



Single-incision trocar-less endoscopic management of giant liver hydatid cyst: a step beyond?

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Acharya *et al.* present the manuscript “*Single-incision trocar-less endoscopic management of giant liver hydatid cyst in children*” (1) and I would like to make some comments about the manuscript and minimal access surgery in liver hydatidosis.

Nowadays, laparoscopic surgery is the gold standard for many abdominal surgical procedures (2). The main advantages of laparoscopy are faster postoperative recovery, less postoperative pain, shorter stay and cosmesis (2). Laparoscopic liver surgery has been probably one of the last in consolidating in minimally invasive surgery, probably due to: fear of bleeding, a long learning curve since the surgeon must have extensive experience in liver and laparoscopic advanced surgery, the need for adequate devices for parenchymal section, difficulty of access to certain segments and the fear of gas embolism.

Initially, only small resections were performed in benign and small tumors localized in so-called favorable segments (II to VI). Today, every liver surgery technique performed by laparotomy, localized in any segment have been performed by laparoscopic approach, although major hepatectomies have not yet been popularized.

Laparoscopic liver surgery has shown a number of advantages over laparotomy surgery: less blood loss, less postoperative pain and analgesic consumption, earlier oral intake, shorter hospital stay, less postoperative adhesions and better cosmetic results. But more importantly, results obtained show that is safe, feasible and efficient. But you have to keep in mind that feasibility and excellent results should never change the surgical indications especially in benign tumors (2).

In conventional laparoscopic surgery, at least three abdominal incisions for trocars are needed. The

introduction of single incision laparoscopic surgery (SILS) has led to a further reduction of abdominal incisions. Surgical procedures that can be performed with SILS are increasing (2). SILS reduces intraoperative blood loss, postoperative pain and are related to a faster recovery compared to an open surgical approach (2). The main problems of the SILS are: new learning curve, loss of triangulation, vision problems since camera and instruments are parallel, costs and incisional umbilical hernia (3,4). Acharya has gone a step beyond because his technique is even less invasive than SILS (1).

In 2015, Benzing *et al.* performed a systematic review of liver SILS surgery finding only 15 studies with 133 patients (2). The studies included showed nice perioperative results focusing in operative time, blood loss and length of stay. SILS was feasible in most cases, even in major hepatectomies. The overall rate of complications was low 6.8%. Conversion from SILS to either procedures was performed in few cases. Most authors reported excellent cosmetic results alter SILS. Follow up of these studies was short. A systematic review of 2017 that included nine studies with 277 patients undergoing SILS hepatic surgery found no differences between SILS and conventional laparoscopic liver surgery in terms of operative time, complication rate and postoperative stay (5).

There are two groups of surgical techniques to treat liver hydatidosis: conservative surgical (CS) and radical surgical (RS). RS has the following advantages: complete elimination of the parasite, low recurrence rate (0–6.4%) and lower morbidity. It has traditionally been argued that RS is accompanied by increased morbidity and mortality. But, technical advances in liver surgery let surgeons

perform RS with low morbidity and mortality. Main bias is that RS is not universally feasible; it cannot be performed in approximately 25% of patients with liver hydatidosis (6). CS techniques are simpler, universally applicable and do not require specific training in liver surgery. The morbidity of CS is admissible and acceptable results are achieved in a high percentage of patients. Therefore, many surgeons consider CS to be the techniques of choice. Nonetheless, the morbidity, recurrence rate and the risk of intraabdominal spread are greater with CS than with RS techniques. One drawback of conservative techniques is that a residual cyst cavity can produce a non-negligible morbidity and recurrence after surgery that is difficult to differentiate from a residual collection. Our group opinion is performing RS always that is possible even when laparoscopy is done (7).

The first case of laparoscopic management of liver hydatidosis (LMLH) was published in 1992. The advantages of a LMLH are a shorter hospital stay, a lower incidence of wound infection and less postoperative pain. The disadvantages of LMLH are the access of some cysts in difficult locations, an increased risk of cyst dissemination, and difficulty in aspirating some cysts (6-8). No randomized clinical trial has evaluated LMLH and most published studies are retrospective non-comparative series (6,8). Resuming literature information: laparoscopy in liver hydatidosis is feasible and safe (level IV evidence and recommendation grade C), the risk of parasitic spread and/or anaphylactic shock is very low, the technique used is fairly standardized except for post-needle aspiration, which can be carried out using several methods, most patients have undergone conservative techniques with low rates of conversion, morbidity, mortality and recurrence, but the follow-up is often short. The number of patients who have undergone radical techniques is insufficient to allow conclusions to be drawn, although radical surgery is known to be technically more demanding and to have fewer applications (6,7).

The morbidity of conservative laparoscopic surgery (CLS) published ranged from 0% to 33% (6). Postoperative complications include wound infection, biliary fistula, biliary peritonitis, and infection of the residual cavity (6,8,9). The existence of several published series with no morbidity suggest that very strict selection criteria that modify the results were used, a bias existed due to the extensive experience in laparoscopy and hydatid disease of some groups, or some authors did not publish cases with morbidity. The rate of recurrence after CLS is 0–16%, that

is similar seen in conservative open surgery (6,8,9).

Focusing in SITE technique presented by Acharya *et al.* (1), I have some concerns: I would like to know the CE group of the cysts, if they perform an ambulatory procedure, more information about how they did omentopexy using a very small incision, and a longer follow up. Results are impressive with a universal feasibility, very low morbidity and recurrence. But, other groups must validate these excellent results to confirm that technique is applicable universally.

Finally, it is difficult to believe that a so conservative procedure as SITE could obtain same results as radical surgery but time will answer us. Similar comments were done when every laparoscopy or minimal access technique has been done.

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