

Negative Pressure Wound Therapy in Groin Lymphorrhea is not Suitable for Patients Under Hemodialysis: Case Report

Hemodiyaliz Hastalarında Kasık Bölgesi Lenforelerinde Negatif Basıncılı Yara Tedavisi Uygun Bir Tedavi Seçeneği Değildir

Erkan KAYA,^a
Doğan ALHAN,^b
Kubilay KARABACAK,^a
Murat KADAN,^a
Faruk CİNGÖZ^a

Departments of

^aCardiovascular Surgery,

^bPlastic and Reconstructive Surgery,
Gülhane Military Academy of Medicine,
Ankara

Geliş Tarihi/Received: 28.08.2012

Kabul Tarihi/Accepted: 16.11.2012

Yazışma Adresi/Correspondence:

Erkan KAYA

Gülhane Military Academy of Medicine,
Department of Cardiovascular Surgery,
Ankara,

TÜRKİYE/TURKEY

erkanaya76@yahoo.com

ABSTRACT Lymphorrhea is a common and serious complication of surgery in patients with vascular disorders. There is no consensus on the most effective treatment modality for groin lymphorrhea. A 57-year old male on hemodialysis for nine years admitted to our clinic with a large hematoma in the right femoral region after coronary angiography procedure. It was drained in another center many times, and the skin was primarily closed after the last procedure. When the nature and characteristics of drained fluid was examined, it was found like the content of a lymphocel. Negative pressure wound therapy (NPWT) was initiated after surgical debridement, due to the persistence of the lymphorrhea even with hard compressive dressings. There was a minimal decrease in the amount of lymphatic drainage while a serious decrease in blood albumin levels after NPWT. Afterall, NPWT was terminated and injured lymphatics were ligated with a re-exploration. The amount of drainage decreased post-operatively and the patient was discharged after 7 days. We suppose that chronic disorders may be a relative contraindication for NPWT, so that early surgical procedures should be kept in mind.

Key Words: Lymphoceles; renal dialysis; negative pressure wound therapy

ÖZET Lenfore, damar hastalığı nedeniyle cerrahi tedavi uygulanan hastalarda sık görülen ciddi bir komplikasyon olup, kasık bölgesinde görülen lenforelerin etkin tedavisi ile ilgili bir görüş birliği halen bulunmamaktadır. Dokuz yıldır hemodiyaliz almakta olan 57 yaşındaki erkek hasta, sağ femoral arter bölgesinde koroner anjiyografi sonrasında gelişmiş olan büyük bir hematoma ve bölgesel akıntı ile kliniğimize başvurdu. Bölge başka bir merkezde daha önce birkaç sefer drene edilmiş ve son olarak primer sütürle kapatılmıştı. Drenaj incelendiğinde lenfosit ile uyumlu olduğu düşünüldü. Yüksek basınçlı kompresyon pansumanlarına rağmen lenforenin devam ettiğinin saptanması üzerine, cerrahi debridman ardından negatif basınçlı yara tedavisine (NBYT) başlandı. NBYT ile lenfatik drenajda minimal bir azalma saptanırken, hastanın kan albümin düzeylerinde oldukça ciddi bir azalma meydana geldi. Bunun üzerine NBYT sonlandırıldı ve hastaya reeksplorasyon yapılarak, hasarlı lenfatik kanalları ligate edildi. Akıntı postoperatif dönemde giderek azaldı ve hasta 7 gün sonra taburcu edildi. Kronik hastalıkların, NBYT için rölatif bir kontrendikasyon olabileceğini ve bu tür hastalarda erken cerrahi girişimin akılda bulundurulması gerektiğini düşünmekteyiz.

Anahtar Kelimeler: Lenfosit; renal dializ; negatif basınçlı yara tedavisi

Damar Cer Derg 2013;22(1):22-5

Lymphorrhea is a common and serious complication of surgery in patients with vascular disorders. Surgical dissection or interventional approaches in femoral areas may lead to lymphatic injury. It appears either as a lymphocele or a lymphocutaneous fistula. Many treatment modalities ranging from conservative compression dressings to surgical lig-

doi: 10.9739/uvcd.2012-31788

Copyright © 2013 by
Ulusal Vasküler Cerrahi Derneği

ation have been described. However there is no consensus on the most effective treatment modality for groin lymphorrhea. Negative pressure wound therapy (NPWT) has been recently presented as a novel therapy for lymphocutaneous fistula.¹⁻³ NPWT was applied to a hemodialysis patient who had chronic renal failure. In this report, we present our experience and specific considerations of the therapy in hemodialysis patients with lymphorrhea.

