What is Endoscopic Ultrasound (EUS)?

EUS is a low-risk diagnostic procedure, combining both endoscopy and ultrasound.

- **Endoscopy**: physician inserts a thin, flexible tube with a light and camera at the end to visualize structures within the digestive tract
- **Ultrasound**: uses high-frequency ultrasound waves to obtain detailed images of structures within the body

EUS is an advanced endoscopic technique that was initially developed in the 1980s and later gained wider clinical application with advancement in technology and physician training. A miniaturized ultrasound transducer on the end of an endoscope is advanced into either the upper or lower intestinal tract, thereby allowing ultrasound imaging of anatomical structures either within or adjacent to the digestive tract. During EUS, you are adequately sedated under monitored anesthesia care (i.e. propofol) by a skilled anesthesiologist or certified registered nurse anesthetist. EUS takes approximately 30 to 90 minutes to perform, and you can return home when the procedure is finished. You will need a responsible adult to accompany you to the procedure so that you can be safely transported home after completion and recovery from the procedure.

Why is EUS performed?

EUS is used to help diagnose a number of gastrointestinal disorders. The following is a list of common indications for EUS.

- Stage gastrointestinal cancers (determine how advanced the cancer is)
- Detection and biopsy of solid or cystic tumors within the pancreas
- Detection of small stones in the bile ducts
- Evaluation of recurrent acute pancreatitis
- Evaluation of small “lumps or bumps” (i.e. submucosal tumors) seen within the intestinal tract on general endoscopy
- Treatment of pain associated with advanced pancreatic cancer or chronic pancreatitis (i.e. EUS-guided celiac plexus neurolysis)
- Drainage of pseudocysts associated with complications from either acute or chronic pancreatitis (typically require overnight observation/hospitalization following the procedure)

Your physician may need to perform a biopsy (fine-needle aspiration or FNA) during the procedure to confirm the diagnosis. A thin needle is passed through the endoscope and across the intestinal wall under ultrasound-guidance into the tissue of interest. The sample is then sent to the pathology lab for
analysis. A biopsy may help to confirm the presence of cancer or whether the cancer has spread to other organs. EUS-guided FNA is generally a low-risk procedure with higher diagnostic accuracy when compared to conventional radiological techniques (i.e. ultrasound or CT-guided biopsy).

**What to Expect on the day of your EUS?**

Prior to your procedure, you will need to follow specific preparation instructions. The following is a list of general instructions prior to the procedure.

- If you are having EUS of the upper gastrointestinal tract, you may not eat or drink for six to eight hours prior to the procedure to insure that the intestinal tract is clear of food products.

- If you are having EUS of the lower gastrointestinal tract, you will need to follow a liquid diet followed by either an enema on the day of the procedure or a laxative preparation, similar to a colonoscopy, on the day prior to the procedure.

- If you have any medication allergies, please inform your physician.

- Your physician will instruct you regarding any prescription medications you are taking. In general, coumadin (warfarin) should be held five days prior to the procedure, and plavix (clopidogrel) should be held seven days prior to the procedure. Holding these medications should be discussed with your physician prior to the procedure.

On the day of your procedure, arrive one to two hours prior to the scheduled procedure time to allow ample time for registration and preparation. The following is a general description of events that will follow.

- An IV will be inserted to allow administration of fluids and sedatives.

- If EUS is performed on the upper gastrointestinal tract, generally a topical anesthetic will be applied to the throat since the endoscope passes through the mouth.

- The physician will then insert the endoscope through either the mouth or rectum, observing both the endoscopic and ultrasound images on a nearby monitor.

- A biopsy (FNA) will be performed if necessary.

- After the procedure, you will be transported to recovery where your physician will discuss the findings with you. You may then return home, accompanied by a responsible chaperone, and rest for the remainder of the day.

If you have any questions regarding your EUS procedure, please contact Dr. Sanders office at 251-414-5900 prior to the date of your procedure.
What is Endoscopic Retrograde Cholangiopancreatography (ERCP)?

ERCP is a highly specialized procedure that should be performed by experienced, skilled physicians. ERCP combines the use of endoscopy and fluoroscopy to visualize the bile ducts and pancreatic duct.

- **Endoscopy** - physician inserts a thin, flexible tube with a light and camera at the end to visualize structures within the digestive tract
- **Fluoroscopy** - X-rays are performed while contrast (a radiopaque liquid) is injected into the bile ducts and/or pancreatic duct to visualize the anatomy.

ERCP is an advanced endoscopic technique that was initially developed in the early 1970s for the diagnosis and treatment of disorders within the bile ducts and pancreas. It offers a less invasive, endoscopic approach than traditional surgical procedures for the biliary and pancreatic ducts. Using a specialized endoscope and fluoroscopy (X-rays), the physician passes the endoscope through the mouth to gain access to the bile duct and/or pancreatic duct from the first portion of the small intestine (duodenum). During ERCP, you are deeply sedated with either propofol-based anesthesia or general anesthesia (similar to surgical procedures) by a skilled anesthesiologist or certified registered nurse anesthetist. In general, ERCP takes approximately 30-90 minutes to perform. Following the procedure, you will be monitored in the recovery area, and the physician will then determine whether you can be discharged home, accompanied by a responsible adult, or admitted to the hospital for further observation.

