



## Laparoscopic Single Site (LESS) Radical nephrectomy using basic laparoscopic instruments : A case report

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### Abstract

**OBJECTIVES:** To present a case of renal cell carcinoma underwent Laparoscopic Single Site (LESS) radical nephrectomy using basic laparoscopic instruments (without a commercial single port or articulate laparoscopic instruments) and without additional access.

**MATERIALS:** A 53-year-old male was diagnosed with a right renal mass on routine check up without symptoms. Computed Tomography revealed a 4 cm.-enhanced complex cystic-solid mass at upper pole of the right kidney consistent with cystic renal cell carcinoma. Laparoscopic single site (LESS) radical nephrectomy was performed.

**RESULTS:** Laparoscopic Single Site (LESS) right radical nephrectomy was carried out using basic laparoscopic instruments without using commercial single port or articulated laparoscopic instruments and without additional access added. The operative time was 155 minutes. The blood loss was 30 ml. No peri-operative complications occurred. The patient was uneventful recovery. The tumor histology was renal cell carcinoma confined in the kidney and free margin.

**CONCLUSIONS:** Laparoscopic Single Site (LESS) radical nephrectomy is safe, feasible and cost-effective because of using only basic laparoscopic instruments. However, the LESS procedures are technically demanded and required steep learning curve.

## INTRODUCTION

In recent years, Laparoscopic Single Site (LESS) surgery has been developed as a safe, reducing numbers of accessed skin incisions, scar hidden in an umbilical incision and potential less post-operative pain over conventional laparoscopy. The LESS procedures still have steep learning curve and require ambidexterity surgeons. However, LESS surgery is costly because of using more instruments for examples; commercial single port, flexible laparoscopic optics and articulated laparoscopic instruments. We present a case of LESS radical nephrectomy not only using basic laparoscopic instruments without using commercial single port, flexible laparoscopic optics and any articulated laparoscopic instruments but also without additional access.

## CASE REPORT

An asymptomatic 53-year-old male had a renal mass on on routine ultrasonography check. Computed tomography scan revealed an enhanced 4-cm. complex cystic-solid mass at upper pole of the right kidney which very closed to the renal artery (figure 1). The patient refused partial nephrectomy so

Laparoscopic Single Site (LESS) right radical nephrectomy was performed.

## LAPAROSCOPIC INSTRUMENTS

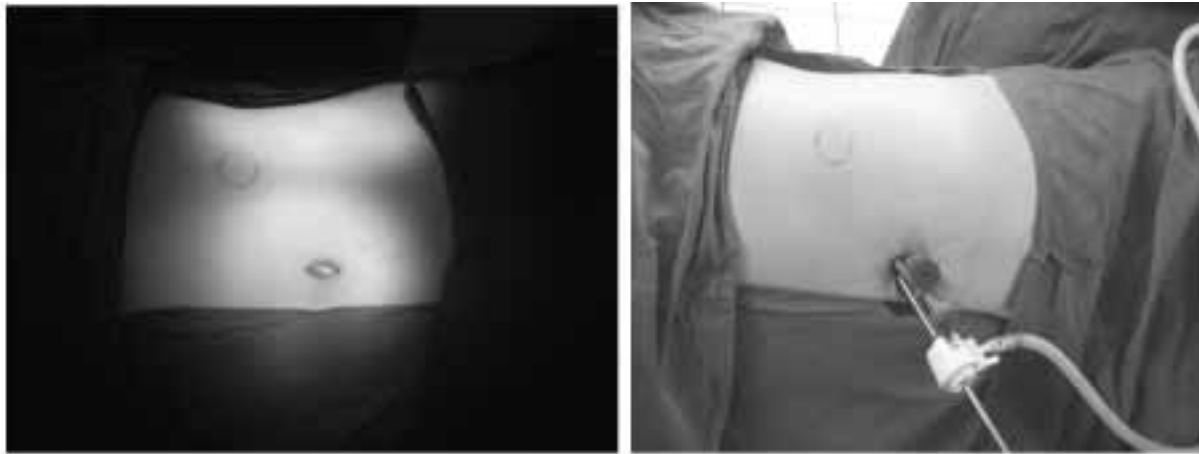
1. 5-mm. 30 degree laparoscopic rigid optics
2. Veress's needle
3. Three 5-mm low profile trocars
4. 10-mm trocar
5. 5 mm. laparoscopic scissors, suction and hook
6. 5 mm. Hem-O-Lok clips
7. 12 mm (XL) Hem-O-Lok clips
8. a retrieval bag
9. Harmonic scalpels

