Editorial

Feasibility of the conversion of percutaneous cholecystostomy to internal transmural endoscopic ultrasound-guided gallbladder drainage

Percutaneous cholecystostomy, or percutaneous transhepatic gall bladder drainage (PTGBD) has traditionally been performed in patients suffering from acute cholecystitis and who are at a high risk for cholecystectomy. It can be a temporary measure to allow drainage of the gallbladder before the patient could be reassessed for surgery, or it could be a definite means of allowing long-term gallbladder drainage. Nevertheless, PTGBD is associated with a 0–25% risk of tube-related complications including dislodgement, leakage, and blockade.[1] Furthermore, the external catheter is associated with discomfort, pain, and cosmetic disfigurement, and continued care for the cholecystostomytube is required.

Therefore, endoscopic alternatives to gallbladder drainage have been developed.[2] These include endoscopic transpapillary gallbladder drainage and endoscopic ultrasound (EUS)-guided gallbladder drainage (EGBD).[3-7] Recently, EGBD is gaining popularity as the procedure of choice because multiple retrospective studies have shown that the procedure is associated with reduced risk of adverse events, unplanned admissions, and re-interventions compared to PTGBD.[8-12] Furthermore, peroral cholecystostomy through the stent for gallstone removal is feasible and complete stone clearance could be achieved in 88% of the patients.[13]

EGBD could be performed by plastic stents, biliary covered metal stents, or lumen apposing metal stents (LAMS).[14,15] There are no studies comparing the efficacy and outcomes of different types of stents for EGBD. However, when performing EGBD, the integrity of the anastomosis between the gallbladder and gastrointestinal tract depends on the properties of the stents. Hence, it is reasonable to recommend the use of biliary covered metal stents or LAMS over plastic stents for EGBD to prevent the chance of leak or migration. Furthermore, in a study comparing the lumen apposing force (LAF) of different types of LAMS, it was observed that, even with LAMS, different stent designs would affect the LAF.[15] Hence, LAMS with higher LAF should be recommended for performance of EGBD. The use of these stents may in turn avoid adverse events as reported in the current study by Chantarojarasiri *et al.* in this issue of the Journal.[16]

On the other hand, EGBD could be performed in patients suffering from acute cholecystitis or as a method to convert percutaneous cholecystostomy to internal drainage.[17] As illustrated in the current study,[16] the benefit of converting percutaneous cholecystostomy to internal drainage is avoidance of an external catheter and potential complications associated with the use of these catheters. However, it is also important is note that not all gallbladders are the same when performing EGBD. In patients with prior percutaneous drainage, the gallbladder is frequently fibrotic and contracted. Thus, it may be more difficult to perform EUS-guided drainage. One could use the percutaneous catheter to inject saline or contrast to distend the gallbladder. However, the presence of a patent cystic duct may limit the effectiveness of distending the gallbladder.

In conclusion, EGBD is gaining popularity worldwide for gallbladder drainage in patients who are not candidates for cholecystectomy. A randomized trial is currently underway to compare both techniques in high-risk patients. EGBD may replace percutaneous drainage as the procedure of choice in patients who are at high-risk for cholecystectomy.

Anthony Y. B. Teoh

Department of Surgery, Prince of Wales Hospital, The Chinese University of Hong Kong, Shatin, Hong Kong SAR, China

Address for correspondence: Prof. Anthony Y. B. Teoh, Department of Surgery, Prince of Wales Hospital, The Chinese University of Hong Kong, Shatin, Hong Kong SAR, China.
E-mail: anthonyteoh@surgery.cuhk.edu.hk

REFERENCES

1. Winbladh A, Gullstrand P, Svanvik J, Sandstrom P. Systematic review of cholecystostomy as a treatment option in acute cholecystitis. HPB (Oxford) 2009;11:183-93.
2. Yeung B, Teoh AY. Endoscopic Management of Gallbladder Stones: Can We Eliminate Cholecystectomy? Curr Gastroenterol Rep 2016;18:42.
3. Walter D, Teoh AY, Itoi T, Perez-Miranda M, Larghi A, Sanchez-Yague A, *et al.* EUS-guided gall bladder drainage with a lumen-apposing metal stent: A prospective long-term evaluation. Gut 2016;65:6-8.