CASE REPORT

A 57-year-old male on hemodialysis for nine years admitted to our clinic with a large hematoma in the right femoral region after coronary angiography procedure. It was drained many times and the skin was primarily closed. Venous and lymphatic laboratory tests were normal. A high-output fluid leakage was seen through the incision and drain lines on the first postoperative day, which was diagnosed as lymphocel according to the characteristics of the fluid (Figure 1). Lymphorrhea persisted even after hard compressive dressings were applied. Healing was not good and surgical debridement was performed under local anesthesia and NPWT was initiated for the open wound bed on postoperative 16th day. System (V.A.C.[®] Kinetic Concepts, San Antonio, Texas, USA) was set up at 125 mmHg continuous negative pressure and changed on a 72-hour basis (Figure 2). Necrotic tissue biopsy cultures revealed an *E. coli* infection which was treated with intravenous Meropenem (Meronem[™]) along with NPWT.

There was an obvious improvement in surgical area and granulation tissue occurred 18 days later initiation of negative pressure therapy. Bacterial colonization was not detected at the end of the second week of negative pressure therapy. However there was minimal decrease in the amount of lymphatic drainage and it seemed to take a little longer. Gradual decrease in albumin blood levels was noticed in the routine blood counts. NPWT was abandoned and a decision for exploration was taken regarding nephrology recommendations in order to prevent protein-energy imbalance (Figure 3). The groin area was explored. Electrocauterisation



FIGURE 1: Lymphocutaneous fistula is seen.

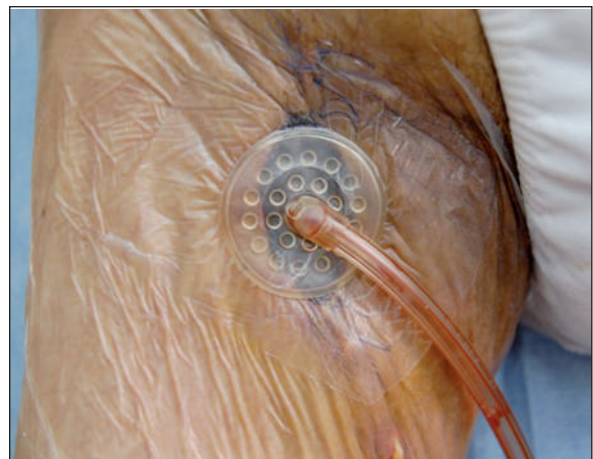


FIGURE 2: Application of negative pressure wound therapy.



FIGURE 3: Wound is seen after stopping NPWT.

and primary suturation were performed so that the injured lymphatics were ligated. Leakage decreased postoperatively and the patient was discharged after 7 days. The written consent has been taken from patient before this report.

DISCUSSION

Lymphatic injury after any dissection can be seen with an incidence of 2%. Uncontrolled lymph leakage can prolong hospitalization time and may lead to serious morbidities and mortality.⁴⁻⁷ The current modes of treatment for femoral lymph leaks include conservative therapies and operative approaches. There is still a controversy about the treatment of groin lymphorrhea. Non-operative treatment modalities have been recommended for non-draining lymphoceles and lymphocutaneous fistulas.⁸⁻¹⁰ However their effectiveness in the treatment of high-output lymphatic leakage cases remains poor. Moreover, operative techniques are far more superior at reducing both hospitalization time and the infection risk. Surgical ligation of leaking lymph channels has been recommended by many authors.^{5,7,10,11}

Fleischmann et al. were the first authors describing the use of subatmospheric pressure therapy on wounds in 1993.¹² Argenta and Morykwas developed the current commercially marketing version in 1995.¹³ During the past 15 years, this modality has gained a wide popularity for treatment of the complex wounds. Its main effect is stimulating granulation formation by increasing local blood flow, reducing edema and reducing bacterial count.^{13,14} The management of lymphocutaneous fistula with NPWT has been reported three times in the literature involving 6 cases.¹⁻³ According to the analysis of all cases reported in literature about the use of NPWT in lymphorrhea; the mean age was 68 years and cessation time was between 5-19 days. Abai et al. reported a mean of 47.6 days for duration of therapy for non operative treatment and 19.8 days for operative treatment in their experiences.³ Greer et al. reported 56 days for duration of subatmospheric pressure dressing and 90 days for overall closure of groin wound.³

In the present case, NPWT was applied to a patient who was on hemodialysis. Eighteen days after initiation of NPWT, an increase in the amount of granulation tissue and eradication of bacterial infection were observed, but no clear decrease in lymphatic leakage was seen. The nephrology clinic was consulted due to gradually decreasing albumin blood levels. According to the nephrologists' recommendation, lymph fluid leakage was considered as the only gate for protein escape. Therefore the therapy was abandoned and lymphatic leakage ceased after surgical ligation of injured lymphatics.

Protein-energy balance is very important for patients on hemodialysis, and protein-energy malnutrition is one of the main causes of mortality and morbidity. Herselman et al. showed a significant relation between serum albumin and all-cause mortality in long-term hemodialysis patients in meta-analysis reported in 2009.¹⁵ In addition, prolonged hospitalization time with an open wound represents a serious risk for infection which is considered as another important cause of mortality and morbidity in hemodialysis patients.

