More recently, endoscopic ultrasound guided liver biopsy (EUS-LB) has been discussed as a liver biopsy method.\textsuperscript{1} EUS-LB uses high frequency ultrasound to visualize the liver for biopsy from inside the stomach and duodenum. Based on the limited evaluation of EUS-LB, the data suggests that EUS-LB is a safe method for liver biopsy.\textsuperscript{1}
Why EUS-Guided Liver Biopsy?

The Boston Scientific Acquire™ EUS-FNB 19ga Flexible Needle design is well-suited for liver biopsy cases, which require needle flexibility for navigation and acquisition in challenging lobe anatomy.

The Acquire EUS-FNB 19ga Flexible Needle is designed with a Franseen needle tip—a three-point cutting design proven for sample acquisition. As the biggest needle size in Acquire Needle family, the Acquire 19ga Flexible Needle may help meet the American Association for the Study of Liver Disease (AASLD) guidelines for liver biopsy. Reasons to consider EUS-Guided Liver Biopsy:

**EUS-LB Safety:**
- Real-time Doppler helps to avoid intrahepatic vessels
- Low complication rates (a multi-center study calls out a complication rate of 0.9%)

**EUS-LB Clinical Efficacy:**
- Reduce sampling error using fanning technique and ability to sample both lobes of liver
- Simultaneous evaluation of the pancreas, gallbladder, common bile duct and other structures
- Concurrent EGD to evaluate upper digestive disorders such as Barrett’s, varices, workup for abdominal pain, etc.
- Adequate or superior specimens to percutaneous and transjugular

**EUS-LB Patient Experience:**
- Single procedure is convenient and cost effective
- Patient stays within gastroenterology allowing for ongoing direct communication
- Sedation/analgesia for patient comfort, reduced anxiety, and eliminates need for breath hold

**EUS-LB Hospital Benefits:**
- Only a few minutes added to endoscopic procedure. From a ten patient study, liver FNA for histology added 4 minutes on average to the time of the EUS procedure
- Potential to increase outpatient referrals
- Keeps the procedure within GI

*Further studies required*
Patient Selection

An ideal candidate where EUS Guided Liver Biopsy should be considered is any patient undergoing an endoscopic procedure who also needs a liver biopsy:

- Patient with elevated LFT’s and negative EUS for stones and/or stricture
- Patients with suspected liver disease who is undergoing an EGD (Barrett’s, varices, abdominal pain, etc.)
- Patients who require sedation for liver biopsy
- Patients who require biopsy of both left and right liver lobes

*A patient with thrombocytopenia or coagulopathy may be better suited for transjugular liver biopsy*
Pathology

**Specimen Preparation:**
Speak to pathology to ensure proper handling of the specimen. The process below is intended to be performed by pathology to consolidate tissue:

1. Express into formalin
2. Technician pours contents into petri dish (figure a)
3. Pieces of liver tissue distinguishable from clot (figure b)
4. Wrap specimen in lens paper (figure c)
5. Process as surgical specimen

**Specimen Adequacy:**
- Specimen adequacy remains widely debated and can vary by pathologist and liver biopsy method
- Diagnostic tissue adequacy of 98% in EUS-LB prospective multicenter trial with 19ga Flex needle
- Needles as small as 20ga may be used in transjugular liver biopsies

*Portal Triads* 28
*Mean Total Specimen Length* 8cm

Image, portal triads and Specimen length information are provided by Jose M. Nieto, D.O.
Endoscopic Ultrasound-Guided Liver Biopsy: A Multicenter Experience

Diehl et al.

- 8 centers biopsied 110 patients with 19Ga Expect or 19Ga Flex
- 98% specimen adequacy for pathological diagnosis (median tissue length = 38mm; median CPT = 14)

Quantified yields from endoscopic ultrasound liver biopsies.

