

ENDOSCOPIC ULTRASOUND UPDATE

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The role of endoscopic ultrasound has come along way in just 10 years with its arrival in the practice of medicine. First, a novelty of the academic centers, endoscopic ultrasound is now routinely being used in the community setting for the staging of esophageal, gastric, pancreatic and rectal cancers. Its primary advantage over other forms of imaging such as CT and MRI, is its unique ability to more accurately stage mucosal depth of invasion of cancers, those that arise within the lumen of the digestive tract. Its primary advantage has been to upstage lesions, those that extend beyond the serosa, thus preventing surgery and instead directing the patient to chemotherapy. Of recent, has been the move in the field of endoscopic ultrasound to a more therapeutic intervention. These endoscopic scopes have the added feature of Doppler flow detection, thus allowing the recognition of vascular structures. With Doppler, this has allowed the echo-endosonographer the ability to apply therapeutics with the security of Doppler and real time endoscopic ultrasound images in maneuvers such as transgastric endoscopic pseudocyst drainage, Fine needle aspiration into the pancreas, and mediastinal lymph nodes, and celiac axis plexus blocks. The future holds the possibility of directed gene therapy, direct chemo-sclerotherapy, and radiation bead implantation. For more information and images on endoscopic ultrasound [click here!](#)

BORLAND-GROOVER CLINIC

Specialists in Liver and Digestive Diseases

Current Medical Literature on Endoscopic Ultrasounds

EUS in preoperative staging of pancreatic cancer

Ahmad NA, Lewis JD, Ginsberg GG, Rosato EF, Morris JB, Kochman ML.
Gastrointestinal Endoscopy Vol 52, (4) Oct 2000 463-468

These investigators looked at the overall accuracy of EUS in the preoperative staging of pancreatic cancer. A retrospective study, they found EUS to have a 69% and 54% accuracy in T and N staging respectively, and hence concluded that EUS is not as accurate as previously reported in other studies in the T and N staging for pancreatic cancer.

A multicenter U.S. experience with EUS-guided fine-needle aspiration using the Olympus GF-UM30P echoendoscope: safety and effectiveness.

Sahai AV, Schembre D, Stevens PD, Chak A, Isenberg G, Lightdale CJ, Sivak MV Jr, Hawes RH. *Gastrointest Endosc* 1999 Dec;50(6):792-6

The aim of this study was to determine the safety, efficacy, and accuracy of endoscopic ultrasound (EUS)-guided fine-needle aspiration using the GF-UM30P echoendoscope. METHODS: GF-UM30P-guided EUS-guided fine-needle aspiration results from 3 EUS referral centers were prospectively recorded. Successful sampling required that the needle tip be seen within the lesion on at least 1 pass. Aspirates were considered adequate if they were diagnostic for cancer, contained suspicious or atypical cells, or were adequately cellular for interpretation but nondiagnostic. RESULTS: EUS-guided fine-needle aspiration was attempted on 162 lesions in 152 patients with no complications. Sampling was successful in 150 of 162 (93%) attempts (mean lesion size 2.5 +/- 1.2 cm (range 0.7 to 6.0 cm). Aspirates were adequately cellular in 138 of 162 (85%) attempts (43% diagnostic, 15% suspicious and/or atypical cells, 27% adequate cellularity but nondiagnostic). Sampling failed in

12 of 162 (7%) attempts. Ten of 12 (83%) failures and 11 of 12 (92%) inadequate aspirates occurred when lesions measured less than 2 cm. The sensitivity for malignancy was 93% if only successfully sampled lesions with surgically confirmed negative results were included. However, it was 68% if all attempts were included and when unconfirmed high/moderate suspicion negative results were counted as false negatives and low suspicion negative results as true negatives. CONCLUSIONS: The GF-UM30P may be clinically useful for EUS-guided fine-needle aspiration if a curved linear array instrument is unavailable.

Improved technique for performing endoscopic ultrasound guided fine needle aspiration of lymph nodes.

