

INTRODUCTION

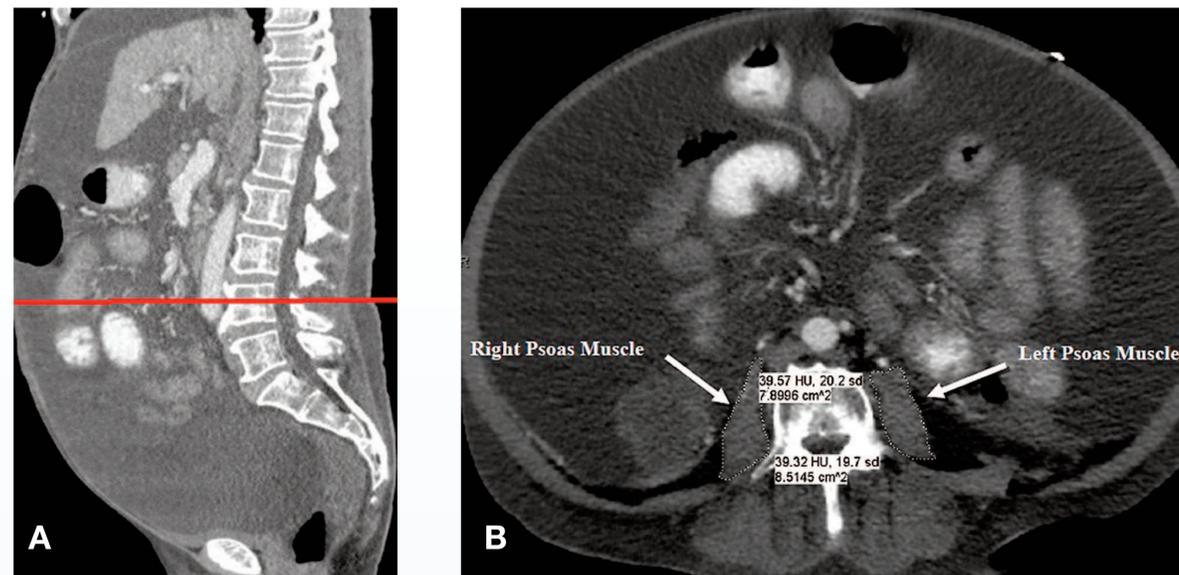
- Weight loss with muscle wasting, also known as sarcopenia, commonly occurs in patients with end-stage liver disease (ESLD).
- A robust association between sarcopenia and mortality in cirrhotic and post-liver transplant patients has been reported.
- This is a report of a patient with severe sarcopenia and ESLD who was provided enteral nutrition using a Dobhoff tube (DHT) pre-liver transplant resulting in successful bridging to transplant.

CASE REPORT

A 59 year old male with chronic hepatitis C-related cirrhosis was awaiting liver/kidney transplant. Complications of his ESLD included hepatorenal syndrome, recurrent admissions for hepatic encephalopathy, variceal bleeding and refractory ascites.

- In addition, the patient continued to lose weight. The patient reported poor appetite and decreased oral intake. His body mass index (BMI) had fallen to 17.2 kg/m² and raised concern by our transplant team about his ability to survive transplantation.
- Past surgical and family histories were unremarkable.
- Physical examination was notable for cachexia, temporal and thenar wasting, moderate abdominal distension and lower extremity edema.
- Significant laboratory data included a pre-albumin of 6.0 mg/dL and albumin of 2.1 g/dL.
- Pre-transplant computed tomography of the abdomen and pelvis (CT a/p) of this patient revealed a mean total psoas area (TPA) of 820.70 mm² (Figure 1 A-B) indicating severe sarcopenia.
- A DHT was placed to improve his nutritional status and allow for home enteral feeding. The DHT was secured with a nasal bridle system to prevent tube dislodgement (Figure 2).
- With enteral feeding, in addition to oral intake, the patient reported feeling less fatigued and lethargic. He gained 3 lbs, his albumin rose to 3.0 g/dL, and he was not hospitalized until 1 month later when he underwent successful simultaneous liver/kidney transplant.

Figure 1: CT Abdomen/Pelvis at L4 Demonstrating Patient Total Psoas Area (TPA)



Mean cross-sectional area of the left and right psoas muscle at the level of the fourth lumbar vertebra (L4) was determined. This was accomplished by first identifying the individual vertebral levels on a CT scan of the abdomen and pelvis. We then selected the individual imaging slice at the midportion of the L4 vertebra and outlined the borders of the left and right psoas muscle. The cross-sectional area (in mm/s) of the enclosed regions was used to calculate the mean total psoas muscle area (TPA). The mean TPA for this patient is 820.70 which is calculated as follows: [(789.96 mm/s + 851.45 mm/s) / 2].