Why is ERCP performed?

ERCP is used to diagnose and treat a variety of complex gastrointestinal disorders. The following is a list of common indications for ERCP.

- Diagnosis and treatment of common bile duct stones
- Diagnosis and treatment of strictures (blockage) involving the bile ducts and pancreatic duct
- Removal of pancreatic duct stones (complication of chronic pancreatitis)
- Treatment of Sphincter of Oddi Dysfunction (SOD)
- Diagnosis and treatment of recurrent acute pancreatitis
- Treatment of bile leaks following gallbladder surgery or trauma to the bile ducts
- Treatment of pancreatic duct leaks from acute or chronic pancreatitis or trauma to the pancreas
- Removal of tumors involving the major duodenal papilla (ampullary polyps)
What is an Endoscopic Sphincterotomy?

During an ERCP, sometimes the physician will need to perform a sphincterotomy to either obtain access to the bile duct or remove bile duct and pancreatic duct stones. During a sphincterotomy, the sphincter muscle that controls the drainage of bile and/or pancreatic juice is cut with a sphincterotome (small wire connected to electrocautery).

What to Expect on the day of your ERCP?

Prior to your procedure, you will need to follow specific preparation instructions. The following is a list of general instructions prior to the procedure.

- You may not eat or drink for six to eight hours prior to the procedure to insure that the intestinal tract is clear of food products.
- Arrive one to two hours prior to the scheduled procedure time to allow ample time for registration and preparation
- Please inform your physician of any medication allergies.
- Your physician will instruct you regarding any prescription medications you are taking. In general, coumadin (warfarin) should be held five days prior to the procedure, and plavix (clopidogrel) should be held seven days prior to the procedure. Holding these medications should be discussed with your physician prior to the procedure.
- An IV will be inserted to allow administration of fluids and sedatives.
- Following sedation, an endoscope will be inserted through the mouth to the first portion of the duodenum where access to the bile duct and/or pancreatic duct is obtained.
- Upon completion of the procedure, you will be monitored in the recovery area where the physician will discuss the findings of the procedure and determine whether you can be discharged home, accompanied by a responsible adult, or admitted to the hospital for further observation.

What are the risks or potential complications of ERCP?

The largest risk associated with ERCP is pancreatitis (generally a 5-10% risk). Pancreatitis is inflammation of the pancreas and can cause severe abdominal pain associated with nausea and vomiting requiring admission to the hospital for intravenous fluids and narcotics for pain control. Sometimes, the physician will place a small, temporary plastic stent within the pancreatic duct to reduce the risk of post-ERCP pancreatitis. If a pancreatic stent is placed, an abdominal X-ray is performed within 2-4 weeks to determine if the stent has spontaneously migrated into the intestinal tract or
remains within the pancreatic duct. If the stent remains in the pancreatic duct, the stent will need to be retrieved with a repeat upper endoscopy. Other potential complications include bleeding, infection, ductal injury and perforation. However, these complications are less frequent than pancreatitis.

**What is the SpyGlass Direct Visualization System?**

The SpyGlass Direct Visualization System is a single-operator cholangioscope that is used by experienced, skilled physicians to either remove difficult bile duct and/or pancreatic duct stones or evaluate indeterminate strictures within the bile ducts or pancreatic duct. Cholangioscopy is an advanced endoscopic technique whereby a small-caliber endoscope is advanced through a larger endoscope into the bile duct or pancreatic duct for direct endoscopic visualization of the anatomy and potential pathology. Historically, this procedure was performed with a mother-daughter scope system, requiring two skilled endoscopists. However, several limitations to this platform led to the development of a more user-friendly cholangioscope, SpyGlass. Currently, Springhill Medical Center is the only hospital in the Mobile area to have this technology available for patient care.

**Why is SpyGlass Performed?**

Occasionally, standard ERCP techniques are limited in the evaluation and treatment of difficult bile duct and pancreatic duct stones and assessment of indeterminate strictures. An indeterminate stricture is a blockage that occurs in either the bile duct or pancreatic duct that may be suspicious for cancer without a definitive tissue diagnosis. Historically, these patients may have undergone an invasive surgical resection without a tissue diagnosis. SpyGlass is also performed for the evaluation and management of common bile duct and pancreatic duct stones.

**What are the risks or potential complications of SpyGlass?**

The SpyGlass procedure carries similar risks to conventional ERCP. In addition, studies with SpyGlass have demonstrated an increased risk of cholangitis (infection of the bile duct) compared to conventional ERCP. Therefore, antibiotics are often used before and after the procedure to lower the risks of cholangitis. In addition, there are steps that your physician may take during the procedure to lower the risk of cholangitis.