Oral

Endoscopy

O1 | NON INFECTIVE COMPLICATIONS OF LUMEN APPOSING METAL STENTS (LAMS) IN MANAGEMENT OF PANCREATIC FLUID COLLECTIONS

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Introduction LAMS are increasingly used for the drainage of pancreatic fluid collections (PFC). Non-infective complications i.e. migration, bleeding, tissue overgrowth and perforation is reported in 5 - 25%. We report results from the largest UK & Ireland multicentre study on the incidence of non-infective complications with LAMS.

Method Retrospective study from a prospectively maintained database in 15 NHS hospitals in the UK & Ireland. Data collected include demographics, aetiology, severity of pancreatitis, type & size of PFC, immediate (< 24 hours), short term (< 7 days) & long term complications, recurrence of PFC and mortality. Minimum follow up was 4 months.

Results 823 LAMS were inserted from November 2015 to October 2019. Median age = 53 yrs. (IQR = 37.2 – 69.1). M: F = 502:321. Gall stones (46%) & alcohol ((29%) were the commonest aetiology. Severity of pancreatitis data was available in 85% 1. Mild = 24%, moderate = 35% & severe = 26%. Median size of the PFC was 11 cm (IQR – 7.4 – 15.32). 48% were pseudocysts, 49% walled of necrosis & 3% acute necrotic collection. 87% were done in the endoscopy unit with 72% under conscious sedation. Technical success was 98% (809/823). Immediate complications was seen in 29(3.5%) including bleeding (9), maldeployment (19) and sedation related (1). Short term complications were seen in 25(3%) including malposition (3), bleeding (9), pain (3) & migration (10). Late complications were seen in 143(17%) including buried stents as a result of tissue overgrowth 37(4.5%); migration 93(11%) - *internal i.e. into the PFC* = 27; *external* = 66, blocked stent 11(1.2%) & bleeding -2(0.2%). LAMS could not be removed in 8/823 patients (0.9%) but was successfully removed in 86%. Median removal time was 7 weeks (IQR = 6–7) & 7 weeks (IQR = 6–9) in patients with late complications. 2% were lost to follow up. Clinical success (complete resolution of PFC) seen in 729(89%) patients. Recurrence of PFC was seen in 3.2%. Median time of removal in patients with recurrence was 5 weeks (IQR – 1.9–8.1) compared to 7 weeks(IQR – 1–15; p> 0.076) in the patients who didn't have recurrence of PFC. All-cause mortality was 7.4%. There was only one LAMS related death as a result of uncontrolled bleeding following deployment. Multivariate analysis did not show any statistically significant difference between any of the parameters resulting in the complications.

Conclusion In the largest multicentre series to date; we conclude that LAMS is effective in drainage of PFC. The incidence of immediate and short term complications is low. There is a high rate of late complications including migration, tissue overgrowth and bleeding. Recurrence of PFC does not seem to be related to timing of LAMS removal.

O2 | DIAGNOSTIC PERFORMANCE OF A NEURAL NETWORK FOR THE PREDICTION OF OESOPHAGEAL SQUAMOUS CELL CANCER

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Introduction Artificial intelligence may augment human recognition of early squamous cell neoplasia (ESCN) using intrapapillary capillary loop (IPCL) patterns, a validated endoscopic marker. We have developed a convolutional neural network (CNN), using the largest reported image dataset for this purpose, capable of classifying endoscopically imaged ICPL patterns as normal or dysplastic.

Methods 114 Taiwanese patients underwent magnification endoscopy with narrow band imaging (ME-NBI). Histologic samples acquired from imaged areas by biopsy or endoscopic submucosal dissection (ESD) were classified as dysplastic (high grade dysplasia to submucosa 2 invasion) or normal. Images were labelled as dysplastic or normal according to histology and IPCL patterns were classified by three expert consensus. A CNN was trained using HD videos, with a frame sampling rate of 30fps. Uninformative images were removed manually. Our CNN trained using 67742 images to classify IPCLs as dysplastic or normal, using five-fold cross validation. A panel of 5 Asian and 4 European (EU) experts predicted the histology of 158 randomly selected images including all JES IPCL subtypes. Diagnostic performance measures were calculated for each CNN fold, and individual endoscopists to give an average F1 score (a measure of accuracy of binary classification algorithms), accuracy, sensitivity and specificity for our CNN, EU and Asian endoscopists.

Results 9 expert EU and Asian endoscopists attained F1 scores of 97.9% and 98% respectively. Our CNN F1 score was 94%. Diagnostic accuracy of the EU and Asian clinicians was 96.9%, 97.1% respectively. Our CNN accuracy was 91.7%. The sensitivity of EU and Asian endoscopists were 98.9% and 97%, compared to our CNN which was 93.7%. Our CNN classifies at 7.6 ms per frame and so has the potential for accurate real-time classification of an endoscopic video feed.

Conclusion We report a CNN for the prediction of ESCN histology based on IPCL patterns. Our CNN achieved diagnostic performance approaching that of expert Asian and European endoscopists. Larger datasets for training are required to minimise performance variability in clinical use. Further work should determine whether this CNN can exceed the diagnostic performance of non-expert endoscopist.