Figure 2: Placement of Dobhoff Tube Secured with a Nasal Bridle System

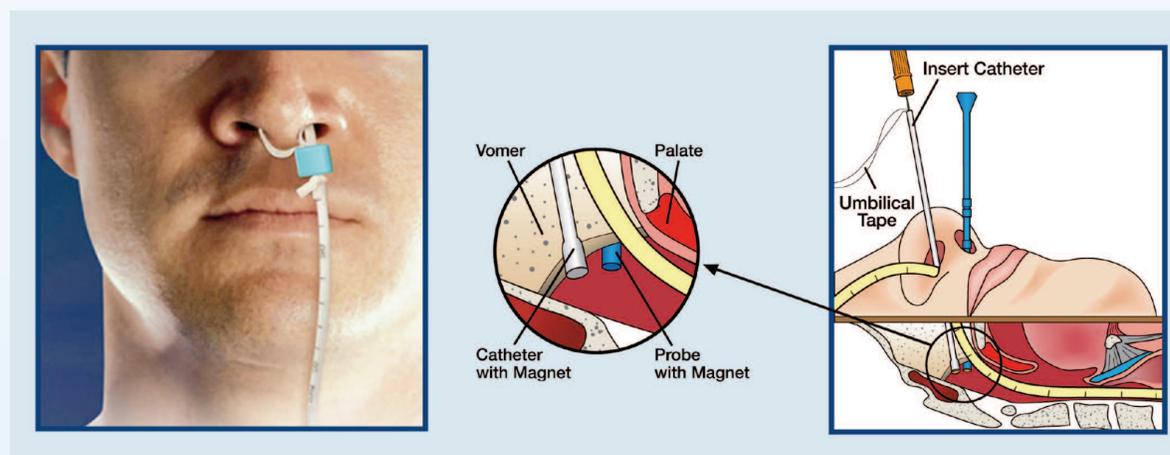


Image courtesy of Applied Medical Technology, Inc

DISCUSSION

As previously reported, there is an increased incidence of perioperative morbidity and mortality associated with a low psoas muscle area as measured on a CT scan of the abdomen and pelvis at the level of the L4 vertebra. This case demonstrates that home enteral nutrition supplementation with a DHT is an option to be considered for improving a patient's nutritional status pre-liver transplant. Although complications such as vomiting, diarrhea and gastro-intestinal bleeding are possible with this intervention, it is overall low risk with regard to infection. DHT for supplemental enteral feeding should be considered in patients with pre-transplant sarcopenia to preserve their candidacy as a transplant candidate. Well-designed trials are needed to study this intervention to determine its overall effectiveness.

REFERENCES

1. Durand F, Buysse S, Francoz C, Laouénan C, Bruno O, Belghiti J, et al. Prognostic value of muscle atrophy in cirrhosis using psoas muscle thickness on computed tomography. *J Hepatol.* 2014. epub ahead of print.
2. Tandon P, Ney M, Irwin I, Ma MM, Gramlich L, Bain VG, et al. Severe muscle depletion in patients on the liver transplant wait list: its prevalence and independent prognostic value. *Liver Transpl.* 2012;18(10):1209-16.
3. Krell RW, Kaul DR, Martin AR, Englesbe MJ, Sonnenday CJ, Cai S, et al. Association between sarcopenia and the risk of serious infection among adults undergoing liver transplantation. *Liver Transpl.* 2013;19(12):1396-402.
4. Merli M, Giusto M, Gentili F, Novelli G, Ferretti G, Riggio O, et al. Nutritional status: its influence on the outcome of patients undergoing liver transplantation. *Liver Int.* 2010;30(2):208-14.
5. Dimartini A, Cruz RJ Jr, Dew MA, Myaskovsky L, Goodpaster B, Fox K, et al. Muscle mass predicts outcomes following liver transplantation. *Liver Transpl.* 2013;19(11):1172-80.
6. Lang T, Streeper T, Cawthon P, Baldwin K, Taaffe DR, Harris TB. Sarcopenia: etiology, clinical consequences, intervention, and assessment. *Osteoporos Int.* 2010;21(4):543-59.
7. Fielding RA, Vellas B, Evans WJ, Bhasin S, Morley JE, Newman AB, et al. Sarcopenia: an undiagnosed condition in older adults. Current consensus definition: prevalence, etiology, and consequences. International working group on sarcopenia. *J Am Med Dir Assoc.* 2011;12(4):249-56.
8. Englesbe MJ, Patel SP, He K, Lynch RJ, Schaubel DE, Harbaugh C et al. Sarcopenia and mortality after liver transplantation. *J Am Coll Surg.* 2010;211(2):271-278.

None of the authors have any relevant disclosures to report