

Laparotomy-Assisted Endoscopic Injection of Jejunal Varices for Overt Small Bowel Bleeding

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ABSTRACT

A 54-year old male liver transplant recipient with Roux-en-Y choledochojejunostomy was admitted for symptomatic anemia. Despite endoscopies and a bleeding scan, active bleeding was not visualized. Angiography and abdominal computed tomography demonstrated possible jejunal varices at the choledochojejunal anastomosis. Double-balloon enteroscopy demonstrated varices with overlying clots in the Roux limb at the anastomosis. Due to the extensive loop formation and unstable position of the endoscope, therapeutic intervention could not be performed. Operative enterotomy and intraoperative endoscopy were subsequently required. A varix in the jejunum with venous flow on Doppler was injected twice with cyanoacrylate and successfully obturated.

INTRODUCTION

Portal hypertension may persist even after liver transplantation and can lead to variceal formation. Ectopic varices occur rarely in the distal gastrointestinal (GI) tract and have been described in the jejunum, ileum, rectum, biliary tract, diaphragm, anastomotic sites, and stomal regions.¹⁻⁴ Active bleeding from small bowel varices is uncommon, occurring in about 5% of patients.⁵ Due to low incidence, anastomotic jejunal varices are often not suspected as a cause of GI bleeding, which delays the diagnosis.⁶

CASE REPORT

A 54-year old male liver transplant recipient with a Roux-en-Y choledochojejunostomy was admitted for symptomatic anemia. He had undergone a deceased donor liver transplantation for primary sclerosing cholangitis in 2005 and had subsequently developed postoperative mesenteric thrombosis, cavernous transformation of the portal vein, and esophageal varices. Despite multiple endoscopies and a bleeding scan, active bleeding could not be visualized. Capsule endoscopy, while useful in patients with presumed small bowel bleeding, was not performed because the Roux-en-Y anatomy would preclude examination of the Roux limb.⁷ Angiography by interventional radiology and an abdominal computed tomography scan demonstrated possible jejunal varices at the site of the choledochojejunal anastomosis (Figure 1).

These varices resulted from presinusoidal cavernous transformation of the portal vein and formed a portoportal shunt. Hence, a portosystemic shunt, such as balloon-occluded retrograde transvenous obliteration or transjugular intrahepatic portosystemic shunt (TIPS), was not performed. Due to the need for recurrent blood transfusions and melena, a double-balloon enteroscope was used to examine the choledochojejunal anastomosis and the Roux limb and to perform therapeutic hemostatic intervention. Varices demonstrating brisk venous flow by Doppler along with small overlying clots were identified at the site of biliary anastomosis. Due to the extensive loop formation and unstable position of the endoscope, therapeutic intervention could not be performed.

ACG Case Rep J 2017;4:e79. doi:10.14309/crj.2017.79. Published online: June 21, 2017.

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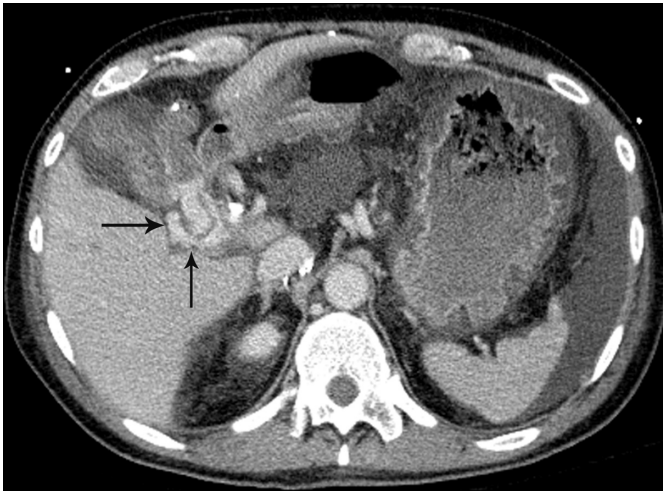


Figure 1. Computed tomography scan demonstrating varices (arrow) in the jejunum.

After resuscitation, interventional radiology, transplant surgery, and anesthesia teams came together for a multidisciplinary consultation to assess therapeutic interventions in view of the continuing transfusion needs. A repeat double-balloon enteroscopy was not performed due to the previous failed attempt and the presence of an acute angulation at the site of the anastomotic varices, which made therapeutic intervention challenging. In view of the significant transfusion requirement, we elected for definitive treatment with an intraoperative endoscopy. The enterotomy was performed distal to the Roux-en-Y anastomosis on the Roux limb, with an intraoperative endoscopy. A 7-mm varix in the jejunum with brisk venous flow on Doppler was visualized and injected twice with cyanoacrylate (Figure 2). Obturation of the varix was visualized, and eradication of the varix was confirmed with Doppler (Figure 3). The patient required