4. Dollhopf M, Larghi A, Will U, Rimbas M, Anderloni A, Sanchez-Yague A, *et al*. EUS-guided gallbladder drainage in patients with acute cholecystitis and high surgical risk using an electrocautery-enhanced lumen-apposing metal stent device. Gastrointest Endosc 2017;86:636-43.
5. Itoi T, Kawakami H, Katanuma A, Irisawa A, Sofuni A, Itokawa F, *et al*. Endoscopic nasogallbladder tube or stent placement in acute cholecystitis: A preliminary prospective randomized trial in Japan (with videos). Gastrointest Endosc 2015;81:111-8.
6. Itoi T, Sofuni A, Itokawa F, Tsuchiya T, Kurihara T, Ishii K, *et al*. Endoscopic transpapillary gallbladder drainage in patients with acute cholecystitis in whom percutaneous transhepatic approach is contraindicated or anatomically impossible (with video). Gastrointest Endosc 2008;68:455-60.
7. Jang JW, Lee SS, Park DH, Seo DW, Lee SK, Kim MH. Feasibility and safety of EUS-guided transgastric/transduodenal gallbladder drainage with single-step placement of a modified covered self-expandable metal stent in patients unsuitable for cholecystectomy. Gastrointest Endosc 2011;74:176-81.
8. Teoh AY, Serna C, Penas I, Chong CC, Perez-Miranda M, Ng EK, *et al*. Endoscopic ultrasound-guided gallbladder drainage reduces adverse events compared with percutaneous cholecystostomy in patients who are unfit for cholecystectomy. Endoscopy 2017;49:130-8.
9. Irani S, Ngamruengphong S, Teoh A, Will U, Nieto J, Abu Dayyeh BK, *et al*. Similar efficacies of endoscopic ultrasound gallbladder drainage with a lumen-apposing metal stent versus percutaneous transhepatic gallbladder drainage for acute cholecystitis. Clin Gastroenterol Hepatol 2017;15:738-45.
10. Tyberg A, Saumoy M, Sequeiros EV, Giovannini M, Artifon E, Teoh A, *et al*. EUS-guided Versus Percutaneous Gallbladder Drainage: Isn't It Time to Convert? J Clin Gastroenterol 2016 [Epub ahead of print].
11. Itoi T, Takada T, Hwang TL, Endo I, Akazawa K, Miura F, *et al*. Percutaneous and endoscopic gallbladder drainage for the acute cholecystitis: International multicenter comparative study by a propensity score-matched analysis. J Hepatobiliary Pancreat Sci 2017;24:362-8.
12. Jang JW, Lee SS, Song TJ, Hyun YS, Park DY, Seo DW, *et al*. Endoscopic ultrasound-guided transmural and percutaneous transhepatic gallbladder drainage are comparable for acute cholecystitis. Gastroenterology 2012;142:805-11.
13. Chan SM, Teoh AY, Yip HC, Wong VW, Chiu PW, Ng EK. Feasibility of per-oral cholecystoscopy and advanced gallbladder interventions after EUS-guided gallbladder stenting (with video). Gastrointest Endosc 2017;85:1225-32.
14. Itoi T, Coelho-Prabhu N, Baron TH. Endoscopic gallbladder drainage for management of acute cholecystitis. Gastrointest Endosc 2010;71:1038-45.
15. Teoh AY, Ng EK, Chan SM, Lai M, Moran S, Binmoeller KF, *et al*. *Ex vivo* comparison of the lumen-apposing properties of EUS-specific stents (with video). Gastrointest Endosc 2016;84:62-8.
16. Chantarojanasiri T, Matsubara S, Isayama H, Nakai Y, Takahara N, Mizuno S, *et al*. Feasibility of conversion of percutaneous cholecystostomy to internal transmural endoscopic ultrasound-guided gallbladder drainage. Saudi J Gastroenterol 2017;23:318-22.
17. Law R, Grimm IS, Stavas JM, Baron TH. Conversion of percutaneous cholecystostomy to internal transmural gallbladder drainage using an endoscopic ultrasound-guided, lumen-apposing metal stent. Clin Gastroenterol Hepatol 2016;14:476-80.

Access this article online

Quick Response Code:	Website: www.saudijgastro.com
	DOI: 10.4103/sjg.SJG_436_17

How to cite this article: Teoh AY. Feasibility of the conversion of percutaneous cholecystostomy to internal transmural endoscopic ultrasound-guided gallbladder drainage. Saudi J Gastroenterol 2017;23:309-10.