

Total Trans-Umbilical Laparoscopic Cholecystectomy And Inguinal Hernia Repair

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Citation

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Abstract

Single-port transumbilical laparoscopy, also known as embryonic natural orifice transumbilical endoscopic surgery (E-NOTES), has emerged as an attempt to further enhance cosmetic benefits and reduce morbidity of minimally invasive surgery. Here we report the first case of successful combined laparoscopic cholecystectomy and transabdominal preperitoneal (TAPP) inguinal hernia repair by totally transumbilical approach. The patient was discharged on the 1st post-operative day without post-operative complications. Combined laparoscopic cholecystectomy and inguinal hernia repair by totally transumbilical approach is feasible, safe and effective without any increased morbidity.

CASE REPORT

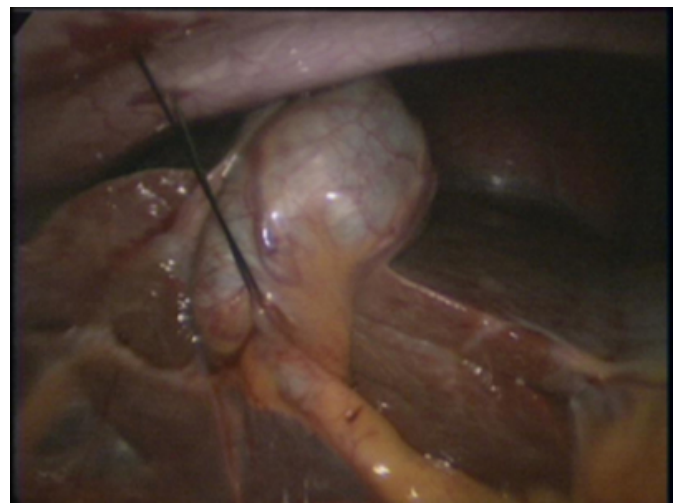
A 35-year-old male patient was admitted to our surgical department with symptomatic gall stone disease in the form of biliary colic attacks. The patient also was a known case of right inguinal hernia for elective repair.

A decision was taken to remove the gall bladder (GB) and repair the inguinal hernia in the same setting. Standard antibiotic prophylaxis was administered.

Laparoscopic cholecystectomy combined with inguinal hernia repair was performed with the patient under general anesthesia using a 10mm, thirty-degree laparoscope and a video camera system on the right side of the patient. Surgeon and first assistant were positioned on the patient's left side. A 1cm incision to the right side and a 5mm incision to the left of the umbilicus were made. A pneumoperitoneum with CO₂ was created up to a pressure of 14 mmHg. A 10mm and a 5mm trocar were inserted. A subcostal stitch was passed into the peritoneal cavity and a knot was secured at the fundus of the gall bladder, which was pulled anteriorly to expose Calot's triangle. Body and Hartmann pouch were pulled infero-laterally with the help of two more silk stitches (fig. 1).

Figure 1

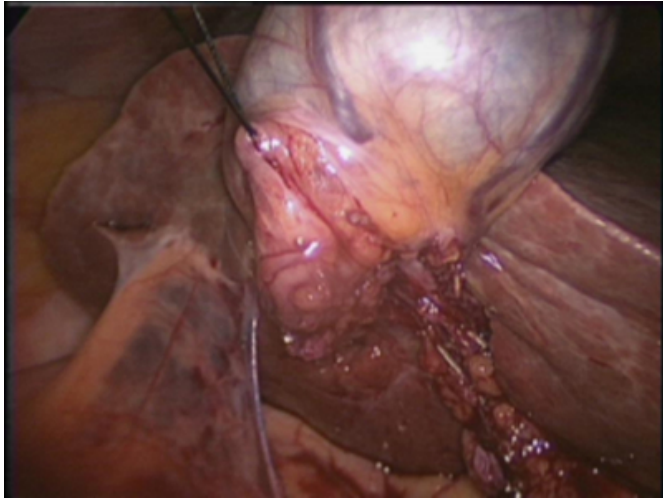
Fig. 1 Gall bladder retracted by stitches



Careful dissection was carried out. Cystic duct and cystic artery were isolated. The cystic duct was clipped with three medium-sized clips and divided between the distal two clips. The cystic artery was clipped before division (fig. 2).

Figure 2

Fig. 2 Dissection in Calot's triangle



The gall bladder was removed from the hepatic bed with the help of a diathermy hook using cutting current setting (fig. 3). It was removed through the 10mm umbilical port after placing it in an endobag. Irrigation and suction was done in the hepatic bed.

Figure 3

Fig. 3 Gall bladder completely separated and stitches still in place



An additional third 5mm trocar (trans-umbilical) was introduced for inguinal hernia repair to help in the retraction of the hernia sac.

The technical steps of trans-umbilical transabdominal preperitoneal (TTAPP) inguinal hernia repair are very similar to that of a traditional laparoscopic TAPP inguinal hernia, and no special instruments are required: Creation of the peritoneal flap and then dissection medially to the pubic bone (Fig. 5a). In next step, the indirect hernia sac was

reduced and separated from the spermatic cord (Fig. 5b).

