RESEARCH PERSPECTIVE

Surgical Risk for Lymphedema Patients

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The need to operate on a body part affected by, or at risk for, lymphedema arouses concern in patients and clinicians alike. Concern is legitimate and due to potentially serious complications including infections, dehiscence, failure to heal, lymph leakage, chronic wounds, and worsening lymphedema. Patients at risk for lymphedema by virtue of prior lymph node removal or irradiation or a strong family history are justifiably concerned over the possibility of triggering lymphedema. When patients are routinely cautioned against venipuncture, the prospect of an invasive surgical procedure is understandably worrisome. Surgeons have anecdotally speculated that lymphedema increases patients’ risk of post-operative infections and swelling. However, the supportive evidence base is quite limited. Unfortunately speculation and the anecdotal accounts of adverse outcomes may dominate clinical thought, preventing careful and informed weighing of the potential costs and benefits.

Infection

Concern over peri-surgical complications has valid theoretical underpinnings with varying levels of empiric support. The increased infection risk is perhaps the most significant and has been extensively addressed. Cellulitis in the context of lymphedema was highlighted in a previous issue of the LymphLink. Lymphatic compromise leads to sluggish sequestration, transport, and presentation of bacteria to the immune system. The consequences of a post-operative infection may be devastating, particularly when placement of orthopedic hardware is involved. The specter of long term antibiotic therapy, hardware removal, and arthrodesis (surgical fusion of a joint) may feature prominently in surgeons’ thought processes.

Shrader and Morrey reported increased rates of superficial (12%) and deep (7%) infections in a retrospective cohort of 63 lymphedema patients undergoing 83 total knee replacements. In this series, lymphedema patients experienced comparable rates of deep venous thrombosis relative to the general population. A case series (N=47) and retrospective cohort study (N=15) describing complications of carpal tunnel release in patients with prior axillary dissections reported no post-operative infections. Unfortunately, details regarding antibiotic prophylaxis were not provided.

Infection rates following the Charles and other debunking procedures historically used to treat lymphedema before the widespread availability of complex decongestive therapy (CDT) are poorly captured. The literature offers conflicting reports. Two authors qualitatively describe “few” and “minor” complications after the Charles procedure while acknowledging that infection was the “most notable.” However a third author, described chronic cellulitis, skin breakdown, and eventual amputation in 60% of lymphedema patients undergoing excision of subcutaneous tissue with split-thickness skin grafting.

Compromised wound healing

The potentially elevated risk of dehiscence, delayed healing, lymph leakage and chronic wounds relates to interstitial abnormalities. Excess fluid interferes with the diffusion of the nutrients and oxygen essential for restoration of tissue integrity. “Lymph” leaks arise from the low pressure outlet that open wounds afford congested interstitial fluid. Persistent leakage may prevent wound closure. Current models of wound healing posit the need for precise, ordered cascades of specific molecules in adequate concentrations. Interstitial congestion associated with lymphedema may significantly disrupt this process. The failure of compromised lymphatics to remove large, biologically active molecules further complicates the picture.

The degree to which concerns over compromised post-operative healing are clinically realized has not been rigorously characterized. Skin dehiscence and lymph leakage for 2-3 weeks were reported complications after surgical resection of massive localized lymphedema in bariatric patients. Incidence rates were not reported. Compromised healing has not been reported following knee arthroplasty or carpal tunnel release in patients with lymphedema.

Lymphedema progression

Surgery increases the local lymph load through blood vessel dilatation, inflammation, and increased capillary permeability. Theoretically this increase may aggravate interstitial abnormalities and trigger or exacerbate lymphedema. In one series 33% of patients with established arm lymphedema and 9% of patients with prior histories of axillary lymph node resection developed worsening swelling after carpal tunnel release. A similar study found no evidence of new or progressive lymphedema among “at risk” patients after carpal tunnel release. However, little detail is provided regarding the adequacy or duration of follow up.
**Conclusion**

Unanswered questions abound in this under-researched area. Areas of compelling uncertainty include: 1. Which patient characteristics increase the likelihood of post-surgical complications, 2. Whether and how antibiotics should be prophylactically utilized in the peri-operative setting in patients with lymphedema, and 3. How post-operative Complex Decongestive Therapy techniques can be incorporated to minimize lymphedema progression. It is hoped that future, well designed studies will guide clinicians in these important areas of current uncertainty.

**References:**


