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Title:

Laparoscopic bisegmentectomy 6 and 7 using a glissonian approach and a half-pringle maneuver

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Abstract:

BACKGROUND: Despite accumulated experience and advancing techniques for laparoscopic hepatectomy, there are still challenging resections that require specific and innovative intraoperative maneuvers ^{1,2,3}. The right posterior sectionectomy presents special concerns about its location, the extensive transection area and difficult access to the pedicle ^{4,5}. Intrahepatic glissonian approach allows safe en masse control of the portal structures without prolonged dissection ². Its association with the half-Pringle maneuver results in less bleeding during parenchymal transection ^{1,6}.

METHODS: 34 years-old woman referred to treat a 8.0 cm hepatocellular adenoma located at segments VI/VII. Patient was placed in a semi-supine position and six ports were located in a distribution that resembles a Makuuchi's incision. The right liver was mobilized and preparation to an anatomic glissonian approach was performed. A vascular clamp was placed to assure that full control of the right posterior pedicle was possible. Then, a vascular stapler replaced it, with division of the right posterior glissonian pedicle. A vascular clamp was inserted from the inferior right flank 5-mm trocar to perform a half-pringle maneuver of the right pedicle in order to minimize blood loss during parenchymal transection. Liver parenchyma was transected with harmonic scalpel and vascular stapler. The right hepatic vein was divided intra-parenchymally with a vascular stapler. Specimen was extracted through a Pfannenstiel incision.

RESULTS: Total surgical time was 210 minutes. Estimated blood loss was 200 ml and no blood transfusion was required. The recovery was uneventful and hospital discharge occurred on the fifth post-operative day. Pathology confirmed the diagnosis of an hepatocellular adenoma.

CONCLUSIONS: Technical issues have initially hindered the development of laparoscopic liver resections ^{7,8,9,10}. Surgeons were concerned about hemostasis, bleeding control, safe and effective parenchymal transection, adequate visualization and the feasibility to work on deeper regions of the liver. During the past decade, a lot of limitations were overcome, but lesions located on the postero-superior liver are still considered tough to beat ^{5,11}. When we look up at large series and extensive reviews ^{12,13,14}, resections located on the posterior segments are still infrequent. Limited access to the portal triad, difficult pedicle control, a large transection area and its anatomically location, hidden from the surgeon's view, attached to the diaphragm and retroperitoneum, makes such resections defying. Our team has made 97 laparoscopic hepatectomies, including 6 lesions resections of the right posterior sector. In our series, half pedicle clamping was used in 12 patients, and we adopt such maneuver as an inflow control when we're operating on peripheric lesions with difficult vascular control (such as enucleations or postero-superiorly located segmentectomies). This technique is safe and useful, as it reduces liver ischemic aggression, a very important issue in diseased livers (e.g steatosis, steato-hepatitis, prolonged chemotherapy, cirrhosis) ^{6,15}. In our series, we applied the glissonian intrahepatic approach in 7 cases (2 left hepatectomies and 5 right hepatectomies).

We understand that laparoscopy applies perfectly to oddly (postero-superior) located tumors and right posterior sectionectomy can be safely accomplished. In fact, we share opinion with other specialized hepatobiliary centers, believing that this may be the preferred approach ¹⁶.

Glissonian approach permits fast and efficient pedicle control, avoiding the risk of falling into the anatomic pitfalls of the extra-hepatic vasculo-biliary elements. Its association to the Half-Pringle maneuver increases the ability to control bleeding during liver transection.

Drs. Paulo Herman, Jaime Arthur Pirola Krüger, Renato Micelli Lupinacci, Fabrício Ferreira Coelho and Marcos Vinícius Perini have no conflicts of interest or financial ties to disclose.

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