

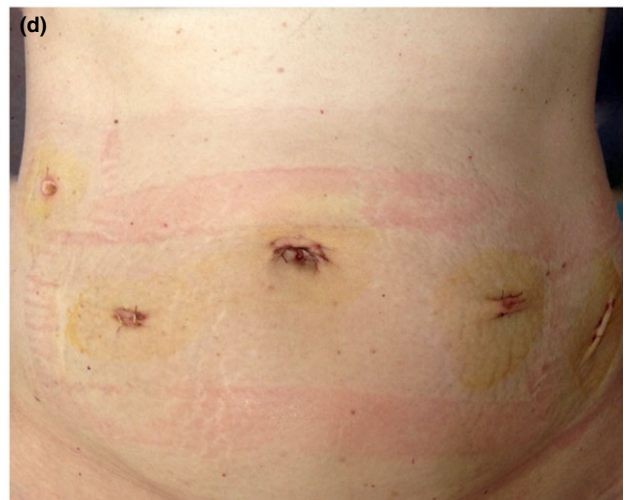
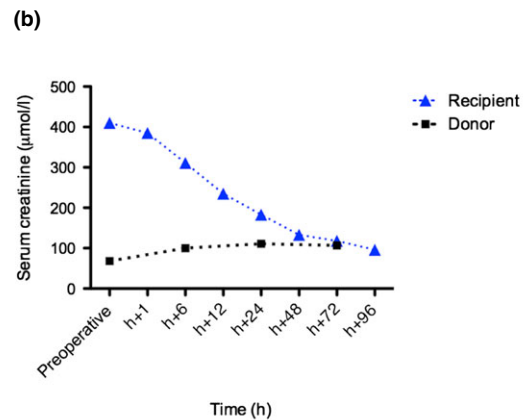
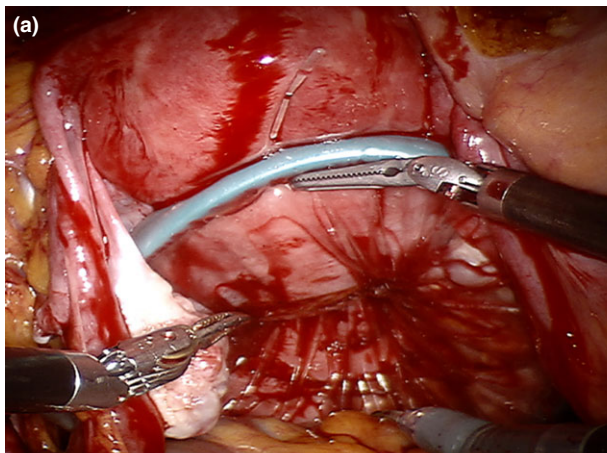
LETTER TO THE EDITORS

# A new surgical area opened in renal transplantation: a pure robot-assisted approach for both living donor nephrectomy and kidney transplantation using transvaginal route

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Dear Sirs,  
Minimally invasive kidney transplantation using a robotic device has already been described and has shown real benefit especially in selected patient group [1]. The transvaginal

approach for kidney extraction with living donor has previously been emphasized showing advantages in recovery and cosmesis [2,3]. The robotic approach was demonstrated to be safe, reproducible, with improving postoperative pain,



**Figure 1** (a) Kidney insertion by transvaginal approach using an Alexis retractor (Applied Medical, Rancho Santa Margarita, USA) (green circle). The kidney is removed and inserted using an Endobag (Landanger, Chaumont, France) to facilitate its progression and to avoid any injuries. (b) Renal function monitoring for donor (blue line) and recipient (black line). (c) Postoperative donor skin overview. (d) Postoperative recipient skin overview.

analgesic requirement and cosmesis without compromising graft function and patient outcome [4,5]. Modi *et al.* [6] recently performed laparoscopic kidney transplantation in eight female recipients following insertion of the kidney through the vagina. They showed that vaginal insertion was feasible, safe and had cosmetic and analgesic benefits. The gynaecologist performed the vaginal approach extracorporeally in a conventional manner.

We report here the first total robotic approach for living donor nephrectomy followed by transplantation using a transvaginal access for both donor and recipient. A 44-year-old ABO donor with no previous abdominal surgery was assessed for a left kidney donation to her 43-year-old sister who had a previous kidney transplantation in right iliac fossa (Wegener disease). Firstly, a left-sided donor nephrectomy with transvaginal extraction of the graft was performed endocorporally with a 4-arm Si HD Da Vinci (Intuitive Surgical Inc., Sunnyvale, CA, USA) robotic device. The use of a new retractor Alexis<sup>®</sup> (Applied Medical, Rancho Santa Margarita, CA, USA) decreased the risk of organ injuries and bacteriologic contamination (Fig. 1a). The kidney was externalized easily and perfused immediately. The warm ischaemia was 1min 50sec and total operative time 185 min.

In the second procedure, a kidney transplantation was performed in a total robotic approach with the same robotic device and a standard port placement. The graft was inserted through vagina using an Alexis<sup>®</sup> retractor. The vaginal suture was performed endocorporally. A temperature probe was used to continuously monitor renal cooling ( $24.0 \pm 2.9$  °C). The operative time was 180 min, and vascular anastomosis time was 45 min. Patient outcome was extremely positive with minimal abdominal discomfort, no vaginal pain and no need for postoperative analgesia. The postoperative course was uneventful, and the quick recovery time allowed discharge from the hospital on 2 d for donor and 4 d for the recipient (Fig. 1b–d).

To our knowledge, this is the first case successfully performed in a complete robotic approach for both donor and recipient using the vaginal approach, with a new device (Alexis<sup>®</sup>) facilitating the insertion of the kidney and decreasing the risk of organ injuries and bacteriologic contamination. A new area seems to be opened for living donor kidney transplantation with this first almost scarless

surgery for both donor and recipient using vaginal access performed successfully, showing a large benefit in cosmesis and postoperative recovery period without compromising patients outcome. A large prospective study is ongoing to confirm these advances.

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## Conflict of interest

The authors of this manuscript have no conflict of interests to disclose as described by Transplant International.

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