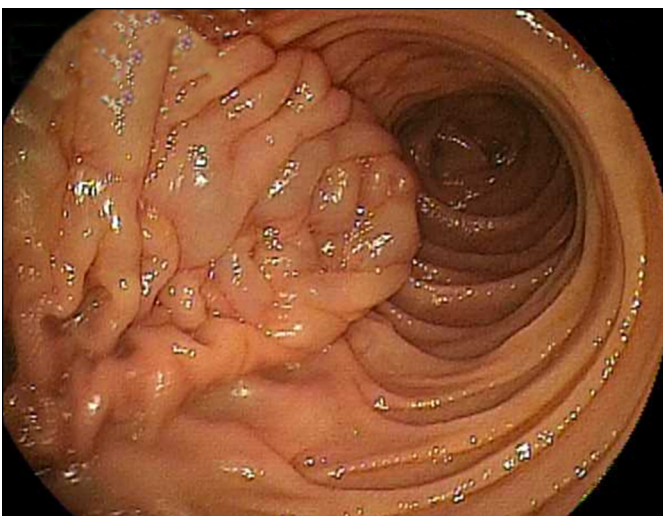


Figure 2. Endoscopic visualization of varices.

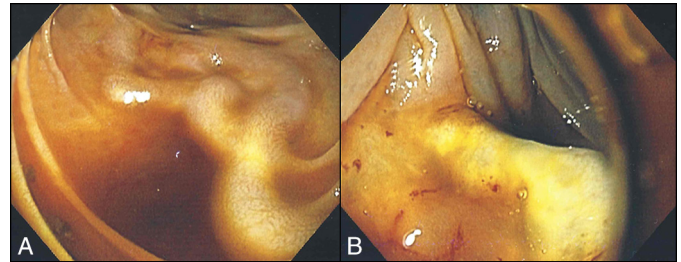


Figure 3. Endoscopic view of jejunal varix (A) before and (B) after injection of cyanoacrylate.

prolonged recuperation in the intensive care unit for resuscitation, postoperative recovery, and improvement of elevated liver enzymes. He was subsequently discharged home after an uneventful course during the remainder of his hospitalization. Patient has been asymptomatic with a stable hemoglobin and excellent allograft function on follow-up after 5 months.

DISCUSSION

Anastomotic jejunal varices are an extremely rare cause of bleeding from the GI tract and are typically seen in patients with portal hypertension due to liver cirrhosis or portal vein thrombosis.^{8,9} Physicians should clinically suspect anastomotic or ectopic varices to avoid fatal outcomes due to incorrect or delayed diagnosis. The clinical triad described in the literature for ectopic jejunal varices consists of portal hypertension, hematochezia without hematemesis, and past abdominal surgery.^{9,10} To our knowledge, bleeding jejunal varices at the site of surgical anastomosis treated with cyanoacrylate injection have not been described in liver transplant recipients.

Jejunal varices can be treated with multiple methods depending on the clinical situation. Transjugular intrahepatic portosystemic shunt as well as balloon-occluded retrograde transvenous obliteration have been described in the management of small-bowel varices.¹ Both of these modalities shunt blood away from the liver, are technically challenging in patients with altered anatomy, and are associated with sepsis and poor survival in liver transplant recipients.^{4,11,12} Further, our patient required portoportal shunting rather than portosystemic shunting, and hence these interventions were not performed.

Cyanoacrylate has been shown to be effective in the obliteration of varices and in the acute management of bleeding varices. Endoscopic injection of *N*-butyl-2-cyanoacrylate injection into jejunal varices using a double-balloon enteroscopy has been described in the literature, but not in liver transplant recipients.¹³ Double-balloon enteroscopy was performed in our patient, but due to the Roux-en-Y choledochojejunostomy anatomy, the location of the varices at the anastomotic

site, and the unstable position of the enteroscope, therapeutic interventions could not be performed. This necessitated a laparotomy and enterotomy to facilitate endoscopic therapy. Laparotomic transcatheter variceal embolization is another therapy that has been described in the literature for the management of jejunal varices.¹⁴

There are no guidelines that dictate the management of such varices.⁸ A multidisciplinary approach with coordination of transplant surgeons, hepatologists, and endoscopists is critical for timely management of the unstable patient. Clinicians should have a high index of suspicion, especially in liver transplant recipients presenting with melena or hematochezia. We demonstrate successful laparotomy-assisted injection and obliteration of anastomotic jejunal varices in a liver transplant recipient.

DISCLOSURES

Author contributions: DR Kohli analyzed the data, reviewed the literature, wrote the manuscript, and is the article guarantor. GB Smallfield and MF Levy reviewed and edited the manuscript.

Financial disclosure: None to report.

Informed consent was obtained for this case report.

Received January 19, 2017; Accepted May 5, 2017

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