## PROCEDURES

The patient was placed in a right lateral decubitus position. A 2-cm. transumbilical incision was made. Pneumoperitoneum was created via a Veress's needle. Three 5-mm. low profile trocars were accessed through the same umbilical incision and separated sheath sites (Figure 2). A 5 mm.-30 degree laparoscopic optics was used. The right sided colon was mobilized medially to expose the vena cava and duodenum. The ureter was exposed, clipped using Hem-O-Lok clips and then divided in order to allow mobilization and upward displacement of the lower pole of the kidney. The dissection was then carried along the vena cava. The retroperitoneal fat overlying the renal vessels was separated, exposing the renal hilum. The renal artery was isolated, clipped using Hem-O-Lok clips and divided. Renal vein was dissected. One 10-mm. trocar was changed instead of a 5-mm. trocar over a plastic stylet. Then, 12 mm. XL- Hem-O-Lok clips were clipped on the renal vein and the renal vein was divided. The adrenal vein was clipped and divided. The whole kidney and the adrenal gland were mobilized away from surrounding organs.



**Fig 1** CT scan



**Fig 2** LESS trocar access



**Fig 3** early postoperative wound

Hemostasis was achieved. The specimen was put into a retrieval bag.

A 6-cm. incision was made at right lower quadrant. Abdominal sheath and muscles were separated along the muscle fibers. Peritoneum was incised and the specimen was removed. The incisions were stitched layer by layer in a routine fashion (figure 3).

## RESULTS

Laparoscopic Single Site (LESS) right radical nephrectomy was carried out using basic laparoscopic instruments without using commercial single port or articulated laparoscopic instruments and without additional access added. The operative time was 155 minutes. The blood loss was 30 ml. No peri-operative complications occurred. The patient was uneventful recovery. The tumor histology was renal cell carcinoma confined in the kidney and free margin.

## DISCUSSIONS

Radical nephrectomy remains a gold standard for renal cell carcinoma. In 1991, Clayman was the first who performed laparoscopic radical nephrectomy (LRN)[1]. Nowadays, LRN becomes a standard treatment for the localized tumor. In the recent years, LESS surgery has been developed and expanded indications to a variety of urological procedures including renal cyst decortications, nephrectomy, partial nephrectomy, donor nephrectomy, adrenalectomy, pyeloplasty, prostatectomy[2-4]. In 2007, Raman et al. performed the first LESS nephrectomy[5]. In

selected patients, LESS parallels multi-site laparoscopy with equivalent operative outcomes. Cosmesis is an obvious benefit due to a hidden scar in the umbilicus. Moreover, potential benefits such as shortened length of stay and minimal requirement of analgesics have also demonstrated[6-9]. However, there are some obstacles of LESS over conventional laparoscopy, for example, steep learning curve and higher costs. Crowded and sword-fighting instruments, requirement of ambidexterity are common obstacles to overcome. Usage of special instruments makes LESS procedures costly such as commercial single

port, flexible optics, articulated instruments. We presented a case of LESS-radical nephrectomy using basic laparoscopic equipments with favorable peri-operative outcomes. Nevertheless, long term oncologic outcomes of LESS need to be investigated.

## CONCLUSIONS

Laparoscopic Single Site (LESS) radical nephrectomy is safe, feasible and cost-effective because of using only basic laparoscopic instruments. However, the LESS procedures are technically demanded and require steep learning curve.

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