

A Simple Technique for Large Tumor Removal During Laparoscopic Liver Resection

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Abstract: Experience with laparoscopic liver resections has increased in recent years, and so have the number of patients operated on by minimally invasive techniques. Specimen extraction is an important step of laparoscopic liver resection. The size of the specimen is usually a limitation for the use of laparoscopy. The aim of this paper is to describe a new technique combining Pfannenstiel suprapubic incision and obstetric forceps to remove a large specimen from laparoscopic liver resections. The present technique allows an expeditious extraction of intact specimens, even huge ones, through a standard suprapubic Pfannenstiel incision. This technique has additional functional and cosmetic advantages over other techniques of specimen retrieval. We believe that the described technique is feasible, can be easily and rapidly performed, and facilitates laparoscopic liver resection by reducing the technical difficulties for specimen removal and may also be used in other abdominal laparoscopic interventions that deal with large surgical specimens.

Key Words: laparoscopy-liver, surgical technique, specimen extraction

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Experience with laparoscopic procedures and recent advances in laparoscopic devices have created an evolving interest in the application of these techniques to liver resection.^{1,2} Experience with laparoscopic liver resections has increased in recent years, and so have the number of patients operated on by minimally invasive techniques.^{2–5}

Specimen extraction is an important step of laparoscopic liver resection. Some authors used suprapubic incision, whereas others use midline or subcostal incisions.^{2–6} The size of the liver specimen is usually a limitation for the use of laparoscopy. The aim of this paper is to describe a new technique combining Pfannen-

stiel suprapubic incision and obstetric forceps to remove a large specimen from laparoscopic liver resections.

OPERATIVE TECHNIQUE

The techniques for right or left laparoscopic liver resections have been previously described.^{2–7} Briefly, the patient is placed in a left semilateral decubitus position for right liver resection and supine position for left liver resections. The surgeon stands between the patient's legs. The technique usually requires 5 trocars—three 12 mm and two 5 mm trocars. Hepatic hilum is dissected for pedicle control. Pringle maneuver and hand assistance are not used. Liver transection and vascular control of the hepatic veins are accomplished with harmonic scalpel and endoscopic stapling device as appropriate. The specimen is extracted through a Pfannenstiel suprapubic incision. A large extraction plastic bag should be used in cases of malignant tumors.

The present technique consists in the application of an obstetric Kjelland forceps to obviate the use of a larger incision (Fig. 1). Obstetric forceps are atraumatic and its correct application allows a rapid extraction of large specimens through a standard Pfannenstiel suprapubic incision.

RESULTS

This technique has been used for successful undamaged specimen extraction of a huge liver cell adenoma (Fig. 2) through a standard Pfannenstiel suprapubic incision in a 28-year-old woman submitted to a laparoscopic left hepatectomy. The surgical specimen weighed 1610 g and the maximum diameter was 19 cm. The specimen was removed in 2 minutes and 12 seconds. Postoperative course was uneventful and the patient was discharged on the third postoperative day.

DISCUSSION

After laparoscopic liver resection, the specimen might be removed by the incisions performed for hand-assisted procedure or in cases of totally laparoscopic liver resection by an extension of one of the incisions used for trocar placement or by a new incision that is usually suprapubic Pfannenstiel incision.⁵

These incisions are sufficient for removal of small or midsize surgical specimens. However, with increasing use

