

**NAME:** John  
**AGE:** 52-year-old  
**PATIENT CHARACTERISTICS:**  
large stone in distal common bile duct

## START OF SYMPTOMS



Admitted to **emergency room** for assessment

**Symptoms**  
Severe right upper quadrant pain for over 1 week, with abnormal liver enzymes

### Magnetic resonance cholangiopancreatography results

- 25 mm filling defect in the distal common bile duct
- Upstream dilatation of the common bile duct (CBD), common hepatic ducts and intrahepatic bile duct
- Distended gallbladder

Undergoes ERCP

### Cholangiogram results

- Large oval-shaped filling defect in distal CBD
- 2.8 cm
- Multiple small filling defects

• ESGE recommends limited sphincterotomy combined with endoscopic papillary large-balloon dilation as the **first line approach** to remove difficult CBD

• The **CRE™ RX Biliary Balloon Dilatation Catheter** is indicated for use in adults for endoscopic dilatation of the sphincter of Oddi with or without prior sphincterotomy. The **CRE™ RX Biliary Balloon Dilatation Catheters** may be used for injection of contrast medium for fluoroscopic visualisation of the bile ducts. Compatible with the RX short-wire system, the guidewire can be locked in place with the **AutoCap™ RX** locking device to maintain control of the guidewire



### Dilatation Assisted Stone Extraction with CRE™ Balloon Dilatation Catheters

[Learn more about CRE™ Balloon Dilatation Catheters](#)

#### Procedure steps:

- Endoscopic sphincterotomy
- Large balloon sphincteroplasty (up to 15 mm)
- Stone extraction balloon

The stone could not be retrieved

The clinician during the initial ERCP intervened with **SpyGlass™ DS Direct Visualization System**

The cholangioscopy was performed which showed a large CBD stone that was impacted in distal CBD

• In the context of ERCP, patients may benefit from direct visualization with the **SpyGlass™ DS Direct Visualisation System** as it may enable:<sup>1</sup>

- More efficient clinical evaluations compared to traditional ERCP
- A reduction in repeat procedures

[Discover SpyGlass™ DS Direct Visualization System](#)



The impacted distal bile duct stone was fragmented using **Autolith™ Touch Biliary EHL System**

### Learn more about Autolith™ Touch Biliary EHL System

#### The Autolith™ Touch Biliary EHL System

- Designed for ease and efficiency, EHL represents a safe and effective technique to achieve stone clearance in complex cases, by using shockwaves to fragment stones<sup>2</sup>
- Cost-effective compared to repeat ERCP procedures without direct visualisation<sup>3</sup>
- **ESGE recommends** the use of cholangioscopy assisted intraluminal lithotripsy as an effective and safe treatment of difficult bile ducts

SpyGlass™ cholangioscopy was repeated after fragmenting the distal bile duct stone and clearing the fragments utilising the **Extractor™ Pro RX-S Retrieval Balloon**

#### Cholangiogram results

- Another large, impacted stone was protruding out from the cystic duct partially occluding the bile duct lumen (**type IV Mirizzi syndrome based on Csendes classification**)

### Learn more about Extractor™ Pro RX-S Retrieval Balloon

- Initial MRCP did not show any cystic duct stone
- The impacted cystic duct stone was completely fragmented with EHL

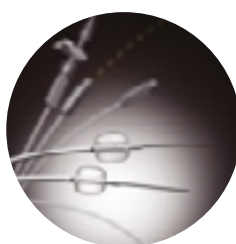
• Managing CBD stones with balloon or basket catheters can be challenging due to specific stone features, their location, the anatomical characteristics of the biliary tract, or the patient's clinical needs

• In such cases, a **combined approach** of direct visualisation and a powerful, precise fragmentation may enable optimal outcomes

• In a recent study, 15/50 patients (30%) were found to have residual biliary stones that were not seen by occlusion cholangiography but were detected when the **SpyGlass™ DS System** was used<sup>4</sup>

• The **SpyGlass™ Retrieval Basket** can be used to capture and remove residual biliary and pancreatic stones and stone fragments visualised with the **SpyGlass™ DS System**

- **Final inspection with SpyGlass™ DS**, stone fragments and small fragments were observed
- **Fragments removed with SpyGlass™ Retrieval Basket**, patency passage of bile duct and cystic duct was restored



Using the **Extractor™ Pro Retrieval Balloon Catheter**, stone fragments were removed

### Learn more about Extractor™ Pro Retrieval Balloon Catheters and SpyGlass™ Retrieval Basket



#### Post-procedure:

John improved symptomatically and was discharged from the hospital the next day

Complete stone clearance with **SpyGlass™ DS** assisted EHL in type IV Mirizzi syndrome requiring surgical interventions

High resolution imaging with **SpyGlass™ DS** facilitates stone removal

John was finally able to experience a sense of relief from his discomfort, and he expressed gratitude towards his medical team for their expertise and care



**Every patient. Multiple solutions.**

**Abbreviations:**  
CBD: Common bile duct; EHL: Electrohydraulic lithotripsy; ERCP: Electrohydraulic lithotripsy; ESGE: European society of gastrointestinal endoscopy

**References:**  
1. Draganov PV, et al. Diagnostic accuracy of conventional and cholangioscopy-guided sampling of indeterminate biliary lesions at the time of ERCP: a prospective, long-term follow-up study. *Gastrointest Endosc.* 2012;75(2):347-353.  
2. McCarty T, Gulati R, Rustagi T. Efficacy and safety of peroral cholangioscopy with intraductal lithotripsy for difficult biliary stones: a systematic review and meta-analysis. *Endoscopy.* 2021;53(2):110-122.  
3. Deprez PH, et al. The economic impact of using single-operator cholangioscopy for the treatment of difficult bile duct stones and diagnosis of indeterminate bile duct strictures. *Endoscopy.* 2018;50(2):109-118.  
4. Seipal DV, et al. Tu1418 Prospective Evaluation of Digital Peroral Cholangioscopy for the detection of Residual Biliary Stones That Are Missed With Conventional ERCP: an Interim Analysis. *Gastrointest Endosc.* 2017;85(5):AB618.

This hypothetical scenario was developed in collaboration with expert clinicians to demonstrate how BSC HPB solutions can support similar pathways. All photographs taken by Boston Scientific.  
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