

	ORIGINAL RESEARCH PAPER CASE SERIES: ERCP-GUIDED MANAGEMENT OF TRAUMATIC PANCREATIC DUCT DISRUPTION FOLLOWING ABDOMINAL TRAUMA	General Surgery KEY WORDS: Endoscopic Retrograde Cholangiopancreatography (ERCP); Traumatic Pancreatic Duct Disruption
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ABSTRACT	Background: Traumatic pancreatic duct disruption (TPDD) is a rare but potentially devastating complication of abdominal trauma. Traditionally managed via high-risk, complex surgical interventions, the paradigm has shifted remarkably toward minimally invasive, organ-preserving endoscopic techniques like Endoscopic Retrograde Cholangiopancreatography (ERCP) [2, 3]. Summary of Case Presentation: We present three contrasting cases of TPDD: a 28-year-old male with a penetrating stab injury complicated by a pancreatic head pseudocyst, a 5-year-old female with blunt abdominal trauma resulting in a peripancreatic fluid collection, and a 28-year-old male with blunt abdominal trauma secondary to a road traffic accident resulting in pancreatic fluid leakage. All patients were successfully managed using ERCP-guided transpapillary pancreatic duct stenting, which rapidly restored physiological drainage and achieved complete clinical resolution without the need for major surgical exploration. Conclusion: ERCP-guided transpapillary stenting offers a definitive, elegant, and minimally invasive cure for TPDD. By bridging ductal defects, it significantly mitigates morbidity and should be considered the frontline therapeutic strategy in hemodynamically stable patients [3].	
INTRODUCTION	The pancreas, owing to its protected retroperitoneal location, is infrequently injured during abdominal trauma; however, when traumatic pancreatic duct disruption (TPDD) occurs, it portends severe morbidity. The extravasation of pancreatic enzymes leads to profound local and systemic complications, including acute pancreatitis, pseudocyst formation, fistulas, and sepsis. Historically, the cornerstone of management involved complex surgical resections or drainage procedures, which carried substantial risks of post-operative morbidity and mortality [2]. The advent of Endoscopic Retrograde Cholangiopancreatography (ERCP) has ushered in a remarkable era of organ-preserving, minimally invasive therapy. ERCP affords the clinician a dual advantage: precise diagnostic mapping of the ductal architecture and immediate therapeutic intervention via transpapillary stenting [2, 3]. This series elucidates the profound efficacy of ERCP-guided management, showcasing its ability to dramatically alter the clinical trajectory and facilitate complete recovery in both adult and pediatric populations [1].	
Case Presentation	Case 1: Penetrating Trauma – Stab Injury A 28-year-old male presented with a history of penetrating abdominal trauma sustained from a stab injury. He underwent an emergency exploratory laparotomy for the primary repair of a transverse colon perforation. During his post-operative follow-up, the patient developed recurrent, severe epigastric pain. Contrast-enhanced computed tomography (CT) unveiled features of traumatic pancreatic duct disruption complicated by acute-on-chronic pancreatitis, pancreatic atrophy, and a notably dilated main pancreatic duct (9–10 mm). Furthermore, a 4.2 × 4.3 cm pancreatic head pseudocyst was identified, alongside portal cavernoma and extensive peripancreatic collateral formation. Following initial stabilization with conservative measures—including fluid resuscitation, analgesia, intravenous antibiotics, and glycemic control—the patient was referred for therapeutic ERCP due to persistent ductal disruption. The procedure was an unequivocal success; a transpapillary pancreatic duct stent was deployed, facilitating the immediate resolution of symptoms, internal drainage of the collection, and the restoration of normal ductal continuity [3]. The patient experienced a full clinical recovery, completely avoiding the severe morbidity associated with secondary surgical intervention. Case 2: Blunt Abdominal Trauma – Accidental Fall A 5-year-old female presented following blunt abdominal trauma sustained from an accidental fall down a flight of stairs. Initial contrast-enhanced CT imaging revealed hemoperitoneum devoid of hollow viscus injury. She was managed conservatively and discharged upon symptomatic improvement. However, fifteen days post-discharge, she was readmitted with progressive abdominal distension and pain. Follow-up CT imaging demonstrated an enlarging peripancreatic cystic fluid collection, which subsequent Magnetic Resonance Cholangiopancreatography (MRCP) confirmed as a traumatic disruption of the main pancreatic duct communicating with a pseudocyst. In light of the known ductal injury, ERCP was promptly performed, a modality increasingly recognized for its safety and efficacy in pediatric trauma [1]. Selective cannulation of the edematous papilla confirmed the ductal disruption. A 4-French transpapillary pancreatic duct stent was elegantly placed across the defect, achieving free drainage of pancreatic fluid. The pediatric patient demonstrated a remarkably rapid clinical recovery, with complete resolution of pain and progressive regression of the cystic collection, ensuring an excellent long-term prognosis [1, 2]. Case 3: Blunt Abdominal Trauma – Road Traffic Accident A 28-year-old male patient presented following a road traffic accident resulting in blunt abdominal trauma. Initial ultrasonography (USG) suggested the presence of hemoperitoneum. The patient was initially managed conservatively; however, his clinical condition did not improve significantly. Subsequently, Magnetic Resonance Cholangiopancreatography (MRCP) was performed to specifically evaluate for potential pancreatic injury. The imaging findings confirmed that the main pancreatic duct (MPD) was disrupted, complicated by the active leakage of pancreatic fluid into the abdominal cavity. An Endoscopic Retrograde Cholangiopancreatography (ERCP) with	
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transpapillary stenting was promptly performed to address the disruption. The patient's condition improved rapidly following the endoscopic intervention, and he was subsequently discharged in a stable, healthy condition.