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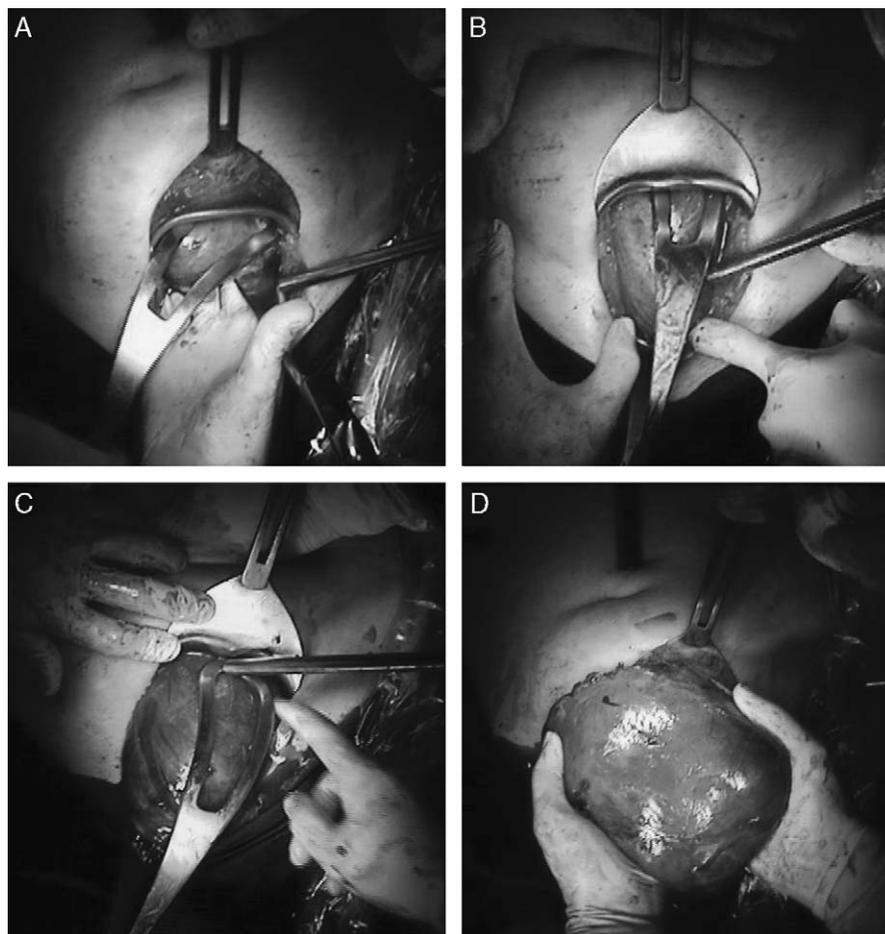


FIGURE 1. Step by step technique for extraction of large tumors using an obstetric forceps. A, Application of the second blade of Kjelland forceps. The first blade is already on place. B, The Kjelland forceps is locked and correctly placed. The liver specimen is encircled by the forceps and extraction begins. C, With circular and smooth movement, the surgical specimen slides toward incision. D, Immediate view after extraction of the large surgical specimen.

of laparoscopy for major liver resections, one can expect larger specimens that will ultimately mean larger incisions. Furthermore, for malignant tumors, it is imperative to remove an intact specimen for correct pathologic evaluation. The present technique allows an expeditiously extraction of intact specimens, even huge ones, through a

standard suprapubic Pfannenstiel incision. This technique has additional functional and cosmetic advantages over other techniques of specimen retrieval. Moreover, Pfannenstiel incision has the advantage of a potentially less painful, nonmuscle-cutting skin incision. Although there is an impression that the degree of comfort,

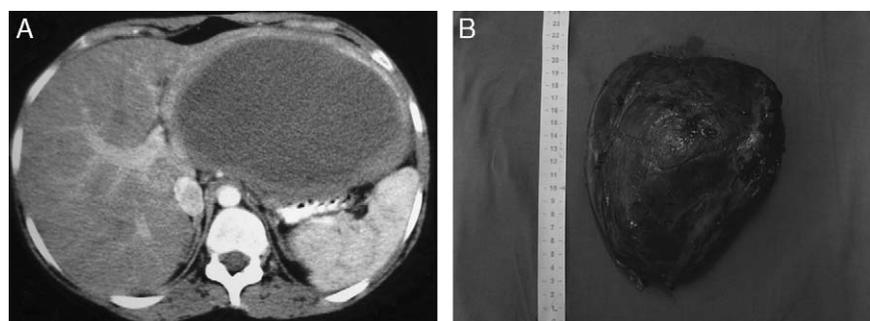


FIGURE 2. Laparoscopic left hepatectomy for a large hepatocellular adenoma. A, CT scan shows a large tumor on the left liver. B, Intact surgical specimen after extraction using Kjelland obstetric forceps. CT indicates computed tomography.

postoperative pain, and cosmesis from Pfannenstiel incision may be better than that after enlargement of the primary port site or other incisions (ie, subcostal and upper midline), comparison of these types of incisions is still required.⁸

We believe that the described technique is feasible, can be easily and rapidly performed, and facilitates laparoscopic liver resection by reducing the technical difficulties for specimen removal and may also be used in other abdominal laparoscopic interventions that deal with large surgical specimens.

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