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Treatment of Groin Lymphocele Following Liver Transplantation with Fibrin Glue

Yale D. Podnos, Jorge Ortiz, Ping Ji, Sean Cao and David K. Imagawa

The morbidity of vascular, oncologic, and transplant operations is greatly affected by the existence of groin lymphoceles and lymphorrhea. We present two cases of persistent lymphatic injury following groin dissection during orthotopic liver transplantation that were refractory to standard initial therapies. After the failure of several treatment modalities, both completely responded to the infusion of 5-cc fibrin glue. These cases illustrate the difficulty in treating lymphatic injuries in the groin. Regardless of the cause, fibrin glue is an advantageous means for dealing with this complex problem.

FIBRIN GLUE:

Human fibrinogen and thrombin, combined in an application immediately prior to application, form fibrin. The fibrin layer serves as an effective sealant.

Introduction

The incidence of groin lymphoceles and lymphorrhea following groin dissections in vascular, oncologic, and transplant operations is a major contributing factor to the morbidity associated with these operations. Compounding this is the fact that they are extremely difficult to treat, often times resistant to several treatment modalities. We present two cases of persistent lymphatic injury following groin dissection during orthotopic liver transplantation that were refractory to standard initial therapies and ultimately cured with fibrin glue injections.

Case #1

A 48-year old male with past medical history of cirrhosis due to chronic hepatitis C infection underwent orthotopic liver transplantation. During the operation, the left saphenous vein was cut down upon and isolated proximally for use in a veno-veno bypass with the left axillary vein. The operation was uneventful. The deep layers of the groin wound were closed using running 2-0 and 3-0 vicryl with 3-0 vertical mattress nylon sutures for the skin. The patient was discharged home postoperative day 13 after an uneventful postoperative course.

On postoperative day 17 the patient was seen in clinic with complaints of a left groin mass and associated discomfort. The wound was mildly erythematous. Sutures were removed from the

groin incision and the wound opened using sterile, blunt dissection. Approximately 50 cc clear fluid was evacuated from the wound. No laboratory studies were sent on the fluid. Antibiotic therapy was withheld. The wound was kept open, and wet to dry dressings using Dakin's solution were begun. Lymphorrhea continued despite vigilant wound care.

On postoperative day 31, 5 cc of fibrin glue was applied to the wound using a "Duploject" application system (Baxter Pharmaceuticals, Deerfield, IL). Post-application day 4 the patient was seen in clinic without any complaints of lymphorrhea. By post-application day 14, the lymphorrhea had totally resolved and the wound was healing by secondary intention.

Case #2

A 41-year old male with end stage liver disease due to hepatitis C infection and alcoholism underwent orthotopic liver transplantation. As in the prior case, the left greater saphenous vein was isolated and cannulized with an 18 French Gott shunt for use in caval bypass. The patient's postoperative course was complicated by reoperation for bleeding and renal insufficiency requiring continuous venovenous hemofiltration.

The patient presented to clinic on post-transplant day 53 with complaints of left groin fullness. A 21-gauge needle was used to aspirate the mass. Approximately 50 cc of clear fluid was evacuated.

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... there is no need, when compared with surgery, to identify the damaged lymphatic vessel ... [and] negates the morbidity associated with surgery and enables the treatment to be done in the outpatient setting, thus substantially decreasing cost.

Gram's stain and culture of the fluid revealed no organisms. The patient returned post-transplant day 60 with a reaccumulation of the fluid. Again approximately 50 cc were aspirated. A compression dressing was applied. The patient returned post-transplant day 64 with persistent fullness at the lymphocele site. This was aspirated and a compression dress applied. The patient was again seen in clinic post-transplant day 78 with return of a 60 cc lymphocele. It was drained and injected with 10 cc of pure ethanol. The lymphocele again recurred, was aspirated of 100 cc clear fluid on post-transplant day 94, and injected with another 10 cc of ethanol. Post-transplant day 101 the lymphocele was aspirated of 60 cc clear fluid. Fibrin glue was injected using the Duploject system (Baxter Pharmaceuticals, Deerfield, IL). The patient returned post-transplant day 108 with a 30 cc reaccumulation of the lymphocele. This was drained and again injected with fibrin glue. On post-transplant day 115 and all subsequent visits, the lymphocele has not recurred.

Discussion

Groin lymphoceles and lymphorrhea contribute greatly to the morbidity associated with vascular, oncologic and transplant operations. Tyndall et al¹ reported an overall lymphatic complication rate of 1.2% following infrainguinal vascular operations. Other authors report rates between 0.5 and 35%.²⁻⁵ They result from disruption of the superficial lymphatic tracks that empty into the superficial superior inguinal lymph nodes. In conditions such as cirrhosis, congestive heart failures, and renal insufficiency where there are larger lymphatic volumes, disruption of the lymphatic networks

becomes more difficult to heal, increasing the probability of a lymphocele or lymphorrhea occurring.⁶ Other conditions associated with lymphatic complications include previous irradiation, scar from prior operations, lymph node metastasis, diabetes, distal limb infection, and steroid and diuretic use.^{3,5} Once present, lymphoceles and lymphorrhea delay wound healing, increase the incidence of wound infections, compress vascular structures, and cause limb edema. In fragile or immunocompromised patients, these can be disastrous.

Many modes of treatment have been used to combat this potentially catastrophic problem. These include repeated aspiration and the injection of sclerosing agents such as bleomycin, talc tetracycline, doxycycline, sodium tetradecyl sulphate, povidone-iodine, and ethanol.⁵ Repeated aspiration, as was first attempted in the aforementioned cases, and injection of sclerosing agents are painful to the patient and further increase the risk of infection. In addition, each has variable results, with the failure rates of aspiration ranging from 9% to 16%.⁷ For that reason, many authors advocate the early identification and excision of the injured lymphatic vessel.⁸ However, that too carries risks of bleeding, infection, and operative failure.

Recent reports have advocated the use of prophylactic fibrin glue in prevention of lymphoceles and lymphorrhea in breast, head and neck, and radical groin dissections.^{9,10} However, there is a paucity of literature regarding the treatment of existing lymphoceles and lymphorrhea with fibrin glue. These cases clearly demonstrate the shortcomings of repeated aspiration and the worth of treating these patients with fibrin glue.

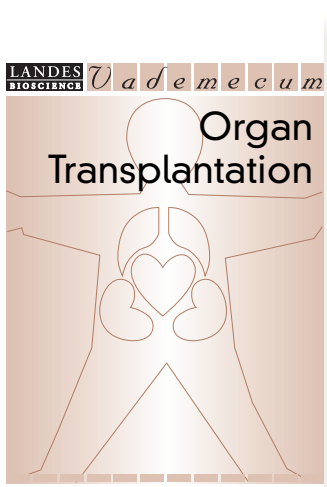
The advantages of this treatment modality are numerous. The patient is not subjected to repeated percutaneous aspirations, thus decreasing the risk of infection and morbidity due to pain. Additionally, there is no need, when compared with surgery, to identify the damaged lymphatic vessel. This negates the morbidity associated with surgery and enables the treatment to be done in the outpatient setting, thus substantially decreasing cost.

These cases illustrate the difficulty in treating lymphatic injuries in the groin. Regardless of the cause, fibrin glue is an advantageous means for dealing with this complex problem. Further study is warranted to define how this treatment modality compares with other, more accepted therapies.

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