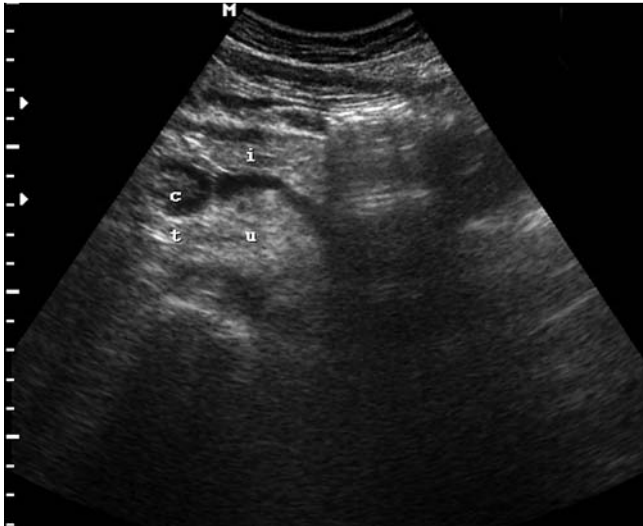


## Life-threatening hemorrhage caused by balloon dilation after sphincterotomy for extraction of a large stone



**Fig. 1** Ultrasound showing longitudinal section of pancreas (u, t, i) and choledocholithiasis (c).



**Fig. 2** Bloodless needle-knife precut.



**Fig. 3** **a** Dilation at 13 mm with 12–15 mm CRE balloon. Note the persisting notch sign. **b** After further injection at 15 mm, the notch has disappeared.

Large balloon dilation after sphincterotomy is carried out for stones that are too big [1–7] and also in cases where the terminal bile ducts are too small [1,7]. It was first described in 2003 [1] and is different from balloon sphincteroplasty without sphincterotomy. Severe bleeding following the procedure has been reported only twice [2,3].

A 39-year-old man was referred for ultrasound as his jaundice had not improved 1 month after stopping alcohol. A 16-mm stone, blocking the lower choledochus (Fig. 1), was seen along with dilated bile ducts.

The bilirubin level was 165  $\mu\text{mol/L}$  and creatinine and coagulation tests were normal. The patient was taking no medication. Retrograde cannulation of the papilla

had failed. A needle-knife section of the papilla was easy to carry out and bloodless (Fig. 2), as was a sphincterotomy.

However, the balloon procedure failed to extract the stone. Progressive dilation with a CRE balloon, 12–15 mm (Boston Scientific, Nanterre Cedex, France), allowed disappearance of the notch sign at 15 mm (Figs. 3 and 4) with the usual technique [1–7].

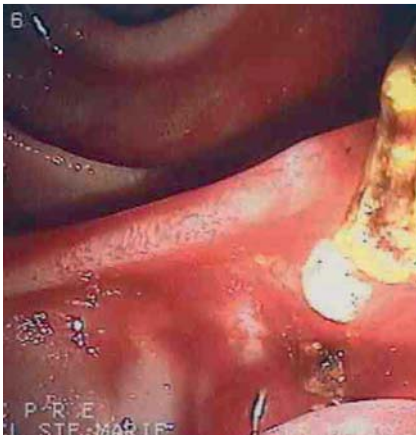
Total duration of the procedure was 1 minute. Stone extraction with the latex balloon was easily accomplished and elicited routine, low grade oozing of blood (Fig. 5).

At 2 hours, however, the patient had a massive bleed from a large artery, impeding vision. Injection of 20 mL of 1:10 000 epinephrine failed to stop the bleeding

but surgery involving over-sewing was successful. Bleeding recurred the next day with temporary cardiac arrest. A second attempt at intervention could not visualize the bleeding artery and more of the bleeding region was sewn up. However, the bleeding failed to stop and embolization was carried out to occlude one of the two arteries. The third attempt at intervention succeeded and involved further over-sewing of the papilla. There was evidence of pancreatitis with cyto-steatonecrosis. Bleeding did not recur but severe, infected necrotizing pancreatitis and a duodenal fistula necessitated 3 months' stay in an intensive care unit. A total of 18 units of packed red cells, 16 units of fresh frozen plasma, and 2 units of concentrated platelets were infused.



**Fig. 4** No bleeding after balloon collapse.



**Fig. 5** Low grade bleeding after stone extraction.

Balloon dilation of a narrow, lower main bile duct or after a sphincterotomy that is too small to allow extraction of the stone has been recently introduced [1] and is an attractive method. Dilation after needle-knife papillotomy plus sphincterotomy has been already described [4]. The method used in the present case was in keeping with other publications [1–7]. It is obvious that dilation should be just en-

ough to allow easy extraction. Progressive dilation of the CRE balloon allows precise dilation, and the two main criteria for success seem to be disappearance of the notch sign [1,3] and diameter of dilation similar to that of the stone [1,2]. Indeed, it is difficult to discern between the role of the dilation and of trauma of extraction in cases of delayed bleeding.

As mentioned previously severe bleeding has been described in two published reports. One of these specifically reported, similar to the present case, arterial spurt- ing that was not responsive to endoscopy and was treated by embolization [3]. In the second, the bleeding led to death [2] but the nature of the hemorrhage was not specified. Moderate bleeding has been reported in five other cases [1,3–5], and it can also be delayed [4]. Of the total reported large balloon dilations (n = 870), 0.11% had fatal hemorrhage, 0.22% had severe, and 0.57% moderate bleeding. Slight bleeding after collapsing of the bal- loon is not serious.

At present no factors that encourage bleeding have been described, or those that would help prevent it. Pancreatitis in the present case was most probably due to the surgery. However, 15 cases of acute moderate pancreatitis (0.17% of 870) [3,5] have been reported. Large balloon dilation sphincterotomy is an exciting al- ternative to mechanical lithotripsy, as it is simple, quick, and efficient. Moreover, it allows easy delayed evacuation of calcu- lous debris. It should, however, be kept in mind that this procedure is not innocuous and that severe, and even fatal, bleeding can occur and cannot be predicted at present.

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**Competing interests:** None

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## References

- 1 Ersoz G, Tekesin O, Ozutemiz AO et al. Biliary sphincterotomy plus dilation with a large balloon for bile duct stones that are difficult to extract. *Gastrointest Endosc* 2003; 57: 156–159
- 2 Byungmoo Y, Jinhong K, Jaehak J et al. Large balloon sphincteroplasty along with or without sphincterotomy in patients with large extrahepatic bile duct stones – multi center study. *Gastrointest Endosc* 2007; 65: AB97
- 3 Attasaranya S, Cheon YK, Vittal H et al. Large-diameter biliary orifice balloon dilation to aid in endoscopic bile duct stone removal: a multicenter series. *Gastrointest Endosc* 2008; 67: 1046–1052
- 4 Park SY, Park CH, Yoon KW et al. Endoscopic large-diameter balloon dilation after fistu- lotomy for the removal of bile duct stones in a difficult cannulation. *Gastrointest Endosc* 2009; 69: 955–959
- 5 García-Cano J, Arana LT, Ayllón CJ et al. Bili- ary sphincterotomy dilation for the extrac- tion of difficult common bile duct stones. *Rev Esp Enferm Dig* 2009; 101: 541–545
- 6 Draganov PV, Evans W, Fazel A et al. Large size balloon dilation of the ampulla after biliary sphincterotomy can facilitate endo- scopic extraction of difficult bile duct stones. *J Clin Gastroenterol* 2009; 43: 782–786
- 7 Maydeo A, Bhandari SP. Balloon sphinctero- plasty for removing difficult bile duct stones. *Endoscopy* 2007; 39: 958–961

## Bibliography

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