



Sphincter of Oddi Dysfunction

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The sphincter of Oddi is a muscular valve that controls the flow of digestive juices (bile and pancreatic juice) through ducts from the liver and pancreas into the first part of the small intestine (duodenum). Sphincter of Oddi dysfunction (SOD) describes the situation when the sphincter does not relax at the appropriate time (due to scarring or spasm). The back-up of juices causes episodes of severe abdominal pain.

Doctors often consider SOD in patients who experience recurrent attacks of pain after surgical removal of the gallbladder (cholecystectomy). More than half a million of these surgeries are performed annually in the United States, and 10–20% of these patients present afterwards with continuing or recurrent pains. SOD is also considered in some patients who suffer from recurrent attacks of unexplained inflammation of the pancreas (pancreatitis).

About half of these patients will have findings on laboratory studies or imaging (blood test, ultrasound, CT scan, or MRCP) to suggest a definite abnormality, such as a stone in the bile duct. MRCP (magnetic resonance cholangiopancreatography) is nowadays a good non-invasive test for checking on the biliary and pancreatic drainage systems.

Based on patients' histories, physical examinations, and other clinical data, doctors can categorize these patients as having SOD Types I and II. The categories help guide treatment of the disease. They are based on a system called the Milwaukee criteria.

When symptoms are severe, standard treatment is to perform an endoscopic procedure called ERCP (endoscopic retrograde cholangiopancreatography). ERCP is a procedure for the examination or treatment of the bile duct and pancreatic duct. The procedure carries a risk of serious complications and is done under sedation by experts trained in the technique. It combines the use of x-rays and an endoscope that is

passed down to the duodenum, where the bile duct and pancreatic ducts drain, and a dye that is injected into the ducts.

An additional procedure, sphincter of Oddi manometry (SOM), involves passing a catheter into the bile and/or pancreatic duct during ERCP to measure the pressure of the biliary and/or pancreatic sphincter. It is considered the gold standard diagnostic modality for SOD.

Treatment depends on what is found. It may often involve cutting the muscular sphincter (sphincterotomy) to remove any stones or to relieve any scarring or spasm of the sphincter.

As noted above, a very important problem in this context is that these ERCP procedures carry a significant risk of complications. In particular, ERCP (with or without sphincter of Oddi manometry) can cause an attack of pancreatitis in 5-10% of cases. While most of these result in a few days in the hospital, about 1% of patients suffer a major attack, with weeks or months in the hospital.

Sphincterotomy also carries a small risk of other severe complications such as bleeding and perforation, and the possibility of delayed narrowing of a duct (stenosis) due to scarring.

Functional SOD

Patients with a similar pain problem, but who have little or no abnormalities on blood tests and standard scans (including MRCP), are categorized as having SOD Type III. The episodes of pain are assumed due to intermittent spasm of the sphincter. It is very difficult to effectively evaluate and manage patients with Type III SOD. Some physicians are skeptical of its existence, or assume that it is a part of a broader problem of a functional digestive disturbance such as irritable bowel syndrome.

Because of the risks of ERCP, patients with suspected SOD III are usually advised to try medical treatments first. Some respond to the use of antispasmodic drugs and/or antidepressants that may help decrease pain. There have been studies of other medical therapies, such as calcium channel blocking drugs. Despite a few encouraging reports, these methods have not proven to be effective generally, and are not widely used.

Patients who fail these approaches (at least those with severe symptoms) are usually advised to see specialists at referral centers. Further evaluation may involve additional or more specialized tests to help guide treatment options.

Clinical Research Study

The uncertainties in how best to diagnose and to treat “suspected” sphincter of Oddi dysfunction (and the risks involved) mandate further scientific investigation. The National Institutes of Health has recently funded an important study called “EPISOD” in 6 major Gastroenterology centers in USA.

The studies are being conducted at centers located in:

- Johns Hopkins Hospital, Baltimore, MD
- University of Alabama at Birmingham, Birmingham, AL

- Medical University of South Carolina Digestive Disease Center, Charleston, SC
- Indiana University, Indianapolis, IN
- Hennepin County Medical Center, Minneapolis, MN
- Virginia Mason Medical Center, Seattle, WA

Additional details are available at the NIH website at www.clintrials.gov by searching: sphincter of Oddi dysfunction III.

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