In spite of the potential successful results with NPWT of lymphocutaneous fistula in the literature, we do not present a successful treatment course. The patient's characteristics such as age and coexisting diseases (co-morbidity) have to be considered as the significant points that affect our decision on treatment modalities. Cardiovascular patients are often elderly and the possibility of having co-morbid conditions should be kept in mind. We used NPWT in a patient who had a co-morbid disease. This may be why the treatment failed. The amount of leakage is another factor that affects treatment facilities, and high-output lymphatic leakage patients may be considered as more appropriate candidates for surgery. According to our experience in this case, added to many other cases written above, no single therapy is the best choice for treatment of lymphocutaneous fistula and no patient is an ideal candidate for any given treatment modality. Non-surgical treatment options may result in prolonged hospitalization time, and consequently have risk for increased morbid-

ity. If therapy period takes a long time, effective surgical approach may be a faster solution for appropriate candidates. We think that early surgical approach should be kept in surgeons' armamentarium when the patient is dependent on hemodialysis.

NPWT may be thought as a relative contraindication for hemodialysis patients. In our clinical practice, NPWT has been accomplished for 10 years to treat infective and exudative wounds. We decided to select NPWT for this situation with regard to the data obtained from literature

and the outcome derived from our patients. Nevertheless we experienced that the administration of NPWT may fail in chronic renal failure (CRF) patients presenting protein imbalance, as we observed in our case. Although the accuracy of this judgement can not be evaluated with a single case, the results we obtained may be challenging for the treatment of such patients.

Conflict of Interest

Authors declared no conflict of interest or financial support.

REFERENCES

1. Lemaire V, Brilmaker J, Kerzmann A, Jacquemin D. Treatment of a groin lymphatic fistula with negative pressure wound therapy. *Eur J Vasc Endovasc Surg* 2008;36(4):449-51.
2. Greer SE, Adelman M, Kasabian A, Galiano RD, Scott R, Longaker T. The use of subatmospheric pressure dressing therapy to close lymphocutaneous fistulas of the groin. *Br J Plast Surg* 2000;53(6):484-7.
3. Abai B, Zickler RW, Pappas PJ, Lal BK, Padberg FT. Lymphorrhea responds to negative pressure wound therapy. *J Vasc Surg* 2007;45(3):610-3.
4. Roberts JR, Walters GK, Zenilman ME, Jones CE. Groin lymphorrhea complicating revascularization involving the femoral vessels. *Am J Surg* 1993;165(3):341-4.
5. Slappy AL, Hakaim AG, Oldenburg WA, Paz-Fumagalli R, McKinney JM. Femoral incision morbidity following endovascular aortic aneurysm repair. *Vasc Endovascular Surg* 2003;37(2):105-9.
6. Tyndall SH, Shepard AD, Wilczewski JM, Reddy DJ, Elliott JP Jr, Ernst CB. Groin lymphatic complications after arterial reconstruction. *J Vasc Surg* 1994;19(5):858-63.
7. Skudder PA Jr, Geary J. Lymphatic drainage from the groin following surgery of the femoral artery. *J Cardiovasc Surg (Torino)* 1987;28(4):460-3.
8. Croft RJ. Lymphatic fistula: a complication of arterial surgery. *Br Med J* 1978;2(6131):205.
9. Sethi GK, Scott SM, tkaro T. Persistent lymphatic fistula: unusual complications of femoro-femoral arterial bypass. *J Cardiovasc Surg (Torino)* 1978;19:155-9.
10. Kwaan JHM, Bernstein JM, Connolly JE. Management of lymph fistula in the groin after arterial reconstruction. *Arch Surg* 1979;114(12):1416-8.
11. Schwartz MA, Schanzer H, Skladany M, Haimov M, Stein J. A comparison of conservative therapy and early selective ligation in the treatment of lymphatic complications following vascular procedures. *Am J Surg* 1995;170(2):206-8.
12. Fleischmann W, Strecker W, Bombelli M, Kinzl L. [Vacuum sealing as a treatment of soft-tissue damage in open fractures.] *Unfallchirurg* 1993;96(9):488-92.
13. Argenta LC, Morykwas MJ. Vacuum-assisted closure: a new method for wound control and management: clinical experience. *Ann Plast Surg* 1997;38(6):563-76.
14. Morykwas MJ, Argenta LC, Shelton-Brown EI, McGuirt W. Vacuum-assisted closure: a new method for wound control and treatment: animal studies and basic foundation. *Ann Plast Surg* 1997;38(6):553-62.
15. Herselman M, Esau N, Kruger J-M, Labadarios D, Moosa MR. Relationship between serum protein and mortality in adults on long-term hemodialysis: Exhaustive review and meta-analysis. *Nutrition* 2010;26(1):10-32.