Bhutani MS , Suryaprasad S , Moezzi J , Seabrook D Endoscopy 1999 Sep;31(7):550-3

Trans-esophageal real-time endoscopic ultrasound (EUS)-guided fine needle aspiration (FNA) has emerged as an important technique for sampling perigastrointestinal lymph nodes. The purpose of this study was to compare the yield of EUS-guided FNA of mediastinal lymph nodes using different techniques. MATERIALS AND METHODS: A 2 cm mediastinal lymph node was dissected at autopsy. FNA was performed on this lymph node with a 21 gauge needle which is used clinically for EUS-guided FNA (GIP-Mediglobe). FNA of the lymph node was performed for 60 sec, while continuous or intermittent suction was applied with a 10 ml, 20 ml and 30 ml syringe. The pathologist was blinded to the technique used for FNA of the lymph node. The slides were examined and the results recorded independently by two pathologists who were blinded to each other's findings. A similar procedure was repeated in a 2 cm lymph node removed during another autopsy. RESULTS: Pathologic examination revealed metastatic transitional cell bladder carcinoma in the first lymph node, and metastatic non-small cell lung carcinoma in the second lymph node. The cellularity and quality of FNA performed with the 10 ml syringe was better than with the 20 ml or 30 ml syringe. With the 10 ml syringe, continuous suction for one minute provided a better sample than intermittent suction. FNA with a 20 ml or 30 ml syringe was more cumbersome, as it required more physical force. CONCLUSIONS: Our study reveals that continuous rather than intermittent suction with smaller syringes (5-10 ml) provides optimal cellularity in EUS-guided FNA of mediastinal lymph nodes and that use of larger (20-30 ml) syringes does not improve the rate of obtaining a diagnostic specimen.

[Clinical value of endoscopic ultrasound-guided transesophageal fine needle puncture of mediastinal lesions]

Janssen J , Johans W , Luis W , Greiner L Dtsch Med Wochenschr 1998 Nov 20;123(47):1402-9.

As the mediastinum has been a region difficult to access for biopsy, mediastinoscopy has been required in most cases. In a prospective study the value of transoesophageal endoscopic ultrasound (TEUS) guided aspiration biopsy was assessed as an alternative. PATIENTS AND METHODS: TEUS-guided fine-needle aspirations were performed between May 1995 and March 1998 in 35 patients with mediastinal space-occupying lesions. In all cases the conventional endoscopic method or percutaneous puncture-sonography had been impossible or had failed. In one patient it had been performed after a negative mediastinoscopy. RESULTS: In 34 patients (97%) the aspirated tissue cylinder could be evaluated histologically. There were no complications. Malignancy was demonstrated in 24 patients, and there were one case

each of sarcoidosis, silicoanthracosis and two cases of retrosternal goitre. In four of seven patients the negative preoperative diagnosis was confirmed at operation or by follow-up. There were two false-negative results and in one patient there has been no definitive diagnosis. The accuracy of the method was thus 91.4%, the positive predictive value for malignancy 88.9% and the negative predictive value for malignancy 72.7%. Ultrasound alone was a poor predictor of malignancy in lymph node enlargement. CONCLUSION: TEUS-guided fine-needle aspiration of space-occupying mediastinal lesions is an effective and low-risk method that can in selected cases shorten the diagnostic process and avoid methods that are expensive or lead to complications such as transpulmonary biopsy guided by computed tomography or mediastinoscopy.

Endoscopic ultrasound and fine needle aspiration for the evaluation of pancreatic masses.

