

Holmium-YAG Laser Lithotripsy in the Treatment of Difficult Biliary Stones Utilizing Peroral Single Operator Cholangioscopy (SpyGlass): A Multi-Center Experience

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INTRODUCTION

5-10% of biliary stones are not amenable to standard endoscopic extraction techniques. Electrohydraulic and laser lithotripsy have been shown to be very effective in this setting but have been utilized sparingly. The recent development of single operator steerable cholangioscopy (SpyGlass, Boston Scientific, Natick, MA) now permits for routine use of these technologies.

We report our multi-center cumulative experience of using Holmium:YAG laser lithotripsy with SpyGlass cholangioscopy in the management of difficult intraductal biliary stones.

METHODS

Patients presenting with refractory bile duct stones underwent ERCP with SpyGlass and Holmium:YAG lithotripsy using a SlimLine GI disposable laser probe (Lumenis, Santa Clara, CA). ERCP with SpyGlass was performed in the standard fashion. Once the stones were visually identified, the laser probe was placed in very close proximity to the stone and short bursts (< 5 sec) of energy (8-12 Watts) were applied until adequate fragmentation was achieved. Repeat ERCP sessions were performed as needed to achieve complete stone clearance. Safety and efficacy parameters were retrospectively collected utilizing a standardized data collection form.

RESULTS

31 pts (8 male, 23 female; mean age of 59.2 years ranging from 20-95) underwent holmium:YAG lithotripsy at four participating centers.

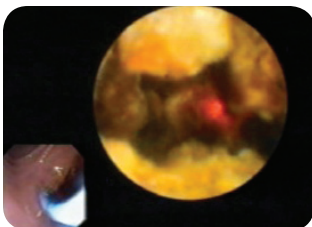


Figure 1

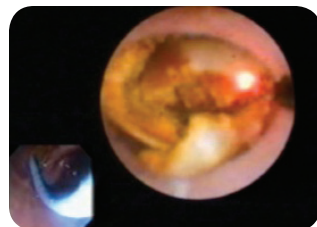


Figure 2

Procedural Outcomes	
Total number of patients	31
Patients with impacted stones	18/31 (58%)
Stone in CBD	23/31 (74.2%)
Stone in CHD	6/31 (19.3%)
Stone in IHBD	1/31 (3.2%)
Stone in CD	1/31 (3.2%)
Intra-ductal stone size	μ = 19.3 mm (9-30 mm)
Prior failed ERCP attempts	μ = 1.8 (1-6)
Sessions needed for ductal clearance	μ = 1.2
Patients requiring one session	23/31 (74.2%)
Attained ductal clearance	31/31 (100%)
Procedural time	μ = 77.5 mm (5-105 mm)
Procedural-related complications	0/31 (0%)

CONCLUSIONS

- Peroral single operator (SpyGlass)- guided holmium:YAG lithotripsy is a safe and effective procedure in patients with difficult to manage biliary stones.
- Early utilization of this procedure may spare these patients unnecessary repeated ERCPs and the associated potential morbidity.

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