

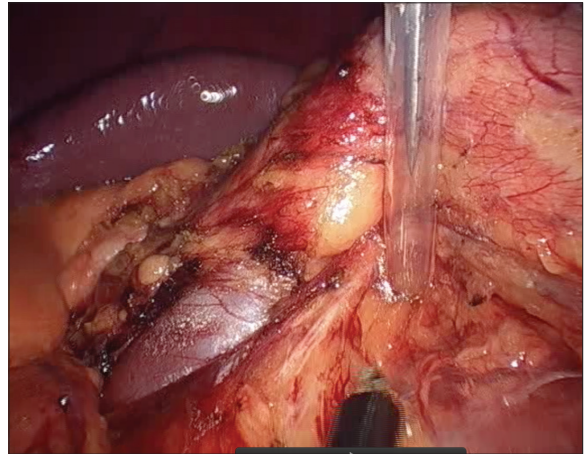
Trans-umbilical laparo-endoscopic single-site donor nephrectomy without the use of a single-port access device

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Laparo-endoscopic donor nephrectomy (LESS-DN) is a procedure in evolution. Currently described techniques utilize single-port access devices and articulating, flexible and bent working instruments. We describe a modified technique of trans-umbilical LESS-DN with conventional laparoscopic instruments in 30 kidney donors.

The patient is placed in a conventional 45° lateral position as for multiport laparoscopic donor nephrectomy. The upper and lower edges of the skin incision are marked 1 cm above and below the umbilicus. The umbilicus is then everted and a 4.5-cm long vertical trans-umbilical incision is made. The rectus fascia is laterally dissected underneath the skin flaps. Pneumoperitoneum is established using a Verrees needle inserted through the rectus fascia in the midline. Three separate vertically aligned ports (one 10-mm and two 5-mm ports) are inserted through this single incision. A 46-cm long, 45° (bariatric) laparoscope (Karl Storz) is used through the 10-mm camera port. A fascial closure (port closure) needle is inserted intra-abdominally through the left subcostal region. A plastic needle cap is inserted into the abdomen through one of the 10-mm ports and fed into the port closure needle. This assembly is used to provide traction to the kidney and adjacent organs. The descending colon is mobilized along the white line of Toldt exposing the ureter and the gonadal



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vein packet. This is dissected off the psoas and lifted up to and exposing the renal vein. Subsequently, the adrenal vein is dissected, ligated and divided. The renal upper pole is freed from the adrenal gland and other posterior abdominal wall structures. The renal artery is exposed after ligating and dividing the lumbar vein. The kidney is mobilized completely all around exposing the psoas muscle. The gonadal vein and ureter are divided at the pelvic brim.

At this point a window is made in the lower pole fat and a No. 1 vicryl suture is tied around the fat including the gonadal vein. This suture is exteriorized through one of the ports and used for kidney extraction.

Prior to renal hilar clamping, the lower 5-mm port is exchanged for a standard metallic 10-mm port. The renal artery is clipped with two Hemolok clips and divided. The renal vein is clipped using one Hemolok clip and divided.

Kidney extraction

A rectus fascial incision is made connecting the three laparoscopic ports. The vicryl thread tied to the lower pole fat is pulled and the kidney delivered along its

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transverse axis into the wound. After kidney retrieval, the port closure needle is brought into the umbilical wound and the needle cap is removed. The skin incision is closed with interrupted No.1 vicryl sutures and the working ports are re-inserted in between sutures. Haemostasis is ensured.

This technique has been used for Left Laparoscopic Donor Nephrectomy in 30 donors and has been compared in a randomized prospective trial with Multiport Laparoscopic Donor Nephrectomy (in press) and found to be associated

with decreased morbidity. It is cost-effective as only standard rigid laparoscopy instruments are used and warm ischemia times are reduced due to our novel method of kidney extraction.

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