

**DR. SMOOT:** Hi, My name is Dr. Smoot. I'm a hepatobiliary surgeon at the Mayo Clinic. That's a surgeon that specializes in surgery of the liver, pancreas, and bile tubes.

Today, I'm going to talk to you a little bit about cholangiocarcinoma, or cancer of the bile ducts, or bile tubes of the liver. In general, there's a broad classification for these tumors that are extrahepatic and intrahepatic, meaning inside the liver or outside the liver. There are multiple different types of risk factors associated with development of these tumors, and they vary from patient to patient-- although, in most patients, we don't find an obvious risk factor.

The most common presenting symptom for patients with these tumors is jaundice. That's turning yellow. The skin, the eyes. The urine can turn dark because of the buildup of bilirubin in the blood system-- in the bloodstream. The diagnosis of these tumors is done based on CT scan most of the time. CT Scan of the abdomen demonstrates stricturing of the bile tubes, or narrowing of the bile tubes, and can demonstrate the actual tumor itself.

For patients with these type of tumors, they require a complex multidisciplinary approach. We often have diagnostic radiologists involved, interventional radiologists, gastroenterologists, surgeons like myself, medical oncologists who deliver chemotherapy, and possibly radiation oncologists that deliver radiation. There are several ways to treat these tumors. Chemotherapy, radiation, and surgery.

And in surgery, we have a couple of different approaches. Resection, or removal of part of the liver, as well as transplantation. This highly-coordinated, complex care requires a team of-- a care team that can be put together to diagnose and take care of these patients. That's one advantage that we have at a center such as Mayo Clinic-- Bringing patients here and coordinating a care team to develop a care plan for them.

For patients with a diagnosis of cholangiocarcinoma, we attempt to stage the tumor, or determine whether or not the tumor can be resected. There are multiple types of tests that we do to try to determine this. We often begin with a CT scan, or a CAT scan, of the abdomen and pelvis. And we typically include a CT scan of the chest to rule out any spread of the tumor, which sometimes can go to the lungs.

We also need to determine how the blood vessels that go into and out of the liver are related to the tumor. This helps us decide if we can take it out. In order to further define the extent of the bile tube involvement, or the bile duct involvement, we often get a test called an MRCP. That's an MRI scan that has special dye and special sequences that show us the bile system within the liver. Occasionally, rather than an MRCP, we use a test called an ERCP, and that's an endoscopic test, where a videoscope is placed into the mouth, down to the entrance of the bile tube, into the intestine, and dye is placed back up the bile tube.

As most patients have some level of jaundice-- or a yellowing of the skin and eyes-- and some of the associated complications with that, we often will place a stent. And there's two ways that that can occur-- via the endoscopic approach, similar to that ERCP test, where a stent is then put up to hold the bile tube open, or by puncturing through the liver in a test that is called a percutaneous transhepatic cholangiogram, where a tube is placed through the liver, stenting open that narrowing, or the area where the tumor is within the liver. Once this occurs, the jaundice often rapidly resolves, appetites improve, and patients feel better.

We then go about determining whether or not the patient can undergo a resection. Less than half of patients who present with cholangiocarcinoma are able to undergo a resection. For some patients-- a very select few patients-- who cannot undergo a resection, they may be able to undergo transplantation.

Mayo Clinic pioneered transplantation for cholangiocarcinoma and remains the highest-volume center in the world for treatment of this disease process, both overall and with transplantation. This specialized level of care and the coordination of multiple types of physicians required for care of these patients really does lend itself to an institution like Mayo Clinic, where these large care teams can be assembled.