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## Editorial

### Implementation of multimodal enhanced recovery protocols in liver transplantation: Is it possible in Spain?



### Implementación de protocolos de recuperación multimodal intensificada en trasplante hepático: ¿Es posible en España?

Thomas Starzl performed the first human liver transplantation (LT) 60 years ago. The beginnings and extension of the procedure were marked by a multitude of technical, physiological and immunological challenges. Survival was around 70% the first year, and long-term survivors were rare. As the surgical technique, anesthesia and immunological management have been refined, one-year survival rates have improved to 95% and 5-year rates to 75%. However, other problems related to chronicity (diabetes, cardiovascular diseases, kidney disorders, *de novo* tumors) monopolize the current study scenario with the aim of improving the quality of life of transplant patients. Until recently, little attention had been paid to the optimization of candidates on the waiting list before transplant surgery, or anesthetic and postoperative management aimed at improving patient recovery and early discharge.

Interest has been growing in the application of enhanced recovery programs in LT. Given the multitude of different clinical scenarios of transplant candidates (generally, terminal cirrhosis or hepatocellular carcinoma of a cirrhotic liver) and liver transplant recipients (comorbidities, postoperative renal failure, monitoring of immunosuppressive therapy), the implementation of fast-track or enhanced recovery after surgery (ERAS) strategies is not easy to achieve and agree upon. We will refer to them as ERAS protocols in this editorial.

ERAS protocols have been applied to various surgical procedures, including LT. ERAS protocols aim to reduce surgical stress, maintain physiological function, and accelerate recovery, ultimately decreasing the length of hospital stay and complications. These protocols begin long before surgery, involving a multidisciplinary team of healthcare professionals, and continue into the postoperative period.

The results of the implementation of ERAS in LT are promising. Patients experience shorter hospital stays, fewer

complications and a faster recovery. By minimizing the physiological and psychological stress associated with surgery, ERAS improves the overall patient experience. In the last 5 years, individual experiences with ERAS protocols in LT have been reported, and clinical guidelines have been developed at consensus meetings of international societies.<sup>1–5</sup> In Spain, the implementation of ERAS protocols in LT was initiated by Rodríguez-Laiz et al.<sup>6</sup> in the Alicante Liver Transplant Unit. Although the recommendation to apply ERAS protocols in LT is high, the evidence is weak to moderate. This is because the main studies conducted to date have included few patients or have not had a control group.

Recently, under the auspices of the International Liver Transplantation Society (ILTS), clinical guidelines have been published for the application of ERAS protocols in LT.<sup>7</sup> The consensus conference reported 80 final recommendations, covering aspects of enhanced recovery for preoperative evaluation and optimization, intraoperative surgical and anesthetic approach, and postoperative management for recipients of living and deceased donor liver transplants, and for living donors.

With a similar objective, the Spanish Liver Transplant Society (SETH) addressed enhanced recovery after LT at its 10th Consensus Meeting held in Madrid in November 2022, with the participation of representatives from the 26 authorized Spanish liver transplant programs, dividing the actions to be carried out into 3 types: preoperative, intraoperative and postoperative.<sup>8</sup> This SETH document addresses aspects similar to the ILTS guidelines, but from a more practical standpoint given the extensive review of the literature already carried out in the ILTS consensus. The document provides 2 checklists, one for patient admission and one for discharge, as well as a list of requirements for both the patient and the transplant center in order to consider discharge.

Although all the individual recommendations in this document have been established on scientific evidence, there are no randomized controlled studies with a sufficient number of patients to consider the protocol a compulsory strategy with a high degree of evidence. As discussed in the ILTS document, it is very difficult to implement an RCT study. In this context, one of the limiting factors in the implementation of this ERAS strategy is the “high inertia” in normal practice, developed over many years, with disciplines that have been establishing their own “individual preferences.” Another factor to consider is the modification of some requirements, such as the introduction of alternatives for early monitoring of immunosuppression. The implementation of intensive pharmacokinetic monitoring is currently not available at many hospitals. Lastly, there are factors, such as pre- and postoperative rehabilitation, that entail a considerable investment of resources for the physical preparation and physiotherapy of patients, as well as nutritional advice, all of which are obvious aspects but difficult to put into practice due to the overload of the healthcare areas involved. But apart from all the barriers, probably the most important point in the implementation of ERAS in liver transplantation is acquiring a “multidisciplinary mentality” and an “awareness” that it is possible to improve results in all phases of transplantation. ERAS requires the participation of all the members of the team working towards the same goal — the best possible recovery for each transplant recipient — which means eliminating individual practices based on routines and unproven experiences that only achieve partial improvements in said recovery. Finally, it is important to record the activity, measure compliance with the protocol, and compare the results with our previous practice. Only by doing so will we be able to measure the strength of these measures in the immediate future.

A new stage is beginning in the management of transplant candidates and liver transplant recipients, where we will surely see spectacular changes in their recovery and quality of life, which until now had only been achieved through prolonged hospitalizations and no structured rehabilitation or education.

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