

CASE REPORT

Pure laparoscopic living donor right hepatectomy (with video)

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Abstract

Only a few centers in the world perform pure laparoscopic right hepatectomy for adult-to-adult living donor liver transplantation. In this procedure, right lobe donation is mostly preferred in view of the higher graft volume usually needed for the recipient. In the area, laparoscopic surgery has had a minor development given the greater technical difficulty and risks for both donor and preservation of the graft. Nevertheless, last 3 years, the advances in major laparoscopic liver surgery suggest that pure laparoscopic right hepatectomy could be a feasible and safe procedure in appropriately selected donors, and mostly, when is performed by surgeons with significant experience in both laparoscopic liver surgery and liver transplantation with living donor liver grafts. This video shows the surgical technique of a pure laparoscopic right hepatectomy in a 30-year-old female volunteered for living donation to her brother.

INTRODUCTION

In some countries, the lack of deceased donor organs has led to the use of living donor liver transplantation as an effective treatment modality for patients with end-stage liver disease, especially in the pediatric population [1]. Minimally invasive surgery has been introduced in living donor liver transplantation to address donor's cosmetic and functional concerns. After the first report of laparoscopic donor left lateral sectionectomy in 2002 [2], laparoscopic donor hepatectomy has spread worldwide [3], and the types of grafts used in these procedures have diversified to full left and right lobe. Initially limited by technical complexities and the steep learning curve associated with the procedures, a series of laparoscopic right hepatectomies performed by experienced surgeons at living donor centers showed that the results were equivalent to those of open surgery [4]. The last 3 years, with the development of mini-invasive surgery, it has been possible to offer living donors the laparoscopic approach, without increasing surgical risk, complications or long-term results [5].

CASE REPORT

This video shows a pure laparoscopic right hepatectomy in a 30-year-old female volunteered for living donation to her brother who suffered secondary sclerosant cholangitis. Right lobe donation fulfilled the volumetric criteria. After full mobilization of the right lobe, dissection of vena cava was performed. Venous branches of the caudate were ligated and dissected until reaching right hepatic vein by the extrahepatic route. This allowed the installation of a melaton probe to perform hanging maneuver and obtain a better reference of the parenchymal transection line. Afterwards, pedicle dissection was performed isolating right hepatic artery and portal vein. A transection line was demarcated during transient clamping of the right pedicle. Parenchymal transection was meticulously executed using harmonic scalpel, bipolar coagulation and laparoscopic CUSA, especially for deeper liver sectors and dissection of larger vascular structures. The v5 and v8 branches were carefully identified and dissected with ligatures in case of subsequent reconstruction, if necessary, in the recipient. Before dissecting

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the hilar plate, indocyanine green with 4-k display fluorescence mode was used to identify biliary tract bifurcation, avoiding any damage to left bile duct. Intraoperative cholangiography was not necessary. After dissecting right hepatic artery and right portal vein, vascular stapler was used for right hepatic vein. The specimen was extracted in a bag by suprapubic incision.

Total operative time was 360 minutes. Estimated blood loss was 150 ml. Pringle's maneuver was not needed. Graft weight was 924 g with GW/RW = 0.90. After an uneventful postoperative course, donor was discharged on Day 4 without complications. The recipient also recovered well.

DISCUSSION

Pure laparoscopic right hepatectomy for living donor liver transplantation is a challenging procedure proposed to reach both, best quality of the graft and maximum safety for the donor, also granting the benefits of minimally invasive surgery. The first report in the literature of pure laparoscopic right hepatectomy was published in 2013 by Soubrane [6]; since then and especially in the last 3 years, the development of this technique has increased, and some centers have published successful results in this regard [7]. Regarding the learning curve, it has been characterized as long and complex [8, 9] because surgeons must be trained in living donor transplantation and laparoscopic major hepatectomies. This aspect constitutes one of the main reasons why pure laparoscopic right hepatectomy for living donor liver transplantation has not been generalized. Now, series published in literature are still scarce, and only a few surgeons in the world perform this procedure [3, 5]. This initial experience must be helpful for other centers into considering adult to adult living donor liver transplantation as a feasible option.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no competing interest.

SUPPLEMENTARY MATERIAL

Supplementary material is available at JSCREP Journal online.

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