A Retrospective, Single Center Experience with the SharkCore Fine Needle Biopsy System: A New Bite in to Gastrointestinal Histological Sampling

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A Retrospective, Single Center Experience with the SharkCore Fine Needle Biopsy System: A New Bite in to Gastrointestinal Histological Sampling

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Materials and Methods

- Study type: Retropective, hypothesis-generating study conducted at a large, tertiary, single center teaching hospital for 6 months.
- Equipment and Endoscopic Ultrasound (EUS) Procedure:
  - Patients monitored under anesthesia care with procedures performed using a linear array endoscopic ultrasound (EUS) device with 20 or 25 G FNB needle of stainless steel (ID 0.020", 0.014 " and OD 0.028" and 0.020", respectively).
  - Localization of mass followed by needle puncture, stylet removed, and needle moved to-and-fro within the lesion four times. All tissue sampling performed with slow pull technique. Specimen then expressed onto slides by flushing air into needle assembly.
- Sampling Process:
  - Sample is obtained from needle onto two slides, one for Diff Quick staining, one Papanicolaou stain.
  - If core biopsy present, tissue material placed into a formalin container.
  - Hand chiming during ROSE to ensure adequate sample.
- Pathology:
  - specimens for histological sampling

Background

- Sharkcore Fine Needle Biopsy (FNB) system allows for interchangeability of all needle sizes through a universal delivery system for rapid needle exchange and passive deployment of the needle for the possible collection of histological samples.
- Studies suggest that diagnostic accuracy/adequacy can be enhanced with the use of rapid onsite evaluation (ROSE).
- Advantage of FNB vs FNA:
  - Accurate diagnosis of an otherwise undifferentiated tumor
  - Intra-abdominal lymph nodes, hepatic masses and biliary samples had 100% adequacy rate but were a low sample size
- Study aims
  - Assess the adequacy of tissue specimens obtained from the SharkCore FNB
  - Determine if location of the mass/lesion effects adequacy
  - Assess if ROSE is necessary in assisting with adequacy

Results

- Adequacy of samples determined by final pathological read was 87.9%.
- Factors to increase adequacy in sampling are ROSIE availability, experience of the endosonographer and familiarity or continued exposure to EUS procedures.
- Our study indicated, based on the pathology protocol, that this needle system did not provide core tissue samples.
- Majority of samples underwent histological processing, but were done so as an afterthought.
- One study reviewed the use of both FNA and FNB systems to obtain histological samples and revealed the FNB to be unassistable in yielding core specimens compared to the FNA system.
- ROSIE allows real time feedback to endosonographers to assist in adequacy samples for biological sampling with about a 10-15% increase in specimen yield in at least solid pancreatic masses.
- 96.2% of cases were able to obtain adequate sample, but with ROSIE absent, a majority of cases were still found to have adequate samples.
- Adequacy:
  - Majority of cases were sampled from pancreas with an adequacy rate of 84.2%.
  - Intra-abdominal lymph nodes, hepatic masses and biliary samples had 100% adequacy rate but were a low sample size.
- Our study is different in that it evaluates many different pathological sites not limited to solid pancreatic masses that are showing adequate sampling with the use of the SharkCore FNB system.

Limitations

- Small sample size (n = 33), single center
- Short time period (6 month) location of mass advanced endosonographers to access and train with new FNB system
- Pathology protocol for core tissue biopsies

Discussion

- Utilizing this technology for intra-thoracic malignancy
- Comparing ROSE adequacy with final pathology if increase familiarity with the system decreases the need for ROSE
- Change in how samples are processed by pathology

Future Studies

- Assess change in how samples are processed by pathology

References: