

THE PUCKER LIVER SIGN AS A SURGICAL WARNING: THREE CASES WITH DISTINCT INTRAOPERATIVE OUTCOMES

GALLARDO-DURÁN KETZARLY GITZELIM¹, ARANDA-CHÁVEZ ADRIÁN EMANUEL¹, CASTELLÓ-MAGALLANES RODOLFO JULIO²

¹Department of Digestive and Endocrine Surgery, High Specialty Medical Unit #71, Instituto Mexicano del Seguro Social, Torreón, Coahuila, Mexico

²Department of Oncologic Surgery, High Specialty Medical Unit #71, Instituto Mexicano del Seguro Social, Torreón, Coahuila, Mexico

INTRODUCTION

Safe laparoscopic cholecystectomy remains a cornerstone of biliary surgery. However, despite decades of refinement, bile duct injuries persist at a rate of 0.3–0.7%, often due to distorted anatomy, chronic inflammation, or excessive traction¹. Recognizing visual cues that signal hazardous dissection planes is therefore essential.

The *Pucker Liver Sign* refers to localized retraction of the hepatic capsule adjacent to the gallbladder². The term originates from visual similarity to a “pucker” or dimpling caused by underlying fibrosis tethering the hepatic surface to the inflamed gallbladder wall³. It is most often described in chronic cholecystitis, where recurrent inflammation induces fibrotic adhesions between the gallbladder and hepatic parenchyma⁴.

Recent intraoperative observations suggest the sign may appear in other contexts—such as congenital anomalies, prior inflammation, or extra-biliary adhesions—without histologic evidence of chronic cholecystitis⁵.

METHODS

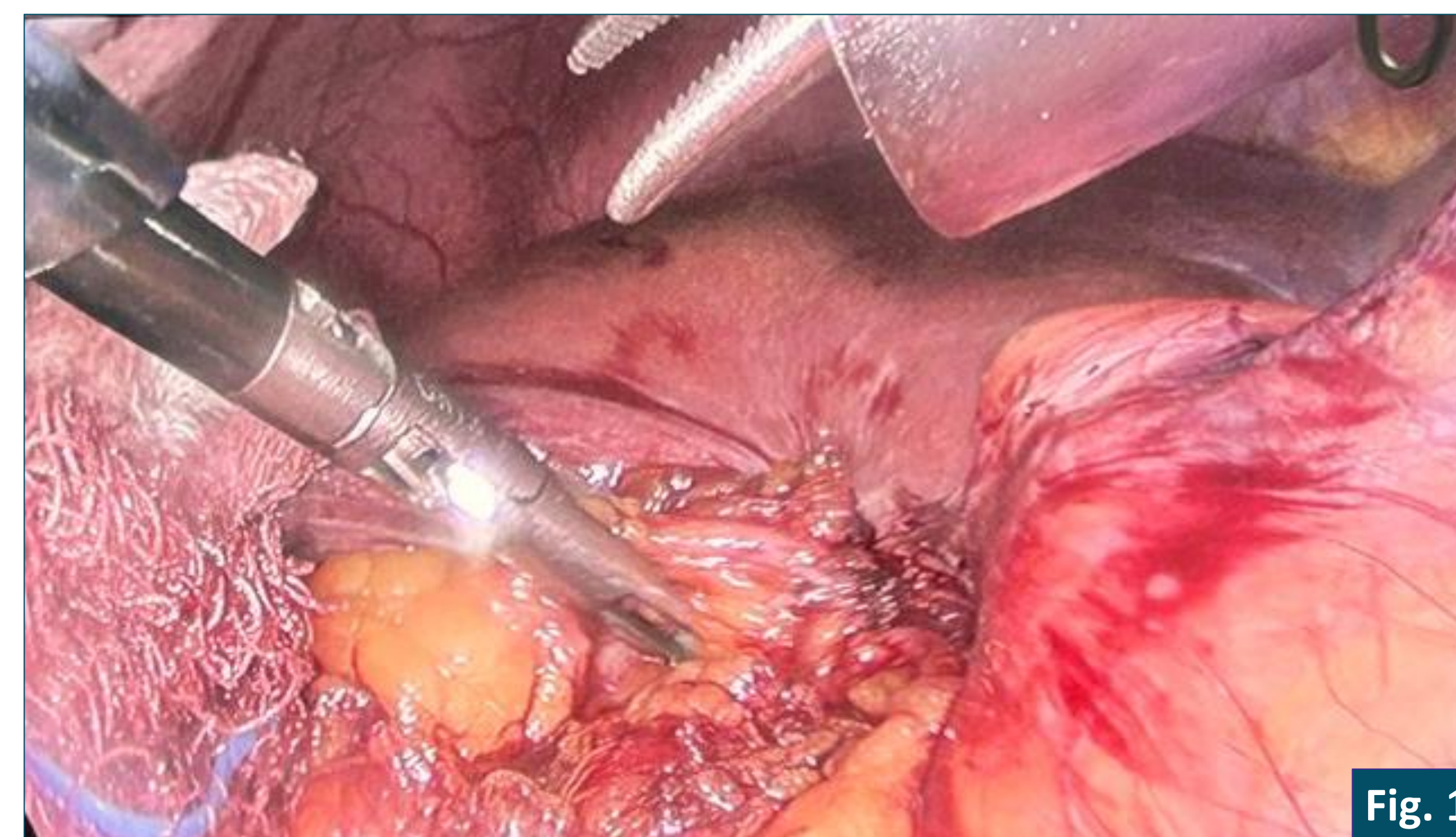
A retrospective observational analysis was performed at a tertiary referral center for hepatobiliary surgery between January 2024 and June 2025. Three cases of laparoscopic cholecystectomy in which the Pucker Liver Sign was identified were included.

