

Bilateral simultaneous single-port (LESS) laparoscopic nephrectomy (laparoendoscopic single site surgery)

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ABSTRACT

Minimal access surgery is rapidly expanding and currently single-port surgery is at the forefront of laparoscopy. Operating through a single port is technically demanding but through advances in camera design and instrument design, it is now gaining popularity. It offers minimal scar surgery as well as decreased postoperative pain and swift recovery. Here we present a case of bilateral simultaneous single-port laparoscopic nephrectomy (LESS) laparoendoscopic single site surgery in a 51-year-old man. Illustrating that LESS can be used by surgeons with laparoscopic skills outside of a few major international centers.

Key words: E-NOTES, laparoscopy, LESS, nephrectomy, SILs, single port

INTRODUCTION

In this patient due to the small size of the native kidneys and the need to perform bilateral nephrectomy at one sitting we elected to use a LESS technique. Bilateral simultaneous nephrectomy is rarely required but in this instance to quickly control blood pressure we opted for simultaneous surgery. We believe this is the first reported instance of simultaneous LESS nephrectomy. The patient was keen to avoid unnecessary scarring and pain and was counseled as to the new nature of this technique. The procedure was carried out as the fifth single-port nephrectomy or pyeloplasty performed by the surgical team in a UK teaching hospital.

This is the first report of a bilateral single-port nephrectomy; the patient recovered quickly and there were no intraoperative problems.

The patient underwent a renal transplant in 2007 for

renal failure secondary to interstitial nephritis. Following this, blood pressure was difficult to control and bilateral nephrectomy was suggested. Both native kidneys were small in size. The patient had a BMI of 26. Other than renal transplantation, the patient had not had prior abdominal surgery or peritoneal dialysis.

The procedure was performed using a tri-port (advanced surgical concepts) [Figure 1] and a 5-mm 30° rigid endo-eye laparoscope (Olympus Medical, Tokyo, Japan) and standard laparoscopic instruments as well as curved 5 mm instruments (Karl-Storz and Braun).

A single tri port was inserted at the umbilicus as described^[1] with the patient in the lateral position [Figures 2–3]. The descending colon and spleen were mobilized and the left kidney pedicle exposed. The left renal artery and vein were clipped with hem-O-lok clips (Teleflex Medical) and divided. The kidney was then retrieved through the port site without need for extending the incision due to the small size of the kidney.

The patient was repositioned with the right side upward. A new tri port was inserted through the existing incision. The ascending colon was mobilized medially without any difficulty due to prior transplantation or hindrance from the transplant kidney in the right pelvis. The kidney pedicle was exposed. The artery and vein were clipped with hem-O-lok clips (Teleflex Medical) and divided. The specimen was removed through the incision again without need for extension. The port site was closed with PDS to deep fascia and clips to skin.

The operating time was 2 h for the left kidney and 1 h for

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Figure 1: Tri port, advanced surgical concepts, Ireland

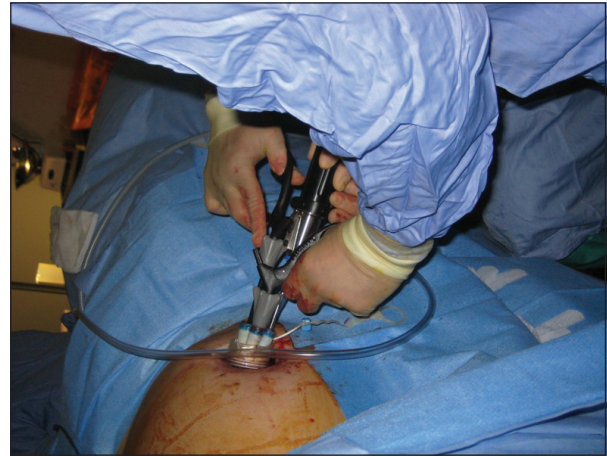


Figure 2: Intraoperative photos showing port *in situ* at the umbilicus and instruments being used through port

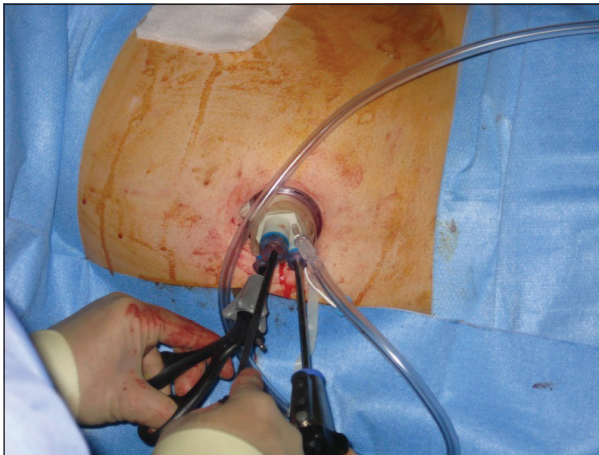


Figure 3: Hand position of surgeon and camera assistant

the right kidney excluding time to reposition the patient and reinsert a new tri port; blood loss was negligible and no drain was required.

CASE REPORT

Postoperatively, the patient made a routine recovery and was discharged on the third postoperative day. Analgesic requirements postoperatively were 21 mg of morphine via PCA, 400 mg of tramadol, and 11 g paracetamol to the day of discharge.

Postoperatively, the incision is well healed with no evidence of herniation. The renal transplant continues to function well and bowel function is normal.

DISCUSSION

Laparoscopy is a rapidly evolving specialty, and the reduction of incisions and ports and the use of natural orifices as means of entry has become a very topical area.

The advantages being both cosmetic, decreased port site complications, and decreased postoperative pain and hospital stay. The disadvantages have been difficulty in instrument angulations and movements, camera access, and maintaining pneumoperitoneum while allowing multiple instrument changes through one port.

The techniques used are still under development. Indeed, standardization of the terms for describing this type of surgery is still under debate with terms such as E-NOTES (embryonic natural orifice transluminal endoscopic surgery) and SILS (single incision laparoscopic surgery) commonly being used. However, the recent consensus is that the term LESS is probably the best descriptor both as it does not specify the site of entry and the acronym implies the improved nature of this method of surgery.

A number of manufactures have started to invest in this area; curved and angulating instruments including needle holders are available. Port technology includes self-sealing flexible ports that can accommodate a number of different sized instruments simultaneously as well as allowing the passage of curved instruments. For the surgeon, these instruments help but do not eliminate the difficulties of operating with instruments and camera all entering the patient through a single access point. Despite these difficulties two series of patients undergoing these procedures have now been published since the first published report.^[1] In January 2009, Gill *et al.* published their series of four E-NOTES donor nephrectomize,^[2] This demonstrated that the technique is safe and a healthy donor graft could be safely retrieved through a single umbilical incision. The same group has also published a series of six reconstructive single-port procedures.^[3]

Our case demonstrates that E-NOTES is transferable from a few specialist centers to a high-volume laparoscopic center and may herald the start of a new era in laparoscopic surgery.

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