

The era of T- tube drainage in bile duct exploration is coming to an end

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Dear Editor,

The management of a T-tube placed in the common bile duct after bile duct exploration was a popular question in surgical vivas since most surgical procedures related to the common bile duct resulted in bile duct closure over a T-tube. At the time, placement of a T-tube was thought necessary because of poor healing in the bile duct, ampullary spasm leading to increase biliary pressure, ability to use a T-tube tract to remove retained stones, and facilitate drainage of bile across a biliary anastomosis.

This traditional approach has changed rapidly in many hepatobiliary centres. At present, complex biliary reconstructions are managed without a T-tube. All previously considered advantages of T-tubes have been negated by technical refinement. In fact, in a recent meta-analysis by Yin et al, the authors have indicated that a T-tube may result in significant morbidity [1].

Poor healing of bile ducts leading to bile leaks is no longer a valid argument. In living donor liver transplantation, segmental ducts as small as 3 mm are anastomosed. In these, the main concern is late strictures, developing in 5% to 10% of patients. Initially, where bile ducts were anastomosed over fine T-tubes, it was shown that the stricture rate increased when a T-tube or a stent was used [2]. Thus, stents are no longer used in standard liver transplant. Instead, we use fine monofilament sutures (5/0 or 6/0 polydioxone) with 6 to 8 individual sutures per layer in a magnified field, for optimum results. Using such standardized techniques, bile leaks or biliary anastomotic obstruction is not frequent.

Therefore, if small ducts may be anastomosed safely without leaks, what is the need of a T-tube in closure of a dilated bile duct in the era of ERCP? In present day practice, most patients with suspected biliary obstruction undergo endoscopic retrograde pancreatocolangiogram (ERCP) before surgery for sphincterotomy and placement of internal biliary stents. Furthermore, even if a small stone is retained after surgery ERCP is often successful. Intra-operative choledochoscopy has also facilitated confirmation of a clear duct before closure of a choledochotomy, reducing the need for T-tube closure. In the absence of a dedicated choledochoscope, a flexible cystoscope or bronchoscope may be used as an alternative.

There have been over a hundred publications in Pub-Med in the previous 3 years advocating avoidance of the use of T-tube drainage after biliary surgery. All of these show equal or better results with lesser morbidity and hospital stay when T-tubes were not used.

Reference

1. Yin Z, Xu K, Sun J, Zhang J, Xiao Z, Wang J, et al. Is the End of the T-Tube Drainage Era in Laparoscopic Choledochotomy for Common Bile Duct Stones Is Coming? A Systematic Review and Meta-Analysis. *Annals of Surgery*. 2013;257(1):54-66.
2. Qian YB, Liu CL, Lo CM, Fan ST. Risk factors for biliary complications after liver transplantation. *Arch Surg* 2004 Oct;139(10):1101-5.

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