

A Reverse Sural Artery Flap for the Treatment of Traumatic Posterior Heel Soft Tissue Defect and Achilles Tendon Rupture: A Case Report

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PURPOSE

The reverse sural artery flap (RSAF) is a versatile flap commonly used for lower extremity wounds. The purpose of this case report is to highlight the use of this reconstructive flap for coverage of a soft tissue defect with exposed calcaneus and newly repaired Achilles tendon. Additionally, this report discusses aspects of the surgical technique and its benefits based on current literature.

CASE STUDY

A 31-year-old male was involved in a motorcycle accident resulting in an injury to his left foot. The patient presented with a large soft tissue defect to the hindfoot with exposed calcaneus and ruptured Achilles tendon. The patient was urgently taken to the operating room (OR) for surgical debridement. A few days later, he underwent a repeat trip to the OR for RSAF harvest with surgical delay. Approximately 10 days later he returned to the OR to assess flap viability, undergo Achilles tendon repair and finish wound coverage with RSAF. With an interdisciplinary approach, the orthopedics team joined the case and repaired the Achilles using a V-Y advancement and reattachment with one anchor into the calcaneus. Following the tendon repair, the RSAF was then rotated, inset and covered with xenograft and a negative pressure dressing. Approximately three weeks later, the patient underwent split thickness skin grafting to both the heel defect and RSAF donor site. The patient successfully healed the posterior heel defect and harvest site. At 12-month follow up the patient was able to ambulate with 15 degrees of dorsiflexion.

CLINICAL IMAGES

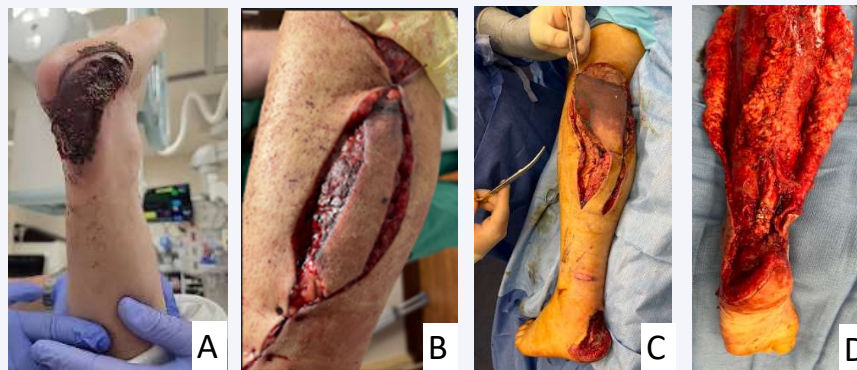


Figure 1: Grossly contaminated posterior heel defect (A) Delayed RSAF in native position (B) Removal of nonviable, necrotic, congested flap (C) Achilles repair prior to inset of RSAF (D)



Figure 2: Inset RSAF over defect (A) Xenograft applied over defect and donor site (B) Split thickness skin grafts over defect and donor site (C) Healed traumatic wound and donor site (D)

DISCUSSION

Reconstruction of soft tissue defects of the lower extremity pose a significant challenge to providers. Fortunately, the RSAF has a reported success rate of nearly 95% with a low complication rate.¹ Benefits of this procedure include a technique that avoids microsurgery, as opposed to free flaps, and this aspect alone ultimately allows for shorter operative times.²

The RSAF was initially described in 1981, but has been further modified in more recent years.² The flap relies on perforator blood flow which avoids disruption of a major artery to the lower limb, a key advantage for plastic reconstruction.² The flap is considered less technical as compared to other reconstructive procedures.² Disadvantages of the flap include the potential of sacrificing the sural nerve, as well as need for delayed inset, requiring two separate surgeries.³ Fortunately, the benefits appear to outweigh the disadvantages making the flap a useful procedure for managing complex distal extremity wounds.

CONCLUSION

Providers should consider the use of reverse sural artery flaps for coverage of soft tissue defects of the distal leg. Our patient's limb was successfully salvaged using an interdisciplinary approach to patient care with both reconstructive plastic and foot and ankle surgery.

REFERENCES

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