

# Herpes wound infection after femoral endarterectomy

Katherine K. McMackin, MD, Gaby Ghobrial, MD, Mikael A. Fadoul, MD, and Joseph V. Lombardi, MD, Camden, NJ

## ABSTRACT

Wound infection after common femoral endarterectomy is a well-documented phenomenon leading to significant morbidity, especially in the setting of a prosthetic graft. A push has recently been made in the literature for salvage of the prosthetic graft using debridement, antibiotics, and vacuum-assisted closure therapy. Herein we present the case of wound infection after common femoral endarterectomy with bovine patch angioplasty initially presumed to be of bacterial origin that failed to respond to vacuum-assisted closure therapy until the viral nature of the pathogen was discovered. The patient will continue lifelong valacyclovir for suppressive therapy. (*J Vasc Surg Cases and Innovative Techniques* 2020;6:185-7.)

**Keywords:** Femoral endarterectomy; Herpes; HSV; Wound infection

Wound infection after common femoral endarterectomy leads to significant morbidity, especially in the setting of a prosthetic graft. It occurs in 8% to 17% of cases.<sup>1-3</sup> The current vascular literature advocates for prosthetic graft salvage using surgical debridement, antibiotics, and vacuum-assisted closure (VAC) therapy.<sup>4-6</sup> The published cases of wound infection after femoral endarterectomy identify a bacterial pathogen.<sup>7</sup> Herein we present the case of wound infection after common femoral endarterectomy secondary to a viral herpes infection salvaged with VAC therapy. The patient agreed in writing to his case details being published.

## CASE REPORT

A 75-year-old man with a history of diabetes presented with right lower extremity rest pain. Computed tomography (CT) angiography demonstrated calcification in the right common femoral artery with occlusion of the origin of the profunda and a mid superficial femoral artery occlusion with distal reconstitution. He underwent a right common femoral and profunda endarterectomy with bovine pericardial patch angioplasty. Postoperatively, his rest pain resolved, and at the follow-up office visit, the surgical site was healed. Four months postoperatively, he developed pain, drainage, and dehiscence of the inferior aspect of the incision. He was afebrile with a leukocytosis of  $22.93 \times 10^3/\mu\text{L}$  and negative blood cultures. CT angiography demonstrated subcutaneous fat infiltration overlying but not contiguous with the right femoral artery. Given the findings correlating with Szilagyi

II infection, aggressive wound salvage was attempted with bedside irrigation and debridement. A 2-cm serosanguineous subcutaneous collection was evacuated at that time. No purulence was noted. Culture specimens were not taken at this time. VAC therapy and 6 weeks of oral cephalexin were initiated. One month from irrigation and debridement, the wound had healed.

However, he presented again a month later with malaise, recurrent pain, and malodorous purulent drainage from the once again open wound. He was afebrile with a leukocytosis of  $28.75 \times 10^3/\mu\text{L}$  and negative blood cultures. CT angiography demonstrated a new rim-enhancing  $3.9 \times 2.1$ -cm collection adjacent to and appearing contiguous with the endarterectomy site with mild surrounding infiltration. There was right pelvic-retroperitoneal lymphadenopathy, centrally necrotic. He underwent washout and VAC placement in the operating room. At this time, subcutaneous and fibrinous tissue was debrided. There was healthy tissue overlying the vessel, and it was not exposed. Intraoperative culture specimens and a lymph node extracted during the washout were positive for herpes simplex virus types 1 and 2. Cultures were negative for bacterial or fungal pathogens. The patient denied any personal history of herpes infection or contact with a person with herpes; he denied any oral, perioral, or genital ulcers. He had a normal body mass index and was not known to be immunocompromised. At no point did he present with a vesicular or maculopapular rash. The infectious disease team initiated an antiviral regimen. Per their recommendation, it is planned for the patient to continue lifelong valacyclovir for suppressive therapy. Two months after initiation of antivirals and VAC therapy, his wound was healed. Six months later, he still remains without further groin complications.

From the Division of Vascular Surgery, Cooper University Hospital.

Author conflict of interest: none.

Correspondence: Joseph V. Lombardi, MD, Division of Vascular Surgery, Cooper University Hospital, 3 Cooper Plaza, Ste 411, Camden, NJ 08103 (e-mail: [lombardi-joseph@cooperhealth.edu](mailto:lombardi-joseph@cooperhealth.edu)).

The editors and reviewers of this article have no relevant financial relationships to disclose per the Journal policy that requires reviewers to decline review of any manuscript for which they may have a conflict of interest.

2468-4287

© 2020 The Authors. Published by Elsevier Inc. on behalf of Society for Vascular Surgery. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<https://doi.org/10.1016/j.jvscit.2020.01.015>

## DISCUSSION

Femoral endarterectomy is the standard of care for femoral occlusive disease, with excellent outcomes.<sup>8</sup> When infection does occur, management ranges from medical treatment to explantation of the prosthetic graft.<sup>9</sup> VAC therapy has recently been championed in the literature, with 91% healing in Szilagyi III infected fields.<sup>10</sup> Dosluoglu et al<sup>11</sup> reported salvaging exposed vascular grafts with VAC therapy with a 0% reinfection

**Table.** Case reports of previously published postoperative herpes wound infections

Author	Year	Surgery	Immuno compromised	Intervention	Outcome
Alexander and Wismer <sup>12</sup>	2003	Total hip arthroplasty	No	Valacyclovir 500 mg orally twice daily for 6 weeks	Resolution
Sharma <sup>13</sup>	2004	Knee arthroscopy	No	Famciclovir	Resolution
Osterman and Gaspar <sup>14</sup>	2017	Interphalangeal joint arthrodesis	No	Valacyclovir	Resolution
Karolak et al <sup>15</sup>	2017	Lung transplantation	Yes	Acyclovir 500 mg intravenously three times daily for 1 week, followed by ganciclovir 250 mg intravenously twice daily for 3 weeks, followed by oral acyclovir prophylaxis	Resolution

rate. Our patient's Szilagyi II infection fell within the parameters for attempted VAC salvage.

