NEW TECHNIQUE

Wire guided balloon assisted endoscopic biliary stent exchange

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Abstract

A simple technique of endoscopic stent exchange using a biliary dilatation balloon is described. The technique is appropriate in patients with bile duct malignancy in whom clogging of a previously placed straight stent has occurred. Balloon assisted exchange has been used in 25 patients to date and minimises the risks of failure of stent reinsertion and the need for further procedures in patients with limited life expectancy.

Endoscopically placed stents are commonly used for the management of inoperable malignant biliary obstruction and occasionally for benign bile duct disease. Stents have a limited life span, ultimately clogging with biliary and bacterial debris.¹ When change is necessary most endoscopists simply extract the stent by snaring the duodenal portion withdrawing the stent and endoscope completely or leaving the stent in

the stomach for retrieval at the end of the procedure.² The bile duct and tumour are then recannulated and a fresh stent inserted. Occasionally recannulation is difficult or fails. This may lead to the need for further endoscopic or percutaneous procedures to replace the stent. A technique is described which avoids loss of access across the stricture and ensures rapid stent replacement. Although a similar technique performed on two patients has been reported previously,³ the method described required the use of a purpose designed stent, introducer, and repositioning kit whereas the technique described here is applicable to all currently available endoscopic stents using readily available materials.

Methods (Figs 1-4)

A large channel therapeutic duodenoscope (Olympus TJF20 or equivalent) is inserted into the duodenum and a 5 Fr endoscopic retrograde

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Figure 1: Old biliary stent has been cannulated with guidewire through standard endoscopic retrograde cholangiopancreatographic catheter.

Figure 2: Dilatation balloon has replaced catheter. Balloon lies between visible metal markers within stent lumen.

Figure 3: Stent has been withdrawn leaving guidewire in position.

Figure 4: Fresh stent inserted.

cholangiopancreatographic catheter capable of accepting a 0.035 inch guidewire is negotiated into the lumen of the stent. Contrast medium can be injected for cholangiography. A 350–400 cm long teflon coated 0.035 inch guidewire (Wilson Cook Europe, Letchworth, UK) is passed through the catheter up the stent and into the intrahepatic duct system. The catheter is removed leaving the guidewire in position. If the duodenal portion of the stent is unfavourably orientated to allow cannulation a gentle curve can be applied to the tip of the guidewire which when protruding from the tip of the catheter can aid access to the stent lumen. A 6 Fr 180 cm long Olbert balloon catheter (4 mm diameter, 2.5 cm long) (Meadox UK, Dunstable, Beds) is passed over the guidewire and negotiated into the lower portion of the stent. The balloon should be completely within the stent before inflation with water by firm manual pressure. Using a gentle but firm and consistent pull the balloon catheter and stent are withdrawn up into the endoscope and out through the biopsy port while an assistant feeds the guidewire through the balloon catheter. The position of the guidewire is maintained under intermittent fluoroscopic control. Once the old stent is withdrawn a new stent can be inserted using the guidewire in a standard manner.

Results

To date 25 patients have been treated with this technique. Failure occurred in four patients during the early stage of development when a 4 cm long balloon was used which could not

always be completely inserted into the stent. An overinflated portion of the balloon outside the stent tended to obstruct withdrawal; partial deflation to relieve this allowed the stent to slip off the balloon. Since the 2.5 cm balloon has been used only one failure has occurred. Insertion of the catheter into the lumen of the duodenal end of the stent and passage of a guidewire up even clinically blocked stents is virtually always achievable. The technique allows extraction of either 10 or 11.5 Fr stents of all lengths. Although the anchoring flap on the stent which lies above the level of the tumour everts when the stent is withdrawn into the endoscope this does not obstruct withdrawal. If the balloon should become dislodged from the stent, deflation and repositioning is easily achieved even if the stent is within the endoscope. In all but one patient in this series managed with the 2.5 cm balloon, stent replacement has been successfully accomplished without complication.

Discussion

No information is available on how frequently stent replacement fails, although the experience at this hospital indicates that in approximately 10% of patients difficulty will be encountered in recannulating the papilla or the tumour for stent reinsertion. This may at least lead to repeat endoscopic retrograde cholangiopancreatography and has led to the need for combined percutaneous and endoscopic procedures to replace the stent. It may be that endoscopic sphincterotomy before initial stent insertion allows easier stent replacement, but stents can

usually be inserted through the intact papilla thus avoiding the possible complications of sphincterotomy. Guaranteed rapid, single procedure stent replacement is an advantage to the patient with a limited life expectancy and should minimise costs due to repeat procedures and longer stay in hospital. However, the Olbert balloon catheter is expensive and this inevitably increases the cost of stent exchange. Although the manufacturers recommend that balloon catheters should be used only once, there does

not seem to be any deterioration of function of catheters which are reused.

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- 3 Thon HJ, Lerch MM, Matern S. A new technique for endoscopic implantation and explantation of large-bore biliary endoprotheses in patients with non-surgical common bile duct obstruction. *Endoscopy* 1987; 19: 211-5.