All surgeries were performed by attending surgeons experienced in advanced laparoscopic techniques.

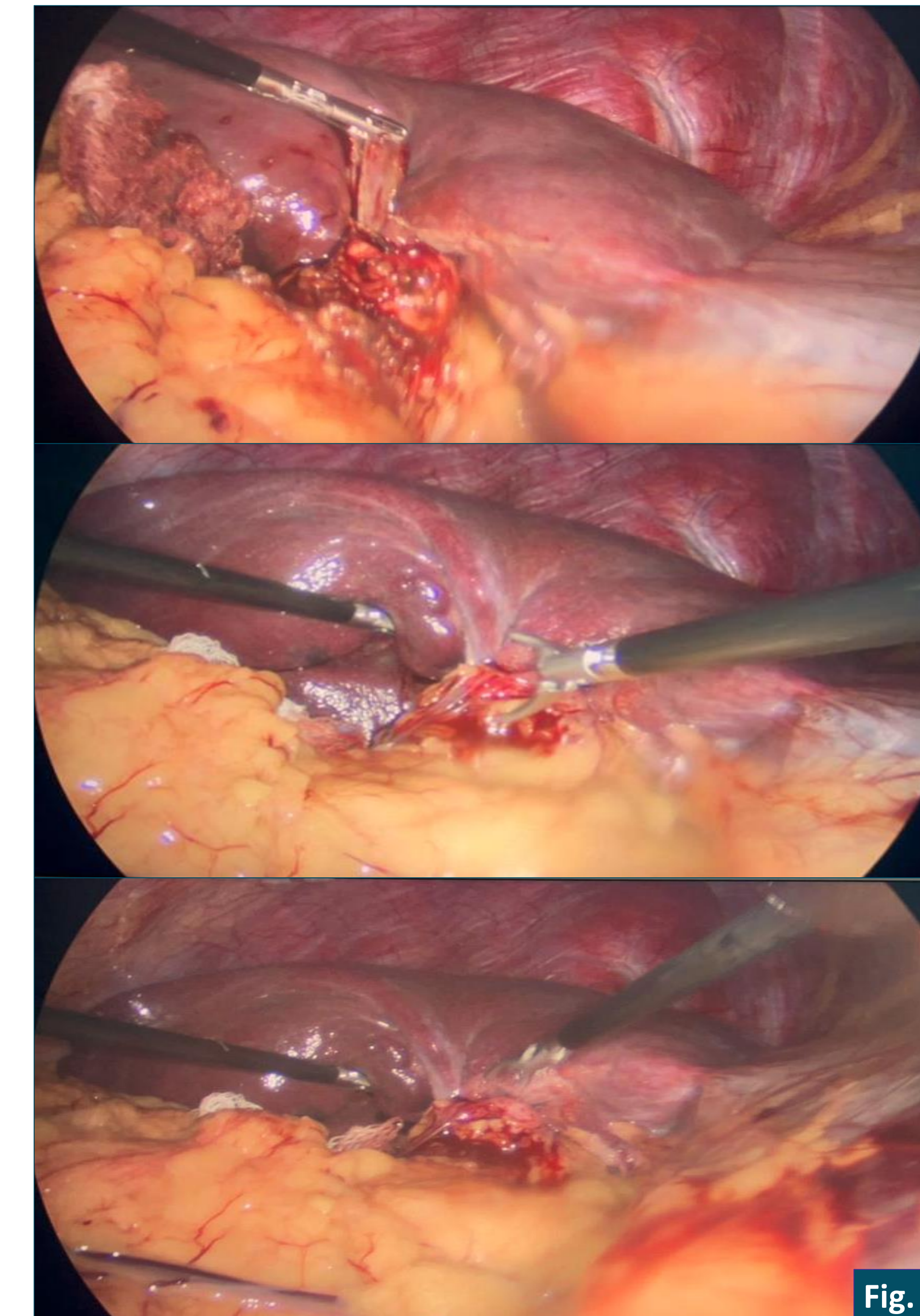
CASES PRESENTATION

In all cases, the Pucker Liver Sign appeared as focal capsular retraction overlying fibrotic adhesions to the gallbladder fossa. Associated conditions included chronic inflammation, gallbladder hypoplasia, and extra-biliary pelvic inflammatory disease sequelae. Surgical outcomes ranged from uncomplicated recovery to major bile duct injury.

