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Intrahepatic Glissonian approach for robotic right hepatectomy

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Minimally invasive liver resection is one of the most complex procedures in hepatobiliary surgery [1,2]. We have described a standardized technique for intrahepatic Glissonian approach, which, based on small incisions and following specific anatomical landmarks, allows a straightforward control of Glissonian pedicles without hilar dissection for both right and left liver. This technique has been used since 2001 in open and laparoscopic resections [3,4]. The choice between extrahepatic or intrahepatic Glissonian approach depends on the specific characteristics of the patient. Usually, the control of both right and left main Glissonian pedicles can be obtained with both techniques. Cirrhotic patient presents a capsular retraction that facilitates extrahepatic control of the Glissonian pedicle. We have more experience with intrahepatic Glissonian approach and this technique, in our view, is better to achieve control of deep located Glissonian pedicles. This video demonstrates technical aspects of a robotic right hemihepatectomy using intrahepatic Glissonian technique. A 66-year-old woman with rectal bleeding underwent colonoscopy that showed a tumor 10 cm from the anal verge. Preoperatory studies showed multiple liver metastasis. She underwent laparoscopic rectosigmoidectomy with ileostomy. Ileostomy was reverted 35 days later. Objective response with neoadjuvant chemotherapy was achieved, and she was referred for liver resection. Multidisciplinary team decided for a right hepatectomy with enucleation of the 2 lesions on the left liver. Robotic approach was proposed. Future liver remnant volumetry was 39%. For intrahepatic Glissonian approach, two small incisions are used. One at the basis of segment 4b and another in the caudate lobe. Removal of liver tissue around the pedicle allows the intrahepatic identification of the right pedicle. It is then encircled using the Cadière forceps, a robotic wristed instrument. Operative time was 272 minutes, with blood loss estimated at 120 ml, without need for transfusion. Postoperative recovery was uneventful, and patient was discharged on the 5th postoperative day. Robotic intrahepatic Glissonian approach is feasible, and it is a useful technique for a safe control of the right liver pedicle, facilitating robotic right hemihepatectomy. The main difference in the robotic approach is that we can encircle the pedicle with ease in the same way we describe for open intrahepatic Glissonian approach [3]. This maneuver is much more difficult in laparoscopic approach and the blind insertion of the clamp followed by the stapler is the rule [4]. Therefore, a previous experience with intrahepatic Glissonian approach is warranted for laparoscopic approach and sometimes intrahepatic cholangiography or ultrasound are to be used to check the proper location of the stapler to avoid damage to the left hepatic duct. Robotic approach permits a safer maneuver to access the Glissonian pedicle while maintaining minimally invasive technique. In Conclusion, robotic approach may help the completion of liver resection by minimally invasive technique, specially in more complex cases. Intrahepatic access of liver pedicles can be achieved using small incisions around hilar plate, following specific anatomical landmarks. The division of the liver following the ischemic area results in less bleeding, precluding the Pringle maneuver. This video shows the different steps (Fig. 1) necessary to perform this complex operation.

Disclosure

Drs. Machado, Mattos, Lobo Filho and Makdissi have no conflicts of interest or financial ties to disclose.

