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Total Laparoscopic Reversal ALPPS

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ABSTRACT

Background. Associating liver partition and portal vein ligation for staged hepatectomy (ALPPS) allows R0 resection even for patients with extremely small future liver remnants. The ALPPS procedure was initially described for two-stage right trisectionectomy. Reversal ALPPS is a denomination in which the future liver remnant is the right posterior section of the liver.

Patient. A 42-year-old woman with colorectal metastases in all segments except segment 1 underwent chemotherapy with objective response and was referred for surgical treatment. The computed tomography (CT) scan showed a predominance of metastases in the left liver and in the right anterior section. The right posterior section had three metastases. The plan was to perform a laparoscopic reversal ALPPS (left portal vein ligation combined with *in situ* splitting in a two-stage left trisectionectomy).

Technique. Three metastases in the right posterior section were resected, followed by liver partition and left portal vein ligation. The CT scan showed a 70 % increase in the future liver remnant. The second stage constituted left trisectionectomy. At laparoscopy after division of adhesions, the left Glissonian pedicle was divided with an endostapler. A stapler also was used to transect the left and middle hepatic veins, and the specimen was removed through a suprapubic incision. The operative times were respectively 5 and 3 h, and the patient was discharged on days 4 and 5, respectively. No blood transfusion or intensive care unit stay was necessary. At this writing, the patient shows no evidence of the disease 18 months after the procedure.

Conclusions. Reversal laparoscopic ALPPS is feasible and safe. Laparoscopy is useful for decreasing blood loss and optimizing visualization during liver transection.

BACKGROUND

Associating liver partition and portal vein ligation for staged hepatectomy (ALPPS) is a relatively new procedure that allows R0 resection even for patients with extremely small future liver remnants.¹ The ALPPS procedure was initially described for two-stage right trisectionectomy.² Reversal ALPPS is a denomination in which the future liver remnant is the right posterior section of the liver. It is performed when a left trisectionectomy is necessary to achieve R0 liver resection. Laparoscopic ALPPS has been reported only in individual case reports, and the future liver remnant was on the left liver in all cases.^{3,4}

PATIENT

The patient was a 42-year-old woman with colorectal liver metastases in all segments except segment 1. She underwent preoperative chemotherapy with objective response and was referred for surgical treatment. The computed tomography (CT) scan showed a predominance of metastases in both the left liver and the right anterior section. Right posterior section (segments 6 and 7) was relatively spared, with three superficial metastases. The plan was to perform a total laparoscopic reversal ALPPS (i.e., left portal vein ligation combined with *in situ* splitting in a two-stage left trisectionectomy).

TECHNIQUE

The patient was positioned in the French position. Four trocars were used. The operation began with exploration of the abdominal cavity and ultrasound. Three superficial metastases were found in the right posterior section and

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resected. The next step was partition of the liver between the right anterior and posterior sections. During the liver transection, the right anterior pedicle was divided. Finally, the left portal vein was dissected and ligated. The operative time was 5 h. The patient recovered uneventfully and was discharged on postoperative day 4. No blood transfusion or intensive care unit (ICU) stay was necessary. The CT scan showed great hypertrophy of the future liver remnant, with a 70 % increase in volume. In the second stage, performed 3 weeks after the first stage, the operation constituted a left trisectionectomy. At laparoscopy, fewer adhesions were noted and easily divided. The left liver was fully mobilized off the retroperitoneum, diaphragm, and inferior vena cava. The left Glissonian pedicle was divided with an endostapler. Staplers also were used to transect the left and middle hepatic veins. The specimen was retrieved inside a plastic bag and removed through a suprapubic incision. The operative time was 3 h, and the patient's recovery was uneventful. She was discharged on postoperative day 5. At this writing, the patient shows no evidence of the disease 18 months after the procedure.

CONCLUSIONS

Reversal laparoscopic ALPPS is technically feasible and safe. Laparoscopy is useful for decreasing blood loss and

optimizing visualization during liver transection. Laparoscopy may be an interesting solution for adhesions and could decrease difficulties that may be encountered during the second stage. With the use of laparoscopy, the second stage can be performed at the optimal time (for the patient), and the surgeon does not need to rush to avoid adhesions. The authors encourage the use of laparoscopy in ALPPS for surgeons experienced with complex laparoscopy.

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