

Scientific Session 34

General IR 4

Wednesday, April 15, 2026
11:15 a.m.–12:45 p.m.

Abstract No. 325

Pneumo and Hydro-Dissection of Critical Structures During Pulsed Electric Field: A Translational Application of a Bench Experiment



(Article No. 108354)

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Purpose: To evaluate various separators that could be used with pulsed electric field (PEF) ablation in order to minimize non-targeted ablation and improve patient safety.

Materials and Methods: A two-phase translational study was performed to improve the safety of PEF ablation. The first phase used an agar model to test the electrical insulating properties of various separators, including CO₂, dextrose (D5), and normal saline (NS), with and without contrast. A PEF probe and sensor were used to measure the resulting voltage and current for each separator. In the second phase, the experiment assessed how electrical conductivity changed as the length of the separating barrier was incrementally increased. The findings were then applied clinically, where CO₂ was used to create a safe space between a recurrent liposarcoma and the nearby colon and femoral plexus, allowing for a successful PEF ablation.

Results: In the translational experiment, CO₂ demonstrated superior isolation properties with no conductivity between the electrode and the sensor in comparison to all other separators; D5W, D5W+contrast, NS, NS+contrast (0.0±0.0, 2.12±0.0, 2.12±0.0, 2.82±0.27 and 3±0.06 KV) and (0.0±0.0, 9±0.84, 8.4±0.0, 14.73±0.09 and 14.73±0.09 A). In phase 2, upon increasing the separator length; 2.16 vs. 4.33 vs. 6.49", the current decreased (12.2, 10.8, and 9.6 A), V1 and V2 increased (2.3, 2.56, and 2.68 KV), and (860, 700, and 680 KV). A 41-year-old man with recurrent retroperitoneal liposarcoma abutting the femoral plexus and ascending colon underwent PEF treatment with NS hydrodissection. However, the procedure was terminated due to a drop in motor evoked potentials (MEPs) of the right femoral nerve and proximity to the colon. Following bench validation, the patient underwent a repeat PEF ablation using intermittent CO₂ for pneumodissection of the adjacent structures. A total of overlapping 19 ablations were performed in the caudal and middle portion of the lesion without a decrease in MEPs. Follow up MRI demonstrated an interval decrease in enhancement and diffusion

restriction noted at the inferior margin of the treatment site within the right psoas muscle and expected treatment cavity.

Conclusion: Pneumodissection is an effective, safe separator when using PEF ablation in proximity to vital structures.

Abstract No. 326

Clinical Outcomes of Outpatient Gallstone Organ-Sparing Cholangioscopy and Percutaneous Extraction (GO-SCOPE) in Patients Desiring to Preserve Their Organ



(Article No. 108355)

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Purpose: To assess clinical outcomes of Gallstone Organ-Sparing Cholangioscopy and Percutaneous Extraction (GO-SCOPE) with de novo access in patients with calculous biliary colic who elect to preserve their gallbladder.

Materials and Methods: This is a retrospective study of patients with calculous biliary colic who presented to a large academic center and had a percutaneous cholangioscopy with gallstone extraction between April 2024 and June 2025. All patients met standard indications for cholecystectomy after evaluation by a board-certified surgeon, but opted for percutaneous cholangioscopy with gallstone removal to preserve their gallbladder. Following gallstone extraction, a 8.5F to 14F choledochostomy tube was left in place to allow decompression of the gallbladder and tract formation. Subsequent tube evaluation was performed approximately 1-3 weeks after gallstone extraction. If no residual stones were present and the cystic duct was patent, the tube was removed. Clinical outcomes for cholecystitis and cholangitis were gathered from the date their choledochostomy tube was removed.

Results: 51 patients (mean age 46.7 yr, SD 11.4yr; 37 female and 14 male) with biliary colic secondary to cholelithiasis presented for elective outpatient percutaneous cholangioscopy and gallstone extraction. There was a 100% technical success rate in stone removal with no major adverse events per Society of Interventional Radiology criteria. Mean time between percutaneous gallstone extraction and biliary tube removal was 21.8 ± 9.5 days. One patient developed sepsis 17 days post-procedure as an outpatient prior to tube evaluation. One patient opted to have a cholecystectomy due to bile leakage from the gallbladder after the choledochostomy tube was prematurely removed. Average clinical follow-up was 252 ± 113 days, with a median of 208 days (range 89 to 505 days). Patients reported complete or near-complete resolution of previous symptoms of biliary colic after GO-SCOPE. No patients had acute cholecystitis or cholangitis.

Conclusion: GO-SCOPE with de novo access resulted in symptom resolution, with no cases of biliary colic, acute cholecystitis, or cholangitis during follow-up. These findings suggest that gallbladder preservation with percutaneous cholangioscopy can provide resolution of biliary colic while preserving the gallbladder.