<table>
<thead>
<tr>
<th>Patients</th>
<th>Median tissue length, mm (range)</th>
<th>Median CPTs (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both Lobes</td>
<td>68</td>
<td>40 (9 - 148)</td>
</tr>
<tr>
<td>Left Only</td>
<td>34</td>
<td>32 (0 - 203)</td>
</tr>
<tr>
<td>Right only</td>
<td>8</td>
<td>49 (8-113)</td>
</tr>
</tbody>
</table>

CPTs, complete portal triads

EUS-Guided Liver Biopsy Provides Diagnostic Samples Comparable with Those via the Percutaneous or Transjugular Route

Geisinger Medical Center, Danville, PA

- EUS-LB of both lobes had better tissue yield (TSL & CPT) than PC & TJ
- EUS LB of left lobe only was equivalent to PC and TJ

<table>
<thead>
<tr>
<th>Methods</th>
<th>No. of Cases</th>
<th>TSL (mm)</th>
<th>CPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUS-LB</td>
<td>110</td>
<td>38 (24-81)’</td>
<td>14 [9-27]’</td>
</tr>
<tr>
<td>EUS-LB (transgastric only)</td>
<td>34</td>
<td>32 (16-66)</td>
<td>13 (6-23)</td>
</tr>
<tr>
<td>EUS-LB (both transgastic and transduodenal)</td>
<td>68</td>
<td>40 (30-82)”</td>
<td>17 [10.5-29]’</td>
</tr>
<tr>
<td>PC-LB</td>
<td>27</td>
<td>25 (15-38)</td>
<td>10 (7-16)</td>
</tr>
<tr>
<td>TJ-LB</td>
<td>38</td>
<td>34 (24-48)</td>
<td>15.5 (9-21)</td>
</tr>
</tbody>
</table>

* Indicates statistically significant p value compared to PC
** Indicates statistically significant p value compared to TJ

The values of CPT and TSL were reported as median with range of 25th to 75th percentile

113 Consecutive Transgastric Liver Biopsies for Hepatic Parenchymal Diseases: A Single-Institution Study

Indiana University, Indianapolis, IN

- More complete portal tracts provided by 19Ga Flex needle compared to QuickCore and ProCore needles
- 19 Flex was non-inferior to percutaneous or transjugular approaches in regards to number of portal tracts provided
Ease of Access

Right Lobe Access
1. Approach the apex of duodenal bulb (Refer to figures 1-4 above)
2. 180 degree torque
3. Knob up
4. Use Doppler to identify puncture site
   - Site should have minimal blood flow
   - Acquire 19ga Flexible FNB Device
   - Perform 7-10 actuations with 20cc suction

Left Lobe Access
- Identify celiac artery
- 90° counter clockwise torque
- Knob up
The Acquire™ EUS-FNB needle is designed to capture bigger tissue specimens

The Acquire EUS-FNB needle has the following features:

- High quality cutting surfaces that allow for a circumferential cut
- Three points that are designed to provide stability at puncture
- Echogenicity that allows for visibility of the needle under EUS
- The 19ga Flex is constructed with Nitinol, which is more resistant to needle deformation through tortuous anatomy compared to stainless steel*
- Improving MD confidence and sample quality

References

5. Pineda JJ, Diehl DL, Xiao CL, Johal AS, Khara HS, Bharushali A, Chen EZ. EUS-guided liver biopsy provides diagnostic samples comparable with those via the percutaneous or transjugular routes. Gastrointest Endosc. 2015 Aug 22

*Data on file; comparable size.

Ordering Information—Acquire 19ga Flexible FNB Device

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Needle Size</th>
<th>Minimum Working Channel</th>
<th>Sheath Diameter</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>M00555580</td>
<td>19ga Flex (1.14mm)</td>
<td>2.8mm</td>
<td>1.73mm</td>
<td>Box 1</td>
</tr>
</tbody>
</table>

Ordering Information—Expect™ Slimline (SL) 19ga Flexible Needle

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Needle Size</th>
<th>Minimum Working Channel</th>
<th>Sheath Diameter</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>M00555530</td>
<td>19ga Flex (1.14mm)</td>
<td>2.8mm</td>
<td>1.73mm</td>
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<tr>
<td>M00555531</td>
<td>19ga Flex (1.14mm)</td>
<td>2.8mm</td>
<td>1.73mm</td>
<td>Box 5</td>
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</tbody>
</table>

Packaging includes a 20cc syringe and one-way stopcock
Working length: 137.5cm to 141.5cm, adjustable
Needle length: 0cm to 8cm, adjustable

*Ordering Information—Expect™ Slimline (SL) 19ga Flexible Needle

Boston Scientific Corporation
300 Boston Scientific Way
Marlborough, MA 01752
www.bostonscientific.com
www.EndoSuite.com

Ordering Information 1.888.272.1001

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