

Dilation Assisted Stone Extraction (DASE)

technique spotlight



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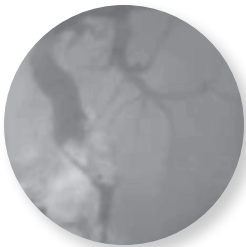
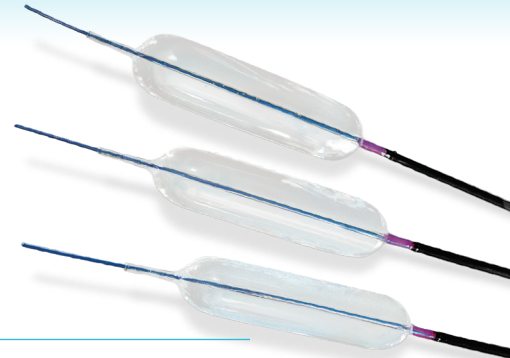


Figure 1

Cholangiogram with
Large Filling Defects
(Stones)

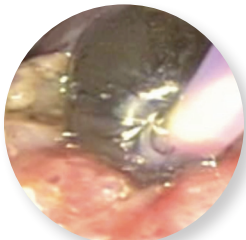


Figure 2

Endoscopic View of CRE
Dilating Balloon

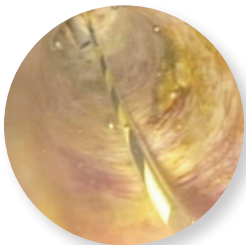


Figure 3

Endoscopic View of
Bile Duct Through
Dilating Balloon

History

A 63 year old male status post cholecystectomy presented to the hospital with fever and altered mental status. On further evaluation he was noted to have elevated liver function testing. His transabdominal ultrasound showed a dilated common bile duct with an internal 2cm shadowing stone. Following medical treatment of cholangitis with antibiotics, the patient was referred for ERCP for definitive management of choledocholithiasis.

Procedure

At the time of ERCP a cholangiogram showed a dilated common bile duct (up to 2.5cm) with several large filling defects (measuring more than 2 cm). A biliary sphincterotomy was performed. Given the distal narrowing of the bile duct and the size discrepancy of the bile duct stone and the biliary orifice, a decision was made to perform Dilation Assisted Stone Extraction (DASE). This was accomplished by incremental wire guided hydrostatic balloon dilation using the CRE Wireguided Balloon beginning at 15mm up to 20mm. An initial waist seen on fluoroscopy was obliterated at the end of dilation. Following this maneuver, attempts were made to extract the large stones using a 3cm wire guided basket. However, once captured, the large stone was unable to be pulled out of the bile duct, resulting in a trapped basket and stone. Attempts at mechanical lithotripsy failed, resulting in fracture of the basket wire and retained basket and stone. The trapped basket was subsequently removed using another wire guided basket, however the stone remained within the bile duct. A decision was made to proceed with per oral cholangioscopy (Spyglass System) for mechanical lithotripsy under direct visualization. Once mounted, the Spyglass Scope was inserted into the bile duct and the large pigmented gallstone was identified. Then, using a Holmium laser probe, laser lithotripsy was performed (1J, 10 pulses per second; 10 Watts) with resultant fragmentation of the stone. The stone fragments were then extracted using wire guided baskets and biliary extraction balloons. However, despite this some stone material remained. Therefore, the decision was made to stent the bile duct to facilitate drainage and further facilitate stone fragmentation.



Endoscopy

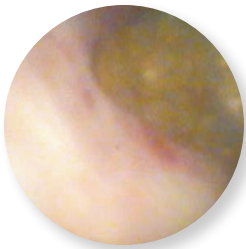


Figure 4
Spyglass
Cholelithiasis



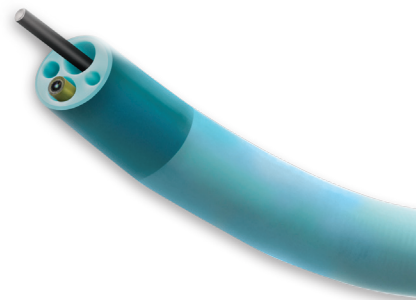
Figure 5
Spyglass with Holmium
Laser Lithotripsy

Outcome/Post Procedure

The patient tolerated the procedure well without any resultant complications. The patient was placed on ursodiol 300 mg by mouth three times per day to treat the remaining choledocholithiasis. The patient was discharged from the hospital the following day with plans to return for repeat ERCP with cholangioscopy and further laser lithotripsy, stone extraction, and stent removal.

Conclusion

In summary this case illustrates the use of advanced techniques for the management of very difficult, large bile duct stones. Following biliary sphincterotomy, the application of the DASE technique using CRE Wireguided Balloon Dilator facilitates the removal of large stones and fragments. Furthermore, as the case demonstrates, baskets and stones can become trapped within the bile duct, ordinarily resulting in the need for surgery. However, as in this case, trapped baskets may be removed by using another basket. Furthermore, when traditional Sohendra mechanical lithotripsy fails, Spyglass System assisted laser lithotripsy under direct visualization results in enhanced stone fragmentation, facilitating removal of stone material. In our practice, both DASE and direct cholangioscopy assisted mechanical lithotripsy are utilized in treating difficult, large common bile duct stones.



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