

INTRODUCTION

Lymphedema is known as a debilitating disease where the management plan can require a combination of surgical and conservative treatments. Worldwide, greater than 300 million people suffer from lymphedema. The lymphatic system is responsible for the drainage of fluid from the interstitial tissues and organ systems and is the body's primary way of managing edema. Modalities for the treatment of lymphedema include both a non-surgical and surgical approach. Non-surgical treatment for the patient typically involves Comprehensive Decongestive Therapy (CDT), which includes gradient compression, manual therapy/massage, exercises, skin care/education, and a home program. The aim of this review was to investigate the efficacy of the procedures and the multiple surgical options that exist for the treatment of lymphedema, including the Charles procedure, liposuction or suction-assisted protein lipectomy (SAPL), lymphovenous anastomosis (LVA), and vascularized lymph node transfer (VLNT).

METHODS

A comprehensive review of 7 major medical indices (Springer, Nature, Science direct, Google Scholar, Wiley, PubMed, Elsevier) was performed. Search queries were filtered to select articles pertaining to the surgical treatment of lymphedema, including lymphovenous anastomosis, vascularized lymph node transfer, suction-assisted protein lipectomy, liposuction, and the Charles procedure. Information collected included the type of surgery performed, the number of patients included in the study, the stage of lymphedema, inclusion/exclusion criteria, the length of postoperative follow-up, limb circumference reduction, quality of life improvement, and complications. Extracted data from the various surgical procedures were compiled into a table to serve as a visual aid which will be discussed in further detail in the following sections.

Figures



Figure 1: Patient with Bilateral Lower Extremity Lymphedema; A: pre-operative with plateauing from CDT; B: Post-SAPL and Modified Charles Procedures; C: 6 months post-operative

Mean Length of Stay

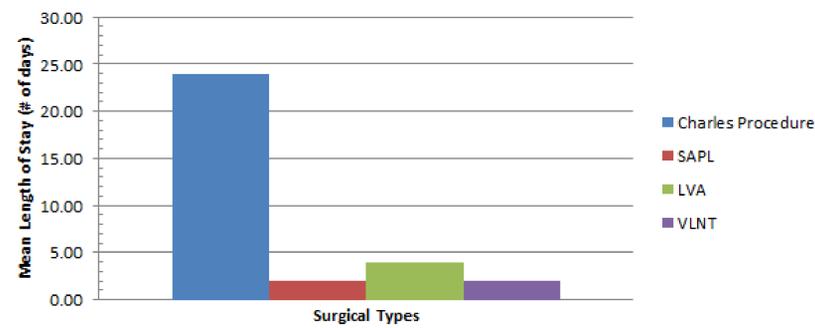


Figure 2: Mean Length of Stay in days following surgical procedure; Charles Procedure (Blue), SAPL (Red), LVA (Green), VLNT (Violet) represented in bar graph

Volume Reduction

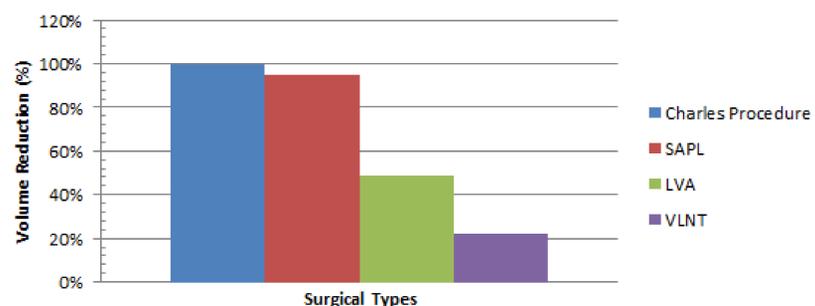


Figure 3: Average Volume Reduction by Percentage after follow-up; Charles Procedure (Blue), SAPL (Red), LVA (Green), VLNT (Violet) represented in bar graph

RESULTS & DISCUSSION

The Charles procedure and the SAPL are both debulking options for treating lymphedema. The Charles procedure is an invasive method that includes the removal of the skin and subcutaneous tissue, while the SAPL removes only adipose tissue. The less invasive nature of the SAPL means fewer cosmetic changes to the limb and a reduced to no inpatient stay for the patient. The LVA and VLNT are both microsurgeries developed to address the altered lymphatic drainage in the involved area. The less invasive LVA connects the functioning lymph vessels in the area to venules to use the venous system as a conduit for lymphatic fluid removal but needs more long-term studies on the patency of the connection. The VLNT transfers lymph nodes from a functioning donor site to the involved area to stimulate lymphangiogenesis; yet, may cause lymphatic dysfunction at the donor site. Graphic representations were created for the average volume reduction, limb circumference, length of stay, and quality of life for the respective procedures.

CONCLUSION

Surgical treatment should be directed at optimizing the management of lymphedema. There is not one perfect option for treating lymphedema, however, a comprehensive therapy utilizing both surgical and non-surgical approaches to lymphedema allows for the most marked improvements in patients dealing with lymphedema.

REFERENCES

<https://refworks.proquest.com/public-share/p0FgRDPc4AAqg8WgoZRddPmdxCPAdRMNprJMhwjVS2SW>

ACKNOWLEDGEMENTS

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