What To Do When Contraindications Prevent a Severely Cirrhotic Patient from Receiving a Liver Transplant or TIPS procedure?

The Effect of Endovascular Lymphatic Decompression via Thoracic Duct Stent Placement on Clinical Outcomes in Severe Cirrhosis with Refractory Ascites

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Introduction

The Problem:

Acute decompensated cirrhosis with a Model for End Stage Liver Disease (MELD) score > 30 has a 1-year mortality rate exceeding 60%[1]. While Transjugular Intrahepatic Portosystemic Shunts (TIPS) and liver transplantation has been proven to reduce mortality (odds ratio =0.62), many patients have absolute contraindications to a both procedures, necessitating the development of alternative therapies[3,4].

The Possible Solution:

In recent years, a novel procedure involving endovascular lymphatic decompression via thoracic duct stent placement has been seen as a potential solution, although the majority of evidence supporting its use is limited to a few case series occurring no earlier than 2020[5]. No meta-analyses have yet evaluated its efficacy, and its clinical utility remains largely unrecognized by many providers[7].

This Poster's Purpose:

This study aims to perform a systematic review of the literature surrounding endovascular lymphatic decompression via thoracic duct stent placement and combine it with anecdotal evidence from UMC hospital in New Orleans to evaluate the procedures efficacy, increase physician awareness, and improve patient outcomes for those living with cirrhosis and refractory ascites.

Anatomic Review:

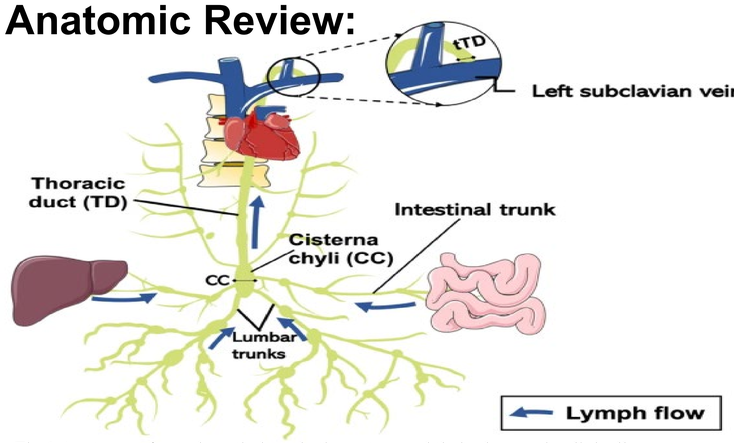

Fig.1 Anatomy of extrahepatic lymphatic system and their changes in clinically significant portal hypertension (CSPH). Thoracic duct (TD) is the largest lymphatic duct. Approximately, 3/4 body lymphatic fluid flows through TD and enters the blood circulation by left subclavian vein. Thoracic duct originates from a widened cystic segment called the cisterna chyli (CC), which accumulates lymph from the lumbar and intestinal trunks. Liver is the largest lymphatic producing organ, generating 25% to 50% of the lymph fluid flowing through the thoracic duct

Methods

A systematic search for existing literature was performed using google scholar, pubmed, and JAMA Network. Search terms included refractory ascites, thoracic/lymphatic duct dilation, and lymphatic stent. 19 studies were identified, and 5 met inclusion criteria for this systematic review, which required human outcome markers in patients with refractory ascites treated with lymphatic duct dilation or stent placement[7,8,9,10,11]. Animal models and studies without clinical outcomes were excluded.

Results

Collectively the studies examined 25 patients. Of these, 11 had refractory ascites from cirrhosis and 14 had refractory chylous ascites. Clinical improvement was seen in 3/9 (33%) of the cirrhotic patients and 9/14 (64%) of those with chylous ascites.

Discussion

Thoracic duct dilation has shown limited value in treating cirrhotic patients with refractory ascites to date. This population, however, already has a high 1-year mortality rate making even small improvements in patient outcomes meaningful. There is additional literature suggesting variations in procedural technique may impact patient outcomes and these avenues have largely been unexplored[9]. Furthermore, the optimum pre and post procedural thoracic duct pressures have yet to be quantified and could substantially impact outcomes [7,8,9]. More research is needed to establish the procedure's efficacy, optimize its use, and ultimately improve the lives of patients in this high-risk group.

