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LETTER TO THE EDITORS

Robot-assisted renal transplantation compared with conventional surgery: a real benefit?

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Dear Sir,

We read with interest the paper *by Tsai et al.* [1] that has been recently published in your Journal. The Authors described their expertise with the retroperitoneal robot-assisted kidney transplantation (KT). They conclude that this technique can be safely performed and showed similar results compared with conventional KT (cKT). We acknowledge these remarkable results; nevertheless, we would like to comment on the actual benefits of robotic surgery in KT toward the patients, the graft survival, and the health care system.

All KTs described by *Tsai et al.* were performed in a selected setting (e.g., organs with no vascular or ureteral anatomical abnormalities). Nevertheless, the overall surgical time, the vascular anastomosis time, and the warm and cold ischemia times were longer compared with cKT. Although the authors commented that the total ischemic time did not influence the graft function, however, there is clear evidence in the literature that it should always be reduced as much as possible [2].

In the report, no advantages were evidenced in terms of patients' resumed oral intake, ambulation, or duration of hospital stay.

Furthermore, the Authors advocated that a real advantage in skin incision can be achieved with robotic surgery compared with cKT (7–9 cm vs. 18–20 cm, respectively). Nevertheless, this result is controversial. *Malinka et al.* [3] described cKT incisions with a length inferior to 9 cm displaying no differences in patient 30-day mortality, morbidity, and long-term kidney function compared with longer incisions. *Kaçar et al.* [4]. also reported a successfully minimally invasive approach (MIKT) with length incision below 4–5 cm, concluding that MIKT represents a safe method for cKT.

Finally, the cost of robotic surgery in KT is significantly higher than cKT. The authors report mean differences of 3000$ *per transplant* (2000$ vs. 5000$, respectively). In both Europe and the US, a health technology assessment analysis report showed a significant increase in the cost of robotic-assisted surgery [5].

Overall, robotic-assisted KT (with a peritoneal or retroperitoneal approach) represents a feasible and safe option. Nonetheless, a clear advantage in terms of patients' morbidity, mortality, and graft short- and long-term survival cannot be demonstrated. In addition, the costs are at least twice compared with cKT. This evidence makes the recommendations for a widespread use of robotic-assisted KT questionable.

Currently, as described by Giulianotti's team, the use of robotic-assisted approach for KT seems to find an application mainly for severely obese patients. In this cohort, it allows a reduced recovery period, and a limited number of wound complications and surgical site infection [6].

Another potential use of the robotic surgery is represented by kidney donation from living donors. In this scenario, donor nephrectomy using the robot-assisted technique is safe, feasible, and offers an advantage to the patients [7]. Considering the overall technical, clinical, and practical aspects of living kidney donation, this technique, in contrast to the traditional technique, could represent the method of choice to assure the surgeon's comfort along with donors' safety.

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Conflicts of interest

We declare that we have no conflict of interest related to this manuscript.

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