

Editorial

Role for biological meshes for delayed abdominal wall closure after pediatric liver transplantation?

In the current issue of the Journal, Caso Maestro et al. (1) describe their experience using a biological mesh for delayed abdominal wall closure after pediatric liver transplantation. The authors should be congratulated on reviewing and presenting their excellent results. We fully agree that tension-free abdominal closure at the end of a challenging procedure is mandatory. The importance of this problem in different areas of the transplant field, such as liver, intestinal, and multivisceral transplantation, has motivated not only single center experiences, but also combined experiences and reviews (2–6). The proposed technique is an acceptable option, but there are certain considerations that require further discussion.

Why should we delay a definitive closure today?

Probably the only need for that decision today might be the unavailability of a biological mesh at the time of the transplant. Currently, there are options to manage this problem. An important advantage in pediatric transplantation is the possibility of having the estimated donor liver volume before the procedure either by imaging studies during the donor evaluation in living-related cases, or by using different available formulas at the time of accepting a cadaveric donor for a split procedure (5). Therefore, it is recommended the “graft to recipient weight ratio” be calculated while the transplant is being planned, predicting the need for a closure strategy. This approach allows surgeons to request the biological mesh on the day a reduced size or split liver becomes available or before a living donor transplant, or, if it is not available, to request the use of cadaveric fascia of the rectus muscle from the same donor (2, 4). The fascia can be procured from the same liver donor, or if a living donor transplant is being scheduled, it can be procured

from a different donor, prepared, and preserved for the time of the living donor liver transplant.

We have published results using the technique of use of abdominal rectus fascia for abdominal wall closure after liver, intestinal, and multivisceral transplantation with excellent results with over 25 months of follow-up (2). This pre-emptive approach only requires a careful planning strategy and saves a second operation in most of those cases; this is more than a minor advantage.

Skin closure and wound management

I certainly agree with the concept of having the mesh covered by skin. Some surgeons propose to do skin closure only or a staged approach using a re-absorbable mesh (7). These are valid alternatives, but they potentially cause fascia retraction and/or leave the patient with a ventral hernia. In other cases, the reduction of the liver edema and the post-surgical fluid shifts facilitate to complete the skin closure in the early post-transplant period, with the consequent need for replacing or resizing the mesh; in those cases a negative pressure dressing can be used after the transplant and before the final skin closure, but this wound care is not recommended to be used with all types of mesh. Certainly, it can be used if the fascia of the rectus muscle is the elected one.

Are all meshes resistant to wound infection?

The authors have reported the absence of wound infection, but infection has certainly been reported. Not all the meshes resist wound infection, but the new biological meshes (7) and the fascia of the rectus muscle tend to. In superficial infections requiring mesh exposure, wet to dry dressings or negative pressure dressings can be used. In cases requiring re-exploration for intra-

abdominal infections, the fascia can be replaced by a new one from a different donor (2, 3).

Costs and availability

In today's complex medical procedures, cost and worldwide availability are very important qualifiers to consider when proposing the use of a technique and/or supplies. Currently, the most cost-effective option is the use of autologous tissue procured at the time of a cadaveric donor operation. Its origin makes it available worldwide. Not every biological mesh is available worldwide (3–5).

In summary, it is certainly recommended to perform a tension-free primary abdominal wall closure whenever feasible. The closure needs to be planned as part of the whole transplant operation. The use of a biologic mesh or the rectus muscle offers simplicity and resistance to infection. But the fascia of the rectus muscle brings a better alternative for reoperation, is cost effective, is replaceable, and it is available worldwide.

Gabriel E. Gondolesi

Instituto de Trasplante Multiorganico, Hospital Universitario –Fundación Favaloro, Buenos Aires, Argentina

E-mail: ggondolesi@ffavaloro.org

References

1. CASO MAESTRO O, ABRADELO DE USERA M, JUSTO ALONSO I, et al. Porcine acellular dermal matrix for delayed abdominal closure after pediatric liver transplantation. *Pediatr Transplant* 2014; 18: 594–598.
2. GONDOLESI G, SELVAGGI G, TZAKIS A, et al. Use of the abdominal rectus fascia as a non-vascularized allograft for abdominal wall closure after liver, intestinal and multivisceral transplantation. *Transplantation* 2009; 87: 1884–1888.
3. MANGUS RS, KUBAL CA, TECTOR AJ, et al. Closure of the abdominal wall with acellular dermal alograft in intestinal transplantation. *Am J Transplant* 2012; 12(Suppl 4): 55–59.
4. GERLACH UA, PASCHER A. Technical advances for abdominal wall closure after intestinal and multivisceral transplantation. *Curr Opin Organ Transplant* 2012; 17: 258–267.
5. YOSHIKUMI T, GONDOLESI G, BODIAN C, et al. A simple new formula to assess liver weight. *Transplant Proc* 2003; 35: 1415–1420.
6. GREVIOUS MA, IGBAL R, RAOFI V, et al. Staged approach for abdominal wound closure following combined liver and intestinal transplantation from living donors in pediatric patients. *Pediatr Transplant* 2009; 13: 177–181.
7. ALEXANDRIDES IJ, LIU P, MARSHALL DM, et al. Abdominal wall closure after intestinal transplantation. *Plast Reconstr Surg* 2000; 106: 805.