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ACCURACY OF ENDOSCOPIC ULTRASONOGRAPHY FOR EVALUATION OF NON-INVASIVE RECTAL VILLOUS ADENOMAS.

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Background: In experienced hands, endoscopic ultrasonography (EUS) is accurate for locoregional staging of rectal carcinoma. The ability of EUS to distinguish between large benign polyps/tumor in situ and invasive cancer is less well studied. This distinction is important, because large lesions confined to the mucosa are often amenable to endoscopic or less aggressive local surgery. We retrospectively reviewed our experience with EUS in determining whether a rectal neoplasm is non-invasive. Objective: To determine the accuracy of endoscopic ultasonography in the staging of large rectal villous adenomas for ruling out invasive carcinoma. Methods: 59 consecutive patients were referred for endosonographic staging of rectal neoplasms. The exams were performed using a radial array echoendoscope (Olympus GF-UM130). Neoplasms without evidence for invasion into or beyond the 3rd (hyperechoic) layer/submucosa were considered non-invasive and amenable to endoscopic or local surgical resection. Pathologic specimens were then obtained on all lesions and served as the gold standard for determining whether a lesion was truly invasive or not. Results: EUS suggested that 10 of the 59 patients (16.9 %) had superficial rectal neoplasms without endosonographic evidence for invasion beyond the mucosa (first two sonographic layers) and without evidence for perirectal adenopathy. Six of these underwent endoscopic resection immediately following the endosonographic exam. The remaining four underwent surgical resection. Subsequent pathologic analysis revealed that all ten were tubulovillous adenomas. While 5 of 10 had foci of severe intramucosal dysplasia, none had invasive carcinoma (specificity 100%). At follow-up (range 2-20 months), none of the ten have evidence for recurrence or invasive carcinoma. All 49 patients (83%) with EUS evidence for invasion into or beyond the 3rd hyperechoic layer/submucosa had invasive carcinoma confirmed on surgical pathology (sensitivity 100%). Conclusion: In this study, EUS accurately determined whether a rectal neoplasm was non-invasive and thus amenable to endoscopic or local surgical resection. Our work suggest that large rectal villous adenomas without invasion beyond the first two sonographic layers often can be managed safely and effectively with endoscopy alone. Further work to better define the group that can be managed without surgery is warranted.

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THREE DIMENSIONAL LINEAR ENDOSONOGRAPHY - CLINICAL RELEVANCE IN THE DETECTION OF VESSEL INVOLVEMENT OF PANCREATIC CANCER?

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Purpose: Endosonography (EUS) is the best available imaging technique to diagnose and stage pancreatic cancer. However, the detection or exclusion of vessel involvement (VI), which might influence the treatment plan, is unsatisfactory. We prospectively evaluated a new equipment allowing three dimensional (3D) interpretation of linear EUS of VI of pancreatic cancer. Material and Methods: Pentax linear echoendoscope (FG34 UA) was used to diagnose the pancreatic lesions and evaluate VI. After EUS-FNA was carried out for obtaining a diagnosis an additional evaluation of the status of vessels (portal vein, confluence, splenic vein) was performed using a magnetic tracked 3D sensor (Hitachi ultrasound-Echotec). This was fixed to the endoscope, to which the movement of the ultrasound tip was transferred. The acquisition of 3D images was realized using a connected computer with a special software transferring 2D EUS images into spatial coordinates. The acquisition time was 15-25 sec. Results: 14 patients with pancreatic lesions were examined and the results compared to surgical histology, which proved pancreatic cancer in 12 patients and chronic pancreatitis in 2. Using 2D linear EUS tumor infiltration into a vessel was suspected in 7 patients, compression of a vessel in further 3 and no VI in 4. In the additional 3D evaluation tumor infiltration was seen in 2 patients, vessel compression in 7 and no VI in 5. Histological evaluation of the resected specimens and/or intraoperative evaluation proved tumor infiltration in 3 patients, vessel compression in 6 and no involvement in 5. In both the patients with chronic pancreatitis EUS gave reason to suspect vessel infiltration, while 3D evaluation clearly demonstrated compression only. In 2 other patients with pancreatic cancer infiltration was seen on EUS, but only tumor compression on additional 3D evaluation (verified by surgery). In only 1/14 patients (7%) the result of 3D evaluation was false negative (no false positives), while there were 4/14 false positives (28%) in 2D evaluation. As false positive results might exclude patients from surgery, this fact is most important. Conclusion: The addition of 3D to linear EUS seems to help in the evaluation of vessel involvement of pancreatic lesions, especially in the differentiation of tumor infiltration into a vessel from tumor compression of a vessel. Additional larger series of patients are needed to prove these preliminary results.

