

Development of Surgeon-Performed Percutaneous Endoscopic Biliary Lithectomy (PEBL) Programs for Management of Complex Gallstone Disease

Colin G. DeLong, MD, Antoinette Hu, MD, Simone Che, MD, John J. Knoedler, MD, Edward L. Jones, MD, Michael S. McCormack, MD, Eric M. Pauli, MD, and Joshua S. Winder, MD
Department of Surgery, NorthShore University Health System
Department of Surgery, University of Colorado
Department of Surgery, Penn State Milton S. Hershey Medical Center

Introduction

Background:

- For many patients who undergo percutaneous biliary drainage for gallstone disease, the intervention represents destination therapy
  - Requires lifelong drainage and tube exchanges
    - Decreased quality of life

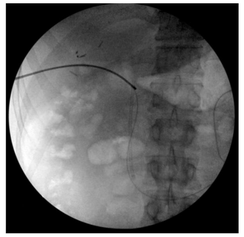
New Concept:

- Percutaneous endoscopic biliary lithectomy (PEBL) is an effective technique which enables biliary clearance and drain removal
  - Utilizes endoscopic and fluoroscopic skills and equipment (**Image 1, 2)**

Image 1



Image 2



Problem:

- Despite documented success, PEBL has not been widely adopted by general surgeons
- PEBL is often absent from treatment algorithms for complex gallstone disease

Question:

- What are the outcomes for a newly developed surgeon-performed PEBL program?

Methods

Study Design:

- Retrospective review of all patients undergoing PEBL by one of four minimally-invasive trained general surgeons
  - 01/2019-07/2022
- Data from 3 academically affiliated health systems
- Inclusion: all patients undergoing biliary endoscopy through percutaneous drain tract for gallstone disease
- Collection of demographic, operative, and postoperative details

Overview of PEBL Technique

- Cholangiogram through preexisting drain with wire passage
- Choledochoscope advanced over wire (**Image 2)**
- Scope is navigated within gallbladder, through cystic duct and biliary system, and into duodenum (**Image 3)** to identify stones **(Image 4)**
- Multiple options for stone removal
  - Basket retrieval (**Image 5)**
  - Laser lithotripsy (**Image 6)**
  - Electrohydraulic lithotripsy
- Completion cholangiogram **(Image 7)**
- Drain removed during procedure or after interval cholangiogram

Image 3

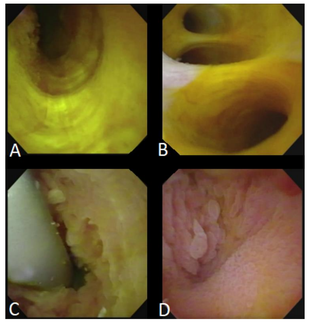


Image 4

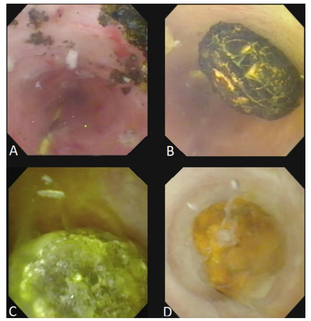


Image 5

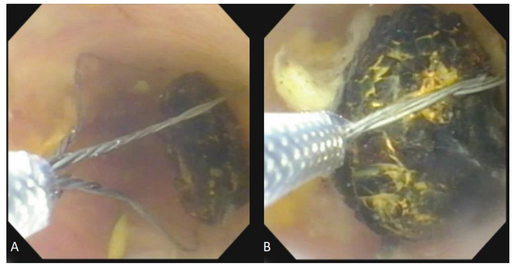


Image 6

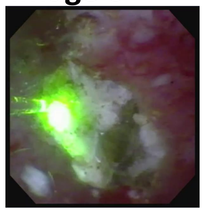
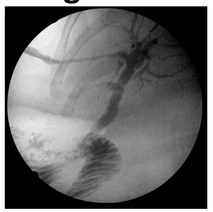


Image 7



Results

- 40 patients underwent 66 PEBL procedures
  - 19 (47.5%) underwent repeat intervention
- Indications for PEBL
  - Cholelithiasis (30)
  - Choledocholithiasis (9)
  - Recurrent pancreatitis (1)
- Contraindications to conventional therapy
  - Altered abdominal anatomy (37.5%)
  - Strict medical contraindications (67.5%)
- Referrals for PEBL
  - Increasing over time **(Figure 1)**
  - 30.0% of referrals from outside of health system
  - Mean days from acute biliary disease to PEBL: 139 ± 140 days
    - Decreasing over time **(Figure 2)**
- Procedural outcomes
  - Mean operative time: 75.7 ± 47 mins
  - Complete biliary clearance with drain removal: 82.5% of patients
  - Recurrent biliary disease: 7.5% of patients with mean follow-up 712 ± 353 days

Figure 1

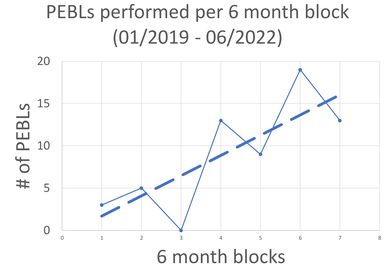
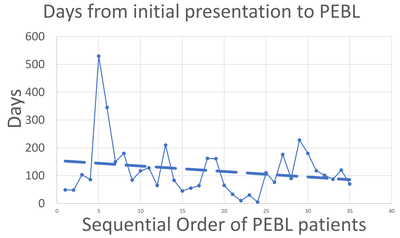


Figure 2



Conclusion

- A unique subset of patients with gallstone disease can benefit from PEBL
- Establishing a program with surgeons who consistently perform PEBL leads to a broad referral base of patients who might otherwise endure the morbidity of lifelong percutaneous biliary drainage
- Wider provider familiarity with the technique may lead to earlier referral and more streamlined care

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