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Laparoendoscopic single-site surgery cholecystectomy using a novel retraction device

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The recent interest in natural orifice transluminal endoscopic surgery (NOTES) has spurred a revival in single incision laparoscopic surgery or laparoendoscopic single-site surgery (LESS). The LESS technique has been described for cholecystectomy, appendectomy, obesity surgery, colectomy, herniaplasty, splenectomy and adrenalectomy.[1–5] The postulated benefits include improved cosmesis, less wound pain and shortened postoperative recovery.[4] However, this approach is associated with a number of intrinsic limitations including the lost of triangulation, crowding of instruments and the lack of retraction.

When carrying out LESS cholecystectomy, the gallbladder can be retracted by the use of percutaneously introduced sutures or through the use of retraction forceps.[4,5] However, with the use of sutures, the gallbladder has to be punctured and this may lead to bile contamination within the peritoneal cavity. However, the introduction of additional retraction forceps may be difficult due to a limited umbilical working space during LESS cholecystectomy. In the present article, we describe our technique of LESS cholecystectomy using a novel retraction device – the Endograb™ (Virtual Ports, Richmond, VA, USA).

A 54 year-old woman with symptomatic gallstones was scheduled for LESS cholecystectomy. Peritoneal access was achieved by multiple trocar insertion via a single umbilical skin incision. One 10-mm and two 5-mm trocars were introduced through separate fascial punctures. Dissection was carried out under a 5-mm 30 degree laparoscope (Endoeye; Olympus, Tokyo, Japan) with a combination of Roticular™ (Autosuture; Mansfield, USA) angulated and straight instruments. Retraction of the gallbladder at the fundus was achieved by the Endograb™ (Virtual Ports). The Endograb™ is a retraction device that consists of two clipping legs interlinked by a metal wire. The jaw of the long leg was opened by the applicator to allow for attachment to the gallbladder whereas that of the short leg was used for attachment to the peritoneum. The direction of retraction could be altered by simply changing the location of peritoneal attachment by the use of an applicator.

Dissection of the gallbladder was carried out in a manner similar to traditional four-port cholecystectomy. With the gallbladder retracted upward and laterally, critical view of the Calot's triangle was obtained. The cystic artery and duct were exposed, controlled and divided in the usual manner with metal and polydioxanone clips, respectively. The gallbladder was then dissected off from the liver using diathermy, and the specimen retrieved in a plastic bag through the umbilicus. The total procedural time was 35 min. The patient enjoyed an uneventful recovery and was discharged on the following day after operation.

In conclusion, the Endograb™ system provided a safe and effective method to enhance retraction of the gallbladder during LESS cholecystectomy. By obviating the need for an extra trocar for insertion of the retractor, it reduced crowding of instruments at the para-umbilical incision. It also has the potential to be applied in the retraction of other organs.

Video image

Additional video images may be found in the online version of this article.
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