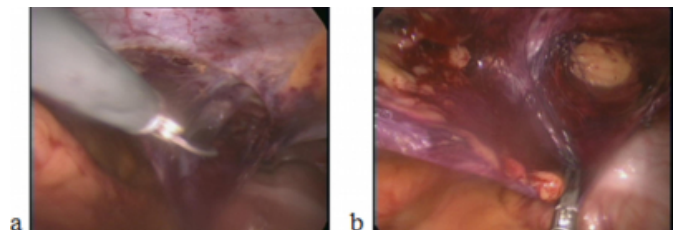
Figure 4

Fig. 4 Ports in place



Figure 5

Fig. 5 a - Peritoneal flap b - Separation of hernia sac



After the entire posterior floor had been dissected, a 10 x 15cm polypropylene mesh was inserted through the 10-mm port and secured on each side using four to five spiral tacks (Fig. 6). Then the peritoneal reflection was repositioned by spiral tacks (Fig. 7).

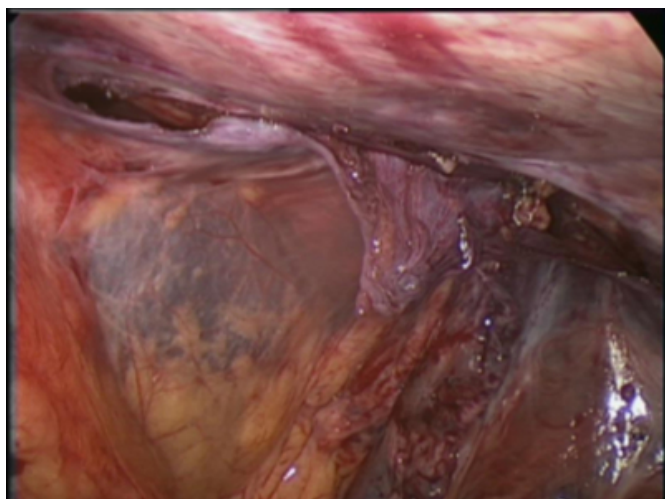
Figure 6

Fig. 6 Mesh in place



Figure 7

Fig. 7 Repositioning of the peritoneum



The abdomen was deflated and the trocars were removed. The wounds were closed and Marcaine was injected in the wounds. Total operating time was 30 min and 80 min.

Post-operatively, the patient was kept on “nil orally” for four hours. Afterwards he tolerated oral fluids well. He was given intramuscular diclofenac sodium 75mg for pain control and discharged on the 1st post operative day. The histopathology showed chronic cholecystitis.

DISCUSSION

The journey from conventional “open” operations to truly “minimally invasive” operations naturally includes progression from operations involving multiple trocars and multiple incisions to operations involving access through the umbilicus alone. Laparoscopic operations through the

umbilicus alone, laparoendoscopic single site surgery (LESS), offer improved cosmesis and hopes for less pain and improved recovery. [1]

Natural orifice transluminal endoscopic surgery (NOTES) has become an exciting area of surgical development. Significant limitations to this surgical concept, however, are lack of surgical expertise and appropriate flexible instrumentation. An alternative and competing technology to NOTES is NOTUS. [2]

The quest for scarless surgery has driven endoscopists and surgeons alike to NOTES, but NOTES has its inherent problems. The procedure of single port cholecystectomy provides the same benefit of scarless surgery as the incision is well hidden in the umbilical cicatrix, which in itself is an embryological natural orifice making us wonder whether this should be termed as E-NOTES or E-NOS.[3]

Unfortunately, access to a single port that allows for SPA has been limited to small numbers of academic centers. The instruments entering through a single port led to clashing of instruments. [3] We minimize or avoid that by inserting two trocars through separate incisions.

The additional needle or a stitch to hold up organs is frequently used in natural orifice transluminal endoscopic surgery (NOTES) and is not considered an additional port. [4] Traction to the gall bladder by 3 stitches gives more exposure to Calot’s triangle, more than in the previously reported transumbilical cholecystectomy technique.

Ger reported the first laparoscopic hernia repair in 1982 by approximating the internal ring with stainless steel clips [5]. The laparoscopic trans-abdominal preperitoneal (TAPP) repair was a revolutionary concept in hernia surgery and was introduced by Arregui [6] and Dion [7] in the early 1990s. Laparoscopic groin hernia repair can be done by TAPP approach and also by Total Extra-Peritoneal (TEP) approach. [8] Both techniques of laparoscopic hernia repair reproduce the concept of Stoppa by placing a large mesh in the pre-peritoneal space to cover half of the abdominal wall and all the weak areas (myopectineal orifice of Fruchad [9] including the area of the internal ring, Hasselbach’s triangle and the femoral ring.

Simultaneous laparoscopic operations were reported in the period of 1993-2003. Performance of simultaneous operations, as a rule, enhanced mildly the total duration at a basic stage, did not influence the duration of the postoperative period and the patients’ rehabilitation

essentially, as well as the frequency of intra- and postoperative complications. [10]

To our knowledge, no paper was published before for combined laparoscopic cholecystectomy and inguinal hernia repair by totally transumbilical approach. As with all new technology, patient selection is paramount during the initial period of one's experience. [11]

CONCLUSION

Combined laparoscopic cholecystectomy and inguinal hernia repair by totally transumbilical approach is feasible, safe and effective without any increased morbidity.

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