Exploring new trends in living related liver transplantation

Salvatore Gruttadauria, Duilio Pagano

Department for the Treatment and Study of Abdominal Diseases and Abdominal Transplantation, Mediterranean Institute for Transplantation and Specialization Therapies (IRCCS-ISMETT), Palermo, Italy
Correspondence to: Salvatore Gruttadauria, MD, FACS. Department for the Treatment and Study of Abdominal Diseases and Abdominal Transplantation, Mediterranean Institute for Transplantation and Specialization Therapies (IRCCS-ISMETT), Via E. Tricomi N. 5 Palermo 90127, Italy. Email: sgruttadauria@ismett.edu.
Provenance: This is an invited Letter to the Editor commissioned by Editor-in-Chief Yilei Mao (Department of Liver Surgery, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences, Beijing, China).
Response to: Chen PD, Wu CY, Wu YM. Use of robotics in liver donor right hepatectomy. Hepatobiliary Surg Nutr 2017;6:292-6.

We read with great pleasure the article entitled "*Use of robotics in liver donor right hepatectomy*" by Chen *et al.*, which was published in last year's October issue of *Hepatobiliary Surgery Nutrition* (1). This review of robotic hepatobiliary surgery focused on the brief history of minimally-invasive surgery (MIS) in the field of living-related liver transplantation (LRLT).

The authors should be commended for reporting in a concise and, at the same time, precise manner the published experiences in right- and left-side donor hepatectomy using MIS, and on the introduction of the robotic platform in living donor hepatectomy (RLDH). Furthermore, in addition to the fine report on the topic, the authors provide the readers with useful considerations regarding RLDH based on their personal, seminal experience (2). Insights into the value of the learning curve and strategies for parenchymal transection during RLDH are properly presented.

However, this review, like others on the same topic, concludes correctly by inviting further exploration of the role of RLDH in order to compare different techniques of MIS in LRLT in an effort to create larger pools of data that may support its use in such a delicate framework.

LRLT and MIS certainly share a pioneering spirit, which drives the common effort to achieve success, but when looking in detail at both scenarios a number dilemma remain open.

In particular, LRLT in terms of the number of procedures performed every year is currently travelling at two different speeds in the East and West, especially in Italy where brain death donation has been consistently increasing over the last 2 years, and LRLT is becoming almost exclusively a pediatric procedure (3).

Living donors are unique, "healthy" patients (4), and open surgery in this setting has been well standardized by following a complex pathway, and reaching the point at which this technique has been chosen as a benchmark for hepatic resective surgery (5).

On the other hand, there is considerable evidence to back the idea that MIS in LRLT of the left lateral segment for adult-to-child liver transplantation provides grafts that result in an excellent outcome for the recipient, and less wound morbidity and faster recovery for the donor. In the adult setting, though the feasibility of both left and right hemi-hepatectomies has been reported, we are far from being able to consider it a standard of practice (6).

Robotic-assisted liver resection using the da Vinci system is being reported as a tool to overcome some ergonomic and visual problems of the laparoscopic approach; however, few groups are consistently dedicated to it, and the cost and learning curve remain important problems (7). This, obviously, has been particularly true in the field of LRLT.

Though RLDH has been shown to be doable, it appears clear that the majority of those challenging cases are performed in select high-volume centers by experienced surgeons exposed to a complex learning curve.

Therefore, the final question is still: how to face the learning curve and the reproducibility of these challenging

operations while prioritizing donor safety.

In this setting, the review by Chen and his colleagues helps in finding answers through a methodologically correct report on the literature.

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

References

1. Chen PD, Wu CY, Wu YM. Use of robotics in liver donor right hepatectomy. Hepatobiliary Surg Nutr 2017;6:292-6.
2. Chen PD, Wu CY, Hu RH, et al. Robotic liver donor right hepatectomy: A pure, minimally invasive approach. Liver Transpl 2016;22:1509-18.
3. Gruttadauria S, Pagano D, Petridis I, et al. Complications and Near-Miss Events after Hepatectomy for Living-Related Liver Donation: An Italian Single Center Report of One Hundred Cases. Ann Transplant 2016;21:596-601.
4. Lauterio A, Di Sandro S, Gruttadauria S, et al. Donor safety in living donor liver donation: An Italian multicenter survey. Liver Transpl 2017;23:184-93.
5. Rössler F, Sapisochin G, Song G, et al. Defining Benchmarks for Major Liver Surgery: A multicenter Analysis of 5202 Living Liver Donors. Ann Surg 2016;264:492-500.
6. Gruttadauria S. Commentary on Yan et al.: Laparoscopic Liver Resection: A Review of Current Status. J Laparoendosc Adv Surg Tech A 2017;27:487-8.
7. Yan Y, Cai X, Geller DA. Laparoscopic Liver Resection: A Review of Current Status. J Laparoendosc Adv Surg Tech A 2017;27:481-6.