutaneous flap could reduce the incidence of ischemia and deep wound infection as much as possible because of its sufficient blood supply and healthy tissue to maximize the success rate of wound repair[12]. A 56-year-old male patient with a chronic back ulcer was successfully repaired with a latissimus dorsi myocutaneous flap [13]. According to Maths and Nahai's classification, the latissimus dorsi myocutaneous flap has an advantage and a secondary blood supply. The superior blood supply comes from the thoracic dorsal artery, and the perforator of the posterior intercostal artery provides the secondary blood supply. When any blood supply vessel exists, the blood supply of the flap can be guaranteed. Therefore, the reverse latissimus dorsi myocutaneous flap can be used as the preferred way to repair the radiation ulcer wound of the back.

To sum up, for the chronic wound, we should actively ask about the patient's history of radiation therapy to avoid a missed diagnosis of radiation ulcer. For the radiation ulcer, removing necrotic tissue as far as possible is the key to successful wound repair; After that, the skin musculocutaneous flap with a rich blood supply was used to cover the wound, which not only improved the local blood supply and nutrition status, protected the deep tissue, but also biocleared the local residual necrotic tissue, which was the first choice for improving the severe radiation ulcer.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests

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