

Laparoscopic kidney donation – giving in the best way possible



Living related donor kidney transplantation is extremely safe for the donor (mortality <0.03%),^[1] offers excellent outcomes for the recipient, and is the standard of care for the treatment of end-stage kidney disease. As an operation, donor nephrectomy is unique in that the donor gains nothing other than emotional satisfaction. The primary objective is therefore to ensure the safety of donors and enable a prompt return to their previous level of activity without affecting their quality of life.

Laparoscopic donor nephrectomy was first described by Ratner *et al.*^[2] in 1995, and has become the procedure of choice for kidney donation in most major transplant centres worldwide. The benefits include reduced postoperative pain, a shorter hospital stay, less incisional morbidity, better cosmesis and an earlier return to normal activity. These advantages have superseded initial concerns about compromised graft outcomes due to increased warm ischaemic time and shorter vessel length. A Cochrane review from 2010 compared traditional open donor nephrectomy with laparoscopic donor nephrectomy and concluded that outcomes were comparable in terms of complications and graft function despite an increase in warm ischaemic time.^[3]

Laparoscopic kidney donation comes at a cost, however. Operating times are on average an hour longer than for open nephrectomies, laparoscopic equipment and disposables are expensive, and there is a steep learning curve. In the USA laparoscopic donation is estimated to cost \$2 000 (R25 000) more than the open operation.^[4] This increased cost for one day less in hospital and an earlier return to work is justified, as most living donors are economically active.^[5]

Furthermore, the appeal of minimally invasive laparoscopic surgery to the general public should not be underestimated at a time when waiting lists for kidney transplantation continue to grow. A large scar and long lay-off from work may be major disincentives to kidney donation, and many studies report an increase in living related transplants after starting laparoscopic donor programmes. Schweitzer *et al.*^[6] reported a doubling of their living related transplantation rate following the introduction of laparoscopic donation. In their study only 35% of patients with renal failure had a family member assessed as suitable for organ donation, and only 12% of these patients went on to receive a living donor kidney transplant within 3 years. After the introduction of laparoscopic donation, the percentage of willing donors increased to 50%, with 25% of patients having a transplant within 3 years.^[6]

Various technical approaches can be used for laparoscopic donor nephrectomies. These are either totally transperitoneal, hand assisted or retroperitoneal. Currently there is no good evidence to favour one method over the other. Expected conversion rates for all three methods are approximately 1.8%.^[5] The hand-assisted procedure offers the surgeon tactile feedback, an easier learning curve and possibly decreased operating time; however, the incision for the hand

port itself is not much smaller than that for a minimally invasive open donor nephrectomy. The totally transperitoneal procedure is technically challenging (easier for left-sided nephrectomies) and takes slightly longer than other laparoscopic methods. The kidney is extracted via a Pfannenstiel incision, with the advantage of a less painful incision and a less visible scar. The retroperitoneal approach offers the advantage of avoiding contact with the bowel and spleen, but at the cost of decreased visibility and working space. In this edition of *SAJS*, Van der Merwe and Heyns^[7] publish the results of their first 50 retroperitoneoscopic donor nephrectomies, encompassing the learning curve of a difficult procedure, and highlight some of the issues relating to the procedure.

The use of the Hem-o-lok clips for control of the renal vessels as reported in this article^[7] is contentious. Although there are multiple studies demonstrating the safety and decreased cost of Hem-o-lok clips, for example Simforoosh *et al.*'s^[8] study with 1 834 consecutive patients, significant reservations about this practice remain. These concerns are based on six reported deaths due to catastrophic failure of the clips, and the US Food and Drug Administration has published two warnings, in 2006 and in 2011, against using these clips for laparoscopic donor nephrectomies.^[9] The manufacturer also states that the clips are not to be used for vascular control in donor nephrectomies. Safe practice is to use a more expensive vascular stapler.

Laparoscopic kidney donation by various methods is safe and offers excellent results for the donor and the recipient. It allows for earlier discharge from hospital and earlier return to work, and increases donation rates. As shown by Van der Merwe and Heyns,^[7] high standards can be maintained with the minimally invasive approach and these patients can be returned smoothly back to normal living, having safely and effectively passed on their gift of a kidney to a grateful recipient.

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