

## Reply to: A few thoughts on “Interventional radiology in the management of benign biliary stenoses, biliary leaks and fistulas: a pictorial review”

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Dear Editor,

We would like to thank the authors of the interesting letter commenting on our recent pictorial review on benign biliary stenoses, biliary leaks and fistulas.

We agree with the authors that the use of biodegradable stents may indeed be a potentially promising option for the treatment of benign biliary stenoses; however there are no series published yet but just sporadic case reports. The biodegradable biliary stent that is commercially available is the Ella-DV (Ella-CS, Czech Republic) and is made from and absorbable polydioxanone suture. Polydioxanone is a polymer that degrades by hydrolysis of its ester bonds. The main problem with this device is that it requires a 15Fr sheath for insertion in the biliary tree, which in the majority of patients is expected to cause major discomfort and complications due to the approach through the intercostal spaces. In

addition the use of the same device in the oesophagus has proven to lead to a local inflammatory reaction based on the degradation process of the matrixes' amorphous regions and led to early stent dysfunction, which also may raise some concerns regarding the stent's patency [1]. Furthermore the radial force achieved with a polymer is much smaller than the radial force obtained with a covered retrievable metallic stent, and it is very unlikely to be able to maintain open very tight anastomotic strictures that might require several balloon dilatations to obtain a satisfactory lumen. Therefore the use of biodegradable stents is very limited in benign biliary strictures for the moment.

We also agree that in case of biliary leaks the main approach is based on bile flow diversion. We extensively described the necessity of percutaneous drainage of collections combined with positioning of drains in the biliary system; in particular in the case that there is also a stenosis in the biliary system a stent might be required, like in the case shown in Figure 2 [2]. The use of occlusion balloons might be of help; however there is only a very small series of seven patients described where the occlusion balloon was used in combination with a large drain [3]. Even though there are promising results it appears that it is very hard to help the balloon maintain the position in the biliary system without slipping caudally.

Finally, we agree that the use of glue may be of help in sealing small leaks; however in the cases where laceration and obstruction of the common hepatic duct occurred, like the case shown in Figure 3, it is very unlikely that glue might be of any help in our view.

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