Thoracic Duct Dilation Visualized:

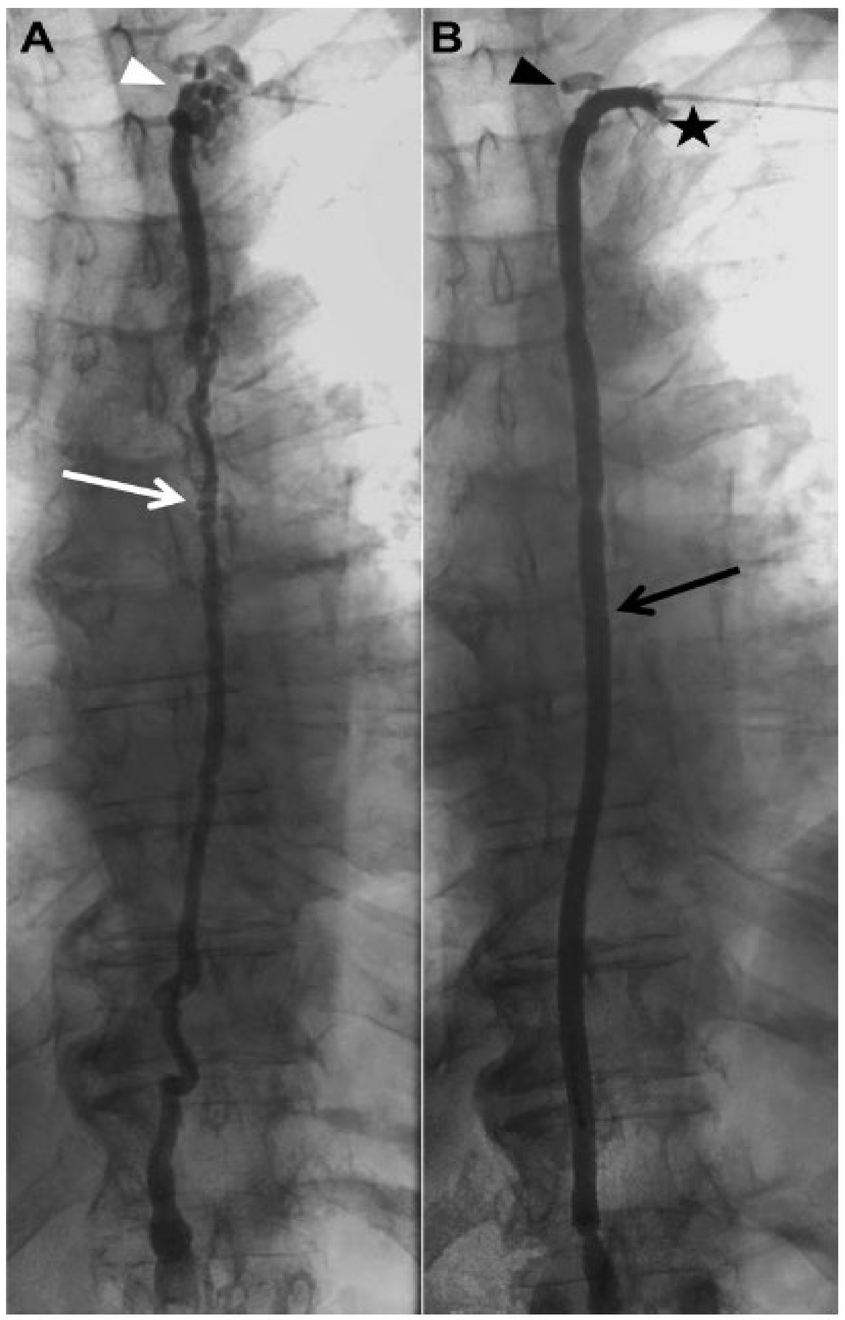

Fig. 1. Lymphography of thoracic duct stenting. (A) Lymphography of the thoracic duct showed initially a tortuous and irregular thoracic duct (white arrow). Multiple collaterals ahead of the lympho-venous junction (white arrowhead) are in favor of hemodynamic obstacle at this junction. (B) After stenting of the thoracic duct and the lympho-venous junction (black star), the thoracic duct diameter is increased and regular (black arrow) with better drainage in the subclavian vein and decrease of lymphatic collaterals upstream of the lympho-venous junction (black arrowhead).

Conclusion

Thoracic duct stent placement offers limited, but potentially meaningful benefits for cirrhotic patients with refractory ascites, particularly given the high mortality risk in this population. While the procedure has shown moderate success in patients with chylous ascites, its efficacy in cirrhotic patients remains uncertain. Several factors influencing patient outcomes are still underexplored, including optimal pre- and post-procedural thoracic duct pressures, ideal stent size and placement techniques, and patient selection criteria. Additionally, variations in operator technique and adjunct therapies may play a significant role in clinical outcomes. Further research into these areas, along with standardized protocols, could help optimize the use of thoracic duct stenting as a viable option for patients with contraindications to TIPS or liver transplantation. Expanding awareness and refining these techniques may ultimately improve outcomes and save the lives of those in this high-risk group.

References Available Upon Request