

## Off-label PuraStat use for the treatment of acute intrahepatic biliary duct bleeding



PuraStat (3-D Matrix Europe SAS, France) is a novel self-assembling peptide hemostatic hydrogel that currently is used in surgery and in digestive endoscopy, where it has been shown to be effective and safe as a rescue therapy for both upper and lower acute gastrointestinal bleeding [1] and as prophylactic treatment after wide endoscopic mucosal resections and submucosal dissections [2]. We performed cholangioscopy (Spyglass DSII, US Boston Scientific) in a 78-year-old man with cholangitis and massive hepatolithiasis. After electrohydraulic lithotripsy (Northgate Autolith IEHL) and stone fragment retrieval, fresh blood started oozing from one of the intrahepatic biliary ducts, inside a biliary cystic dilatation at the IV hepatic segment. Because the bleeding site was inaccessible using endoscopic hemostatic devices, a feasible option was off-label application of hemostatic hydrogel. The hemostatic hydrogel catheter is compatible with a 2.8-mm diameter working channel, whereas the cholangioscope working channel has a 1.2-mm diameter. Therefore, we transferred the hemostat-

ic hydrogel from the 1-mL prefilled syringe to a 10-ml Luer-lock syringe. After suctioning out the previously instilled 0.9% saline to avoid dissolving the hemostatic agent, we pushed the hemostatic hydrogel through the working channel, aiding its progression with an air-filled syringe (**▶ Video 1**). The hemostatic hydrogel effectively covered the bleeding point, resulting in complete hemostasis.

Both cholangioscopy and hemostatic hydrogel application within biliary ducts would seem situations of increased risk for subsequent cholangitis; however, the formulation of the hemostatic hydrogel is water-based, unlike other hemostatic agents available, which are powders. Moreover, as recommended, we administered an intravenous antibiotic before the procedure and we monitored the patient on the ward. No further cholangitis or bleeding episodes occurred, and the patient was discharged home 3 days later.

## Conclusions

In conclusion, off-label hemostatic hydrogel application may be useful for obtaining hemostasis in the biliary tract, where procedures or devices such as injection of diluted epinephrine and clip deployment are technically not applicable.

## Competing interests

The authors declare that they have no conflict of interest.

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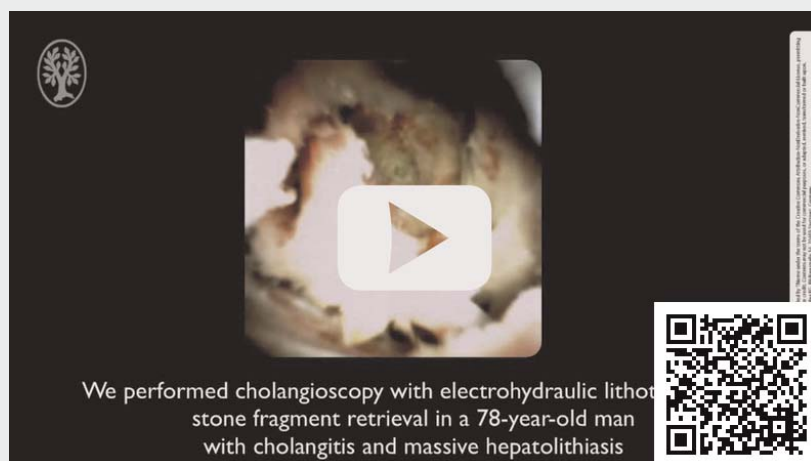
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## ▶ VIDEO



▶ **Video 1** Full-length video showing the procedure.

## Bibliography

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