

A Novel Paradigm in the Management of Pancreatic Trauma

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Abstract : Background: Historically with pancreatic trauma, complete disruption of the main pancreatic duct (MPD), classified as Grade IV-V by the American Association for the Surgery of Trauma (AAST), necessitated a damage-control laparotomy. This was to avoid mortality, shorten diet upgrade timeframe, and hence shorter length of stay. However, acute pancreatic resection entailed complications of pancreatic fistulas and leaks. With the advance of imaging-guided interventions, non-operative management such as percutaneous and transpapillary drainage of traumatic peripancreatic collections have been trialled favourably. The aim of this case series is to evaluate the efficacy of endoscopic ultrasound-guided (EUS) transmural drainage in managing traumatic peripancreatic collections as a less invasive alternative to traditional approaches. This study also highlights the importance of anatomical knowledge regarding peripancreatic collection's common location in the lesser sac, the pancreas relationship to adjacent organs, and the formation of the main pancreatic duct in regards to the feasibility of therapeutic internal drainage. Methodology: A retrospective case series was conducted at a single tertiary endoscopy unit, analysing patient data over a 5-year period. Inclusion criteria outlined patients age 5 to 80-years-old, traumatic pancreatic injury of at least Grade IV and haemodynamic stability. Exclusion criteria involved previous episodes of pancreatitis or abdominal trauma. Patient demographics and clinicopathological characteristics were retrospectively collected. Results: The study identified 7 patients with traumatic pancreatic injuries that were managed from 2018-2022; age ranging from 5 to 34 years old, with majority being female (n=5). Majority of the mechanisms of trauma were a handlebar injury (n=4). Diagnosis was confirmed with an elevated lipase and computerized tomography (CT) confirmation of proximal pancreatic transection with MPD disruption. All patients sustained an isolated single organ grade IV pancreatic injury, except case 4 and 5 with other intra-abdominal visceral Grade 1 injuries. 6 patients underwent early ERCP-guided transpapillary drainage with 1 being unsuccessful for pancreatic duct stent insertion (case 1) and 1 complication of stent migration (case 2). Surveillance imaging post ERCP showed the stents were unable to bridge the disrupted duct and development of symptomatic collections with an average size of 9.9cm. Hence, all patients proceeded to EUS-guided transmural drainage, with 2/7 patients requiring repeat drainages (case 6 and 7). Majority (n=6) had a cystogastrostomy, whilst 1 (case 6) had a cystoenterostomy due to feasibility of the peripancreatic collection being adjacent to duodenum rather than stomach. However, case 6 subsequently required repeat EUS-guided drainage with cystogastrostomy for ongoing collections. Hence all patients avoided initial laparotomy with an average index length of stay of 11.7 days. Successful transmural drainage was demonstrated, with no long-term complications of pancreatic insufficiency; except for 1 patient requiring a distal pancreatectomy at 2 year follow-up due to chronic pain. Conclusion: The early results of this series support EUS-guided transmural drainage as a viable management option for traumatic peripancreatic collections, showcasing successful outcomes, minimal complications, and long-term efficacy in avoiding surgical interventions. More studies are required before the adoption of this procedure as a less invasive and complication-prone management approach for traumatic peripancreatic collections.

Keywords : endoscopic ultrasound, cystogastrostomy, pancreatic trauma, traumatic peripancreatic collection, transmural drainage

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