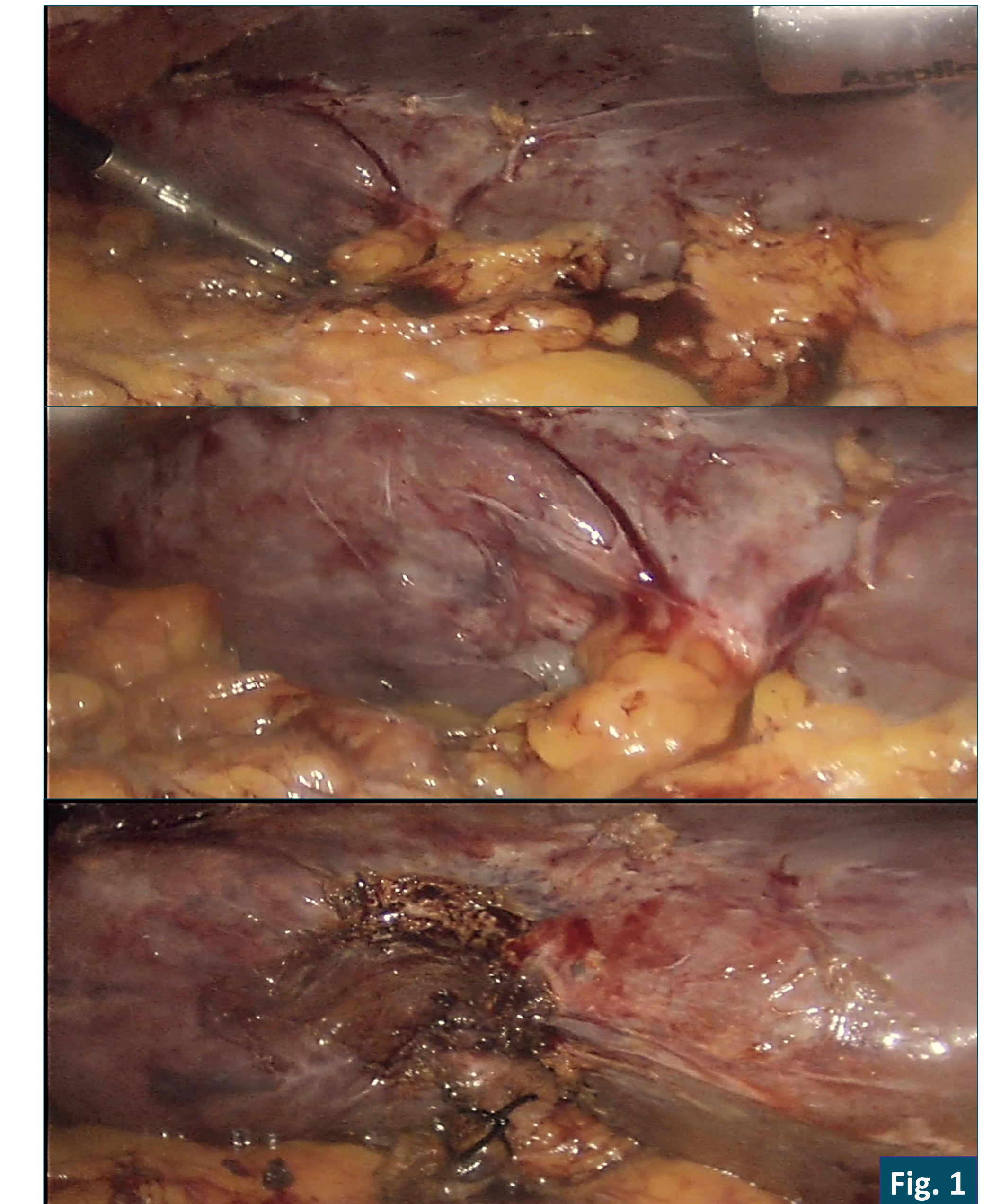
Case 1: A 38-year-old female with recent pancreatitis underwent total laparoscopic cholecystectomy (**Figure 1**). Strasberg’s critical view of safety was achieved without rescue maneuvers. Findings: Parkland grade 5 gallbladder, 4 mm wall, single 2 cm gallstone. Uneventful recovery.



Case 2: A 50-year-old male with type 2 diabetes, prior pancreatitis, and recurrent biliary colic had a hypoplastic gallbladder on MRCP. Subtotal reconstituting cholecystectomy was performed (**Figure 2**). Dense adhesions led to common hepatic duct transection, confirmed postoperatively by MRCP. Patient is under evaluation for biliary reconstruction.



Case 3: A 65-year-old female with hypertension, diabetes, prior biliary pancreatitis, and recurrent colic underwent subtotal cholecystectomy (Henneman C). Intraoperative findings: atrophic, alithiasic gallbladder with 5 mm wall, Fitz-Hugh–Curtis perihepatitis, and extensive Zühlke grade 2–3 adhesions (**Figure 3**). Recovery was uneventful.



CONCLUSION

The Pucker Liver Sign, while classically linked to chronic cholecystitis, may occur in varied settings, including perihepatitis and congenital anomalies. Its presence should be considered a warning of increased operative complexity rather than a marker of a specific diagnosis. Prompt recognition and adoption of safety-oriented strategies—such as subtotal cholecystectomy—may reduce the risk of iatrogenic injury. Expanding awareness of this sign beyond chronic inflammation may enhance intraoperative decision-making and patient safety.

REFERENCES

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