Suits J , Frazee R , Erickson RA Arch Surg 1999 Jun;134(6):639-42;

Endoscopic ultrasound (EUS) and endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) are accurate for the preoperative staging of pancreatic ductal carcinoma. DESIGN: Retrospective medical record review. PATIENTS: A prospective registry of 98 patients having EUS-FNA for peripancreatic masses from April 1994 to April 1998 was analyzed. MAIN OUTCOME MEASURE: The accuracy of EUS-FNA for preoperative diagnosis and staging of peripancreatic neoplasms. RESULTS: Ninety-eight patients, aged 41 to 91 years (mean age, 67 years) with peripancreatic masses were evaluated by EUS-FNA. All patients had initial computed tomography scanning with a mass seen in 49 patients, "fullness" to the pancreas in 28 patients, and no mass seen in 21 patients. Evaluation with EUS-FNA revealed 22 benign lesions, 18 T2 masses, 37 T3 masses, 1 T4 mass, and 20 masses representing nonpancreatic tumors. Results of EUS-FNA of adjacent lymph nodes were positive in 27 patients. Twenty-seven patients had surgical resection or palliation permitting operative and pathologic staging. On comparison of EUS-FNA staging with surgical staging, 12 patients were the same stage, 14 patients were upstaged, and 1 patient was downstaged. The remaining patients who did not have surgery have been followed up for a mean of 15 months. Overall accuracy of EUS-FNA for differentiating benign from malignant masses was 96%. CONCLUSIONS: Endoscopic ultrasound-guided fine needle aspiration is a useful technique for the evaluation of pancreatic masses. It is highly accurate for differentiating between benign and malignant lesions and for predicting T stage, but is limited for predicting nodal status.

Hodgkin's disease diagnosed by endoscopic ultrasound-guided fine needle aspiration of a periduodenal lymph node.

Lewis JD , Faigel DO , Dowdy Y , Sack MJ , Salhany KE , Haynes B , Fox KR , Ginsberg GG. Am J Gastroenterol 1998 May;93(5):834-6

Hodgkin's disease rarely presents as obstructive jaundice. We report a case of Hodgkin's disease arising in periduodenal lymph nodes, presenting with biliary obstruction, definitively diagnosed on cytologic material obtained by endosonographically-guided real-time fine needle aspiration biopsy and confirmed at laparotomy. The medical literature pertaining to the use of endosonography and fine needle aspiration biopsy for pancreatic lesions and abdominal lymphoma is reviewed. Currently available data support the use of fine needle aspiration biopsy in establishing the diagnosis of lymphoma. This case highlights the utility of endoscopic ultrasonography with endosonographically guided real-time fine needle aspiration

biopsy in diagnosing and managing patients with extrahepatic biliary obstruction or suspected abdominal lymphoma. Pairing endosonographically guided real-time fine needle aspiration biopsy with on-site cytologic assessment and immediate specimen triage can lead to definitive diagnosis of abdominal lymphoma, avoiding surgical intervention in many cases.

Endoscopic ultrasound-guided diagnosis and therapy in pancreatic disease.

Soetikno RM , Chang K Gastrointest Endosc Clin N Am 1998 Jan;8(1):237-47

The role of endoscopic ultrasound (EUS) in the detection and staging of pancreatic cancer is well established in medical literature. The development of EUS-guided fine needle aspiration (FNA) and subsequently EUS-guided fine needle injection (FNI) has expanded the clinical utility of EUS. These newer techniques made "interventional" EUS possible. Several recent applications of EUS-guided FNI include celiac nerve block, pseudocyst drainage, and drug delivery into pancreatic tumors. EUS is also gaining acceptance as an alternative diagnostic modality in the management of choledocholithiasis. The value of EUS in the diagnosis of early chronic pancreatitis is still being actively studied. This article reviews a number of recent developments in EUS-guided diagnosis and therapy with an emphasis on EUS-guided FNA and EUS-guided FNI.

Endoscopic drainage of pancreatic pseudocysts: patient selection and evaluation of the outcome by endoscopic ultrasonography.

Etzkorn KP, DeGuzman LJ , Holderman WH , Abu-Hammour A , Schlesinger PK Harig JM , Watkins JL Endoscopy 1995 May;27(4):329-33.

In this study, the investigators describe the use of EUS with Doppler ultrasound in order to perform successful endoscopic drainage of pancreatic pseudocysts. The added feature of Doppler allowed these investigators to determine if there were significant vascular structures that lay between the interface of the pseudocyst and gastric wall. In such cases, attempts at transgastric drainage were aborted.