



Transduodenal Sphincteroplasty: A Visual Case Study

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Abstract

Background Sphincter of Oddi dysfunction is a challenging and rare clinical entity resulting in pancreatobiliary pain and stasis of bile and pancreatic juice. This problem was classically treated with surgical therapy, but as classification of the disease has changed and newer methods of endoscopic evaluation and therapy have evolved, operative transduodenal sphincteroplasty is now generally reserved as a final therapeutic option for these patients. In this video and manuscript, we describe our approach to operative transduodenal sphincteroplasty in a patient with type I Sphincter of Oddi dysfunction.

Methods A 50-year-old female with history of Roux-en-Y gastric bypass presented with episodic right-upper-quadrant and epigastric abdominal pain with associated documented elevations in liver chemistries. Preoperative cross-sectional imaging demonstrated dilation of her common bile duct. After multidisciplinary discussion, the decision was made to pursue operative transduodenal sphincteroplasty.

Results All key operative steps of the transduodenal sphincteroplasty are demonstrated in the embedded video. Key operative steps include laparotomy, generous Kocher maneuver, and duodenotomy over the ampulla, allowing access for sequential biliary and pancreatic sphincterotomies and sphincteroplasties with absorbable suture. The duodenotomy and abdominal fascia are then closed. Our patient underwent sequential diet advancement and was discharged to home on postoperative day five. At clinic follow-up, pancreatobiliary-type pain had resolved.

Conclusion The embedded video demonstrates a case of operative transduodenal sphincteroplasty, which can provide durable results in appropriate patient populations.

Keywords Sphincter of Oddi dysfunction · Sphincteroplasty · Bile duct · Pancreas surgery

Introduction

Sphincter of Oddi dysfunction (SOD) is a rare functional and mechanical disorder resulting in ampullary obstruction of bile and pancreatic juice in the absence of calculous biliary disease. It classically presents with pancreatobiliary-type pain, is most often diagnosed in women post-cholecystectomy, and may be diagnosed in patient populations with concomitant motility disorders.¹ Manometry remains the gold standard

of SOD diagnosis, which today is typically achieved via endoscopy. Classification systems exist and have changed over the years as our understanding of this complex disease have evolved.^{1,2} Traditionally, therapy involved an open surgery via laparotomy and sphincteroplasty. As minimally invasive endoscopic therapies have improved, this approach is now generally reserved for those patients with disease refractory to endoscopic therapy or patients with atypical anatomy. In the patient case presented, there was concern for choledochoceles on cross-sectional imaging. As the treatment for this subtype of choledochal cyst is also sphincterotomy or sphincteroplasty, this factor also influenced the ultimate choice of operative therapy. In this video, we offer a visual case study of our approach to an open transduodenal sphincteroplasty (TDS) for a patient with type I SOD with the aim of demonstrating this approach for an increasingly rare clinical scenario.

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Operative Conduct: Open Transduodenal Sphincteroplasty

In the attached video, we narrate a patient case of open TDS for type I SOD, and therein describe our approach to this challenging problem. Operative TDS may be achieved minimally invasively via laparoscopy or robotic surgery, or via traditional laparotomy. As above, operative TDS is now generally reserved for those patients with disease refractory to endoscopic therapy or those with surgically altered anatomy (in our patient case, Roux-en-Y history). While fully described in the video narration, we will highlight key steps of this increasingly rare operation below. The operation begins with a midline laparotomy, generous Kocher maneuver, and intraoperative ultrasound to identify the ampulla and duodenotomy site. We then perform the longitudinal duodenotomy after placing stay sutures in the duodenum. After duodenotomy, we place further mucosal stay sutures to facilitate ampullary instrumentation. A pediatric feeding tube (5 French) is used to cannulate the common bile duct (CBD). Electrocautery is then used to perform and extend the sphincterotomy cephalad with the feeding tube in situ in the CBD. Sphincteroplasty is then performed with monofilament, absorbable suture. This same technique is then used to perform the pancreatic sphincterotomy and sphincteroplasty. The feeding tube is then trimmed and left in the pancreatic duct as a stent. The duodenotomy is then closed in two layers. Though some surgeons advocate for longitudinal duodenotomy with transverse closure after sphincteroplasty, in a patient with Roux-en-Y gastric bypass, this technical consideration is less important as only pancreatobiliary secretions will traverse this closure. We do not routinely leave abdominal drains.

Outcomes

In our patient scenario described in this multimedia article, the operation resulted in complete resolution of pancreatobiliary-type pain. Prior work at our institution suggests excellent results may be achievable in a high percentage of patients when appropriately selected.³ Relief, in those patients who respond to surgical therapy, is often immediate.

Conclusion

We herein describe our approach to a challenging and increasingly rare clinical scenario: open transduodenal sphincteroplasty for type I Sphincter of Oddi dysfunction, which can provide durable results in appropriately selected patients.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s11605-023-05842-2>.

Declarations

Ethics Approval and Consent to Participate The authors have nothing to disclose. In accordance with institutional policies, written informed consent was obtained from the patient prior to treatment and conduct of the study.

Competing Interests The authors declare no competing interests.

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