Herpes surgical wound infections are extremely rarely reported in the literature, with only four reported cases (Table). Karolak et al<sup>15</sup> published a case of an immunosuppressed 17-year-old girl who developed a wound infection after lung transplantation, originally thought to be fungal in nature but confirmed as herpes simplex virus on viral swab. Alexander and Wismer<sup>12</sup> described a patient after total hip arthroplasty with recurrent burning sensation on the incision with vesicles. Initial cultures were negative. Subsequent viral swab was positive for herpes simplex virus. Sharma<sup>13</sup> described an infection of a port site after knee arthroplasty. Viral cultures were negative; however, the wound infection resolved, after failure of antibiotic therapy, with famciclovir. Osterman and Gaspar<sup>14</sup> described a patient who underwent distal interphalangeal joint arthrodesis of her left index and middle fingers with subsequent wound infection, initially treated with antibiotics unsuccessfully. A history of perioral ulcers prompted initiation of an antiretroviral. The full list of treatments and outcomes is presented in the Table.

## CONCLUSIONS

VAC therapy for wound infection is successful for wounds with bacterial pathogens. After failure of antibiotic therapy, with prodromal burning or tingling or in patients with a history of perioral, oral, or genital ulcers, viral etiology should be considered. Herein we present the case of a wound infection secondary to viral infection for which initial therapy failed until the viral nature of the infection was identified and treated.

## REFERENCES

1. Nguyen B, Amdur R, Abugideriri M, Rabhar R, Neville R, Sidawy A. Postoperative complications after common femoral endarterectomy. *J Vasc Surg* 2015;61:1489-94.
2. Derksen W, Verhoeven B, van de Mortel R, Moell F, de Vries J. Risk factors for surgical-site infection following common femoral artery endarterectomy. *Vasc Endovascular Surg* 2009;43:69-75.
3. Kechagias A, Ylonen K, Biancari F. Long-term outcome after isolated endarterectomy of the femoral bifurcation. *World J Surg* 2008;32:51-4.
4. Seify H, Moyer H, Jones G, Busquets A, Brown K, Salam A, et al. The role of muscle flaps in wound salvage after vascular graft infections: the Emory experience. *Plast Reconstr Surg* 2006;117:1325-33.
5. May B, Zelenski N, Daluvoy S, Blanton M, Shortell C, Erdmann D. Salvage of exposed groin vascular grafts with early intervention using local muscle flaps. *Plast Reconstr Surg Glob Open* 2015;3:514.
6. Dosluoglu H, Loghmanee C, Lall P, Cherr G, Harris L, Dryjski M. Management of early (<30 day) vascular groin infections using vacuum-assisted closure alone without muscle flap coverage in a consecutive patient series. *J Vasc Surg* 2010;51:1160-6.
7. Turtiainen J, Saimanen E, Partio T, Kärkkäinen J, Kiviniemi V, Mäkinen K, et al. Surgical wound infections after vascular surgery: prospective multicenter observational study. *Scand J Surg* 2010;99:167-72.
8. Kang J, Patel V, Conrad M, LaMuraglia G, Chung T, Cambria R. Common femoral artery occlusive disease: contemporary results following surgical endarterectomy. *J Vasc Surg* 2008;48:872-7.
9. Siracuse J, Nandivada P, Giles K, Hamdan A, Wyers M, Chaikof E, et al. Ten year experience with prosthetic graft infections involving the femoral artery. *J Vasc Surg* 2013;57:700-5.
10. Mayer D, Hasse B, Koelliker J, Enzler M, Veith F, Rancic Z, et al. Long-term results of vascular graft and artery preserving treatment with negative pressure wound therapy in Szilagyi grade III infections justify a paradigm shift. *Ann Surg* 2011;254:754-9.
11. Dosluoglu H, Schimpf D, Schultz R, Cherr G. Preservation of infected and exposed vascular grafts using vacuum assisted closure without muscle flap coverage. *J Vasc Surg* 2005;42:989-92.
12. Alexander P, Wismer D. Herpes simplex virus causing superficial wound infection in total hip arthroplasty. *J Arthroplasty* 2003;18:516-8.
13. Sharma D. Herpes simplex infection of portal wound following arthroscopy of knee joint. *J Infect* 2004;48:366-7.
14. Osterman M, Gaspar M. Distal interphalangeal joint arthrodesis complicated by postoperative infection: a rare

- presentation of disseminated herpes simplex virus. *J Hand Surg Am* 2017;42:e57-60.
15. Karolak W, Wojarski J, Zegleń, Ochman M, Urlik M, Hudzik B, et al. Superficial herpes simplex virus wound infection following lung transplantation. *Transpl Infect Dis* 2017;19:e12703.

Submitted Nov 21, 2019; accepted Jan 30, 2020.