Imaging and Intervention Highlights



Figure 1: Endoscopic and Fluoroscopic Views Demonstrating the Sequential Steps of ERCP and Transpapillary Pancreatic Duct Stenting.

DISCUSSION

The integration of ERCP into the algorithmic management of traumatic pancreatic injuries represents a true clinical triumph. Ductal disruption fundamentally alters the pressure gradients within the pancreaticobiliary tree, driving secretions into the retroperitoneal space and fueling a relentless inflammatory cascade. Transpapillary stenting elegantly subverts this pathophysiology by bridging the anatomical defect and reducing the intraductal pressure, thereby promoting internal drainage and allowing the duct to heal naturally^[3]. As demonstrated in our cases, this approach is highly versatile, proving exquisitely effective for both high-velocity penetrating injuries in adults and blunt compressive trauma in pediatric populations^[1]. By favoring an organ-preserving endoscopic route, clinicians can precisely identify the site of disruption^[2] and spare patients the arduous recovery and long-term functional deficits associated with distal pancreatectomy or complex enterostomies.

CONCLUSION

ERCP-guided transpapillary stenting stands as a highly effective, definitive, and minimally invasive modality for the management of traumatic pancreatic duct disruption. By restoring physiological continuity and facilitating rapid resolution of associated fluid collections, ERCP significantly minimizes patient morbidity and circumvents the need for high-risk surgical operations. It should be strongly considered as the frontline therapeutic strategy in hemodynamically stable patients with documented ductal injury.

Keywords:-

Endoscopic Retrograde Cholangiopancreatography (ERCP); Traumatic Pancreatic Duct Disruption; Pancreatic Trauma; Transpapillary Stenting; Minimally Invasive Surgery; Pancreatic Pseudocyst.

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Annotation: This foundational study explicitly outlines the safety and remarkable efficacy of therapeutic ERCP in the pediatric population, supporting our findings in the 5-year-old case.
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Annotation: This paper provides compelling evidence on how ERCP precisely identifies the site of ductal disruption and dictates the shift from surgical to minimally invasive management, significantly reducing complication rates.
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Annotation: A critical review demonstrating that early intervention with transpapillary stenting effectively bridges ductal defects, offering a reliable, organ-preserving alternative to pancreatectomy in trauma patients.