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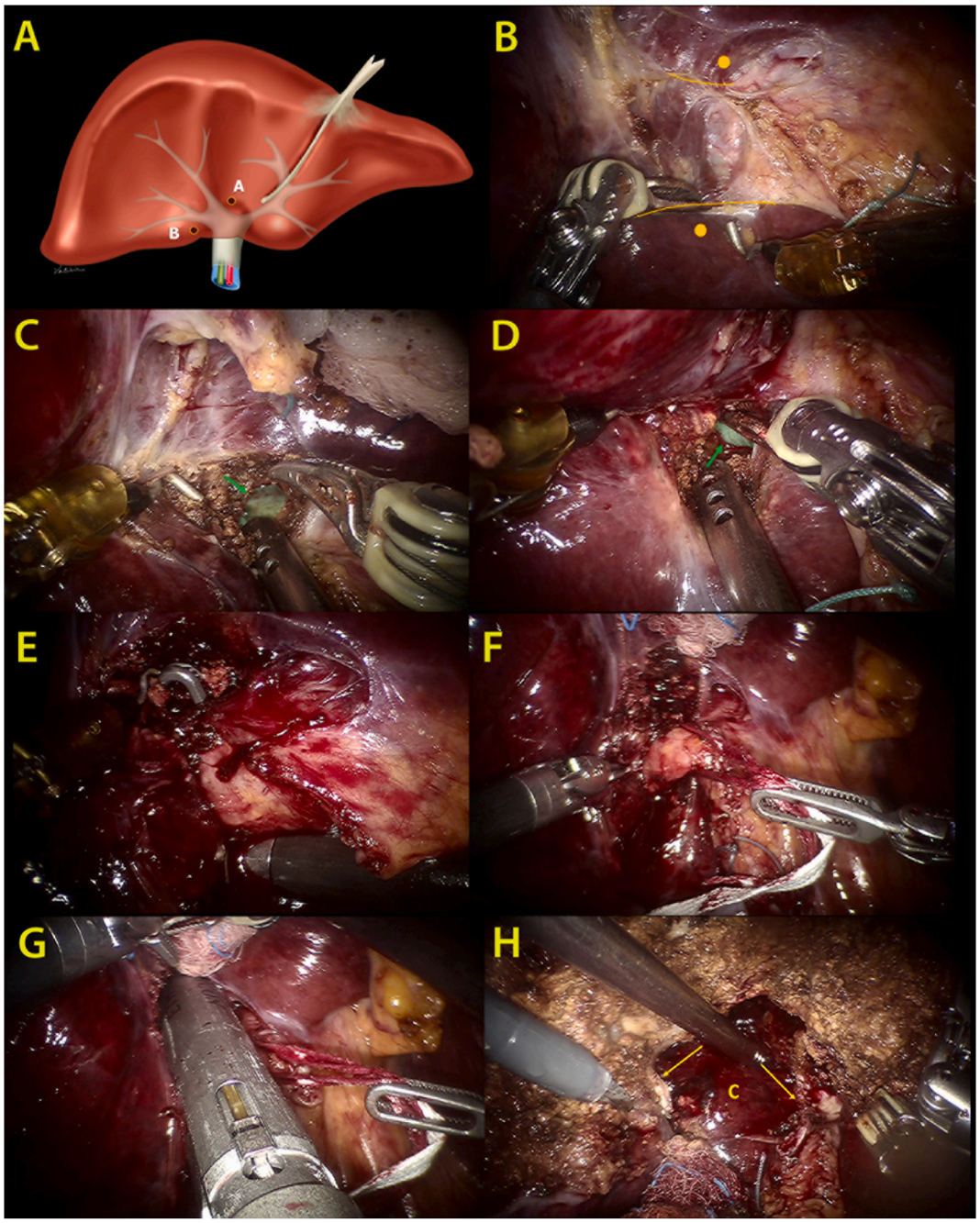

Fig. 1. Intrahepatic Glissonian approach for robotic right hepatectomy.
A. Schematic drawing of intrahepatic Glissonian approach for right hepatectomy shows the site for the two incisions (A and B).
B. Intraoperative view showing the intrahepatic path of the right pedicle (orange lines) and the site for the incisions (orange spheres).
C. Intraoperative view shows the anterior surface of the right pedicle seen inside the liver substance (green shadow and green arrow), exposed after opening the first incision (A in Fig 1A). D. Intraoperative view shows the posterior surface of the right pedicle seen inside the liver substance (green shadow and green arrow), exposed after opening the second incision (B in Fig 1A).
E. Intraoperative view: The right Glissonian pedicle is encircled using the Cadière forceps.
F. Intraoperative view: The right Glissonian pedicle is encircled by an umbilical tape and pulled towards the left to allow correct positioning of the stapler.
G. Intraoperative view: The right Glissonian pedicle is divided by a stapler.
H. Intraoperative view after partial liver transection shows the right Glissonian pedicle divided (arrows). Caudate lobe (C) appears underneath.

Authorship statement

All authors have made substantial contributions to all of the following: (1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content, (3) final approval of the version to be submitted.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.suronc.2021.101579.

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