T-tube or No T-tube in Cadaveric Orthotopic Liver Transplantation: The Type of Tube Really Matters

To the Editor:

We read with great interest the study by Lopez-Andujar et al.,1 recently published in Annals of Surgery, describing the results of their large prospective randomized trial for biliary reconstruction with or without a temporary T-tube after orthotopic liver transplantation (OLT). We would like to congratulate the authors for this very interesting and well-conducted trial. In the article, the authors report an overall biliary complication (BC) rate of 25.5% in the T-tube group, including an incidence of anastomotic leak of 4.2%, both rates being comparable with those observed in the non–T-tube group. Notably, however, there was a significantly lower rate of anastomotic stenosis in the T-tube group (2.1% vs 14.1%; P = 0.002). In addition, the T-tube–related complication rate was 23%, with a 13.6% incidence of leaks after elective tube removal.

Biliary reconstruction using choledochocholedochostomy (CC) with a 2.5-mm rubber T-tube (Teleflex Medical, Willy Rusch, Kernen, Germany) has been the technique of choice at our institution since we initiated our orthotopic liver transplant program. From February 1996 to April 2010, we performed 833 orthotopic liver transplants; in 743 of these cases, T-tube CC was used for biliary reconstruction. We found a low overall rate of 9.8% for BC, including a rate of 2.3% for anastomotic stenosis and that of 5.2% for leaks.2 Of the total BC events, 2% were anastomotic leaks and 3.2% were leaks at the T-tube exit site. On the contrary, the overall incidence of T-tube–related complications was only 5.3% in our series, including rates of 1.1% for accidental removals and only 1% for leaks after elective removal 3 months after OLT, which seems remarkably lower than the rate of 13.6% found by Lopez-Andujar et al.1 Our results are in accordance with those of Weiss et al.,3 who found no complications after elective T-tube removal in a recent prospective trial focused on the use of T-tube after side-to-side CC.

It is worth noting that these 2 reports,2,3 with unusually good outcomes after using T-tubes, had in common the same technique for tube placement and the use of a 2.5-mm rubber T-tube. The role of tube material in stimulating tissue tract formation has been demonstrated in experimental models. In the study of Apalakis,4 red rubber tubes were found to be the most irritant, creating considerable tissue tract formation around them whereas silicon and polyvinyl chloride tubes were unsatisfactory for the lack of tract formation. Moreover, the importance of the material became evident in a recent well-conducted trial by Amador et al.5 That study used silicon T-tubes and results obtained were unacceptable for the T-tube group, with as many as 60% complications being T-tube–related including leak incidence after elective removal in 37.7% of cases. The role of the tube material is also addressed in the article by Lopez-Andujar et al, who observed a decrease in the tube removal complication rate from 22.6% to 2.4% after switching from an 8-Fr latex tube to a 2.5-mm rubber tube during the study period.

The decrease in severity of complications after using T-tubes is another important issue addressed by Lopez-Andujar et al. Complications in the non–T-tube group were type III complications (94%), including type IIIB complications in 44% of the cases whereas most of the complications observed in the T-tube group were mainly Clavien-Dindo type I/II (66.7%). Our experience is similar to these findings.2 Specifically, in our study, of the 73 BC events, around half (50.7%) were type II complications, a third (35.6%) were type IIIA complications, and 12.3% type IIIB complications. Remarkably, only 9 patients (1.2%) within our cohort needed surgery for the treatment of BC, with 6 patients requiring hepaticojejunostomy, meaning a conversion rate of just 0.8%. In our opinion, T-tube use permits cholangiography, avoiding other more aggressive diagnostic procedures, and facilitates the first therapeutic step in the event of a bile leak, either anastomotic or nonanastomotic, as simply opening the tube serves to decrease biliary tree pressure. In fact, 30 of 39 leaks (77%) were successfully treated in our cohort by opening the tube.

Taking into account that a significant reduction in BC events, including those related to elective tube removal, can be achieved by using 2.5-mm rubber T-tubes and that the severity of complications seems to decrease when a T-tube is used for biliary reconstruction, we fully agree with other authors5 that there are benefit in using a T-tube in all patients undergoing a CC reconstruction after OLT, not just in the high-risk transplants as stated by Lopez-Andujar et al.1 Furthermore, on the basis of the available data, a 2.5-mm rubber T-tube should be the tube of choice for biliary reconstruction and should be considered the gold standard for any future clinical trial designed to assess the impact of T-tube use after OLT.

Mikel Gastaca, MD
Andres Valdivieso, MD, PhD
Patricia Ruiz, MD
Alberto Ventoso, MD
Jorge Ortiz de Urbina, MD
Hepatobiliary Surgery and Liver Transplantation Unit
Cruces University Hospital
University of the Basque Country
Baracaldo, Vizcaya, Spain
mikelgastaca@gmail.com or mikel.gastacamateo@osakidetza.net

REFERENCES