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ROLE OF ENDOSCOPIC ULTRASOUND WITH FINE NEEDLE ASPIRATION (EUS-FNA) VERSUS POSITRON EMISSION TOMOGRAPHY (PET) FOR DECIDING OPERABILITY OF LUNG CANCER PATIENTS.

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Purpose: When possible, surgery remains the best therapy for non small cell lung cancer. However, clinical staging of proven or suspected lung cancer to determine, which patients should be sent to surgery remains problematic, because a significant proportion of operated patients are found to be surgically incurable. We compared chest CT with PET and EUS-FNA of the mediastinum to detect mediastinal metastases of lung cancer. Methods: 77 patients with proven or suspected lung cancer, suitable for surgery, were clinically staged by chest CT, PET and EUS-FNA and interpreted by blinded experts. Small cell, stage IIIb and higher lung cancers were removed from consideration for surgery. Final diagnosis of mediastinal involvement was assessed by surgery in 33 patients and/or cytology in 49 and clinical follow up in 7 patients. Results: Out of the total number of 77, 24 patients were staged IIIb by EUS-FNA alone. PET excluded 27 and CT 16 patients from surgery. 4 patients were excluded by various other medical reasons. EUS-FNA provided cytopathologic evidence in 16 of the 27 patients excluded by PET, and in 11 of the 16 patients excluded by CT. In locations, not accessible by EUS, PET excluded 11 and CT 5 patients. However, 9 patients had a false positive result on PET scan and 4 on CT. 33 patients were operated and none of these had N3 disease in surgical staging. Conclusion: 64% of patients found to be inoperable were identified by EUS-FNA; PET independently identified only 29%. After patients undergo chest CT scanning, EUS-FNA is preferable to PET as a staging test to identify inoperable lung cancer patients.

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THE USE OF SIMETHICONE SUSPENSION AS A LUMINAL CONTRAST AGENT DURING ENDOSCOPIC ULTRASOUND.

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Background/Objectives: The evaluation of polypoid luminal lesions by endoscopic ultrasound is often challenging. In order to best view the sonographic features of a mucosal or submucosal lesion, the endosonographer is required to suction intraluminal air and abut the lesion with the balloon. This however, often compresses the polypoid lesion, making it more difficult to find, and often obscuring the echoarchitecture. Intraluminal saline infusion may be helpful in this regard, however as it can be isoechoic with the lesion, it may be difficult to distinguish the polyp from the surrounding fluid, lengthening the time of the procedure. Methods and Results: When a simple saline flush was requested of the endoscopy nurse/technician to reduce air artifact, a syringe filled with simethicone suspension, [1 part (12 cc) Genasyme drops, Goldline Laboratories, Miami, FL 40mg/0.6 ml and 5 parts (60cc) normal saline solution], was handed to the endosonographer and used to flush the lumen during evaluation of a polypoid lesion. To our surprise, the simethicone suspension provided echogenic luminal contrast, conferring remarkable visibility to the lesion, allowing us to lighten compression of the polyp by the transducer and better visualize the architecture. We have successfully reproduced this technique on numerous occasions and it become almost standard in our laboratory in evaluating polypoid luminal lesions. Images with and without simethicone contrast will be displayed at the poster presentation. Conclusions: Intraluminal instillation of simethicone suspension has been discovered serendipitously to create useful background contrast during endosonography, rendering polypoid lesions more visible. It is an effective, inexpensive, and readily available option. The benefit most clearly relates to the echogenic nature of the simethicone suspension, however there may be an added benefit in its antiflatulent properties to reduce intraluminal gas. This constitutes the first report, of which we are aware, to use a luminal contrast agent during endoscopic ultrasound.