



LETTER TO THE EDITORS

The Glissonian stitch traction for biliary duct manipulation in living donor liver transplantation

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Dear Editors,

The reported incidence of biliary complications after living donor liver transplantation (LDLT) is 11%–35% [1,2] which are twice as common with deceased donor LT (DDLT) [1]. The greater incidence of biliary complications further contribute largely to the higher post-operative morbidity, prolonged hospital stay, and increased re-hospitalization rates in LDLT patients [3].

Currently, duct-to-duct biliary reconstruction is the reconstruction of choice in LDLT recipients with many advantages: less biliary reflux because of the intact of sphincter, physiologic bile flow, no bowel manipulation, easier endoscopic biliary examination, and treatment after surgery [4]. In our institution, high hilar dissection technique is employed during recipient hepatectomy, which would grant us a longer bile duct with a sufficient blood supply for tension-free anastomosis [5]. In general, the duct-to-duct anastomosis was reconstructed under a surgical loupe and it involves the placement of 2 corner stitches by which both ducts are approximated. It is followed by anastomosis of the posterior wall with continuous suture, after which the anterior wall is closed by interrupted suture technique with 6–0 prolene. This is potentially a difficult procedure because the exposure of surgical field is limited, and we sometimes have to deal with multiple small caliber ducts.

After the right graft liver was harvested, Glissonian sheath around the graft bile duct was minimally dissected to allow ductal mobilization. By introducing an additional traction stitch in the Glissonian sheath 1 cm cranial from the anastomosis site and then using a

mosquito clamp to tension the suture at the 2 o'clock direction (Fig. 1) before duct-to-duct anastomosis has many advantages as follows:

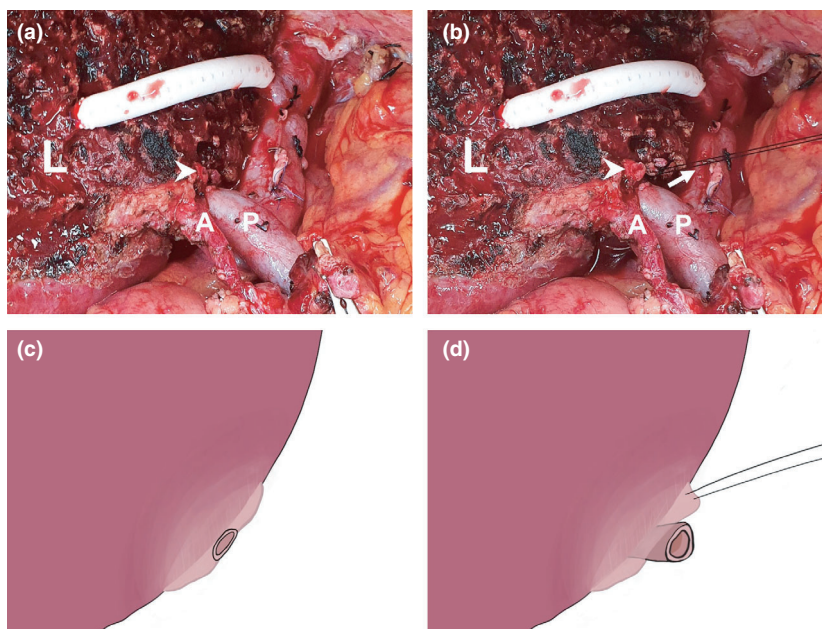
1. This stitch traction would pull out the graft bile duct to improve the exposure of the orifice, therefore increase the visualization of the surgical field.
2. By increasing the exposure of surgical field, the subsequent ductoplasty can be performed with less hustle.
3. The posterior wall of the anastomosis would be brought up to allow for easier suturing.
4. This traction could further enhance the interrupted front wall sutures to bring the graft and recipient structures in alignment.

These changes would improve surgical ergonomics and make the subsequent procedure more efficient. Between July 2018 and June 2019, 56 patients underwent LDLT with right lobe liver grafts at our center using this stitch traction technique followed by standard surgical procedures for duct-to-duct biliary reconstruction.

Glisson's sheath is a fibrous connective tissue that encloses portal tributaries, hepatic arteries, and bile ducts. By applying an additional traction stitch in the Glissonian sheath, we can improve the surgical ergonomics during the biliary duct manipulation. Although our experiences on using this technique on left lobe liver transplants has been limited. We have applied this traction in closing the donor's bile duct stump (left hepatic lobe) in which we grasped and tensioned the traction suture at 10 o'clock direction to bring out the transected orifice. We believed this minor modification also adds benefits to improve the visualization under this circumstance. One drawback is that we did not evaluate surgical ergonomics using more objective surrogates such as the diameter of the bile duct orifice or the tilt angle of the graft bile duct after the stitch traction, therefore, further prospective analyses with greater sample sizes are required.

The biliary leakage in the current letter was 8.93% (5/56), which was not statistically and significantly different from those of our previous report [6]. The cause of

Figure 1 (a) Intraoperative picture showing the graft bile duct (arrowhead) after vascular anastomosis and graft reperfusion. (b) Intraoperative picture showing the graft bile duct (arrowhead) after a traction stitch (arrow) in the Glissonian sheath followed by using a mosquito clamp to tension the suture at the 2 o'clock direction. Schematic drawing showing the graft bile duct before (c) and after (d) after adding a traction stitch in the Glissonian sheath 1 cm cranial away from the anastomosis site and then using a mosquito clamp to tension the suture at the 2 o'clock direction. L: Liver graft; A: Hepatic artery; P: Portal vein.



biliary complication could be multifactorial including immunosuppressive protocols, peri-operative management, and surgical techniques. There are reports regarding biliary anastomosis methods, efforts at preservation of blood supply in the donor bile duct, and different types of stenting/decompression procedure with a common aim to lower the incidence. Currently, we are conducting a study with a bigger sample size to evaluate the

impact of with and without the use of Glissonian stitch traction for bile duct reconstruction during LDLT, and we hope to share our results in the near future. Nonetheless, Glissonian stitch traction is a simple, safe, fast, and reproducible technique which improves the exposure of surgical field, elevates the ductal wall and enhances the alignment. Together, these changes facilitate the biliary manipulation in LDLT and improve surgical efficiency.

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