GALLSTONES:

Gallstones are solid deposits of the digestive fluid bile that can form within the gallbladder. They occur when there is an imbalance in the chemical constituents of bile that results in the precipitation of one or more components.

They vary in size, these solid crystal deposits are formed by cholesterol, calcium ions, and bile pigments in the gallbladder or bile duct. The medical term for gallstones is cholelithiasis.

**TYPES OF GALLBLADDER STONES**:

* Cholesterol gallstones: These types are most common; they vary in size and are usually yellow-green in color. 80-85% are made of dissolved cholesterol, a fatty substance found in the bile. They are formed when there is an imbalance in the components of bile, resulting in excess cholesterol and a reduction in bile salts and lecithin (a type of fat).
* Pigment gallstones: Pigment stones are mainly formed of bilirubin, a pigment that is a waste product from the breakdown of red blood cells. They are also made up of calcium salts that are found in bile. These stones are, in most cases, small or dark in color. When there is excessive bilirubin in the bile, pigment stones are formed.

CAUSES OF GALLSTONES:

An imbalance in the composition of bile juice leads to the formation of gallstones. Other causes are:

* When your body is unable to process excess cholesterol, it can lead to the solidification of cholesterol, resulting in the formation of gallstones. This occurs when there is an excessive amount of cholesterol present.
* Bilirubin (bile pigment) is another causing factor in the bile.
* When your gallbladder doesn't empty correctly.

SYMPTOMS OF GALLSTONES:

Some symptoms and signs are as follows:

* Sudden intense rapid pain in the upper right portion of the abdomen.
* Pain in the right shoulder.
* Intense shooting pain in the center of your abdomen, just below your breastbone.
* Excessive sweating, high fever with chills.
* Vomiting and nausea.
* The feeling of fullness, flatulence, or feeling gassy.

TREATMENT OF GALLSTONES:

Gallstones can cause intense shooting pains and uncomfortable symptoms; your gastroenterologist may suggest either laparoscopy or open surgery as a line of treatment to get a permanent cure. Around 80% of patients with gallstone symptoms will require surgery. This surgical treatment would involve the removal of the gallbladder, and we call it cholecystectomy. The cholecystectomy is of two types:

* **LAPAROSCOPIC CHOLECYSTECTOMY**: Being the most widely preferred and best method for gallbladder stones, this surgery will take up to 90 minutes and is performed under general or local anesthesia. A surgeon will make a few small incisions on the abdomen, a laparoscope (a thin tube with a camera) is inserted in the abdomen to have a full view of the abdomen on the screen, the gallbladder is then separated from the neighboring organs, and the surgeon then carefully removes the gallbladder. These incisions are then carefully closed, resulting in the completion of surgery. It is a minimally invasive procedure, resulting in less pain and a faster recovery.
* **OPEN CHOLECYSTECTOMY:** If the gallbladder is severely inflamed and infected, the surgeon may recommend an open cholecystectomy. In this type of surgery, a four- to six-inch-long cut is made on the stomach underneath your ribs, and then the gallbladder is removed. Open cholecystectomy is a 1–2-hour procedure.

**DIAGNOSIS OF GALLSTONES**:

* Blood tests: A healthcare professional may perform certain blood tests to detect any signs of infection, jaundice, or inflammation in the pancreas along with the blood parameters that would indicate the presence of gallstones.
* Ultrasound: Ultrasound is the best imaging and primary diagnostic method for gallstones. A device called a transducer is used, which is safe and provides a clear image of the internal organs. In a few cases, gallstones might be present in the bile duct, which are not detected via ultrasound, and hence further tools are being used to identify them.
* Endoscopic retrograde cholangiopancreatography (ERCP): In this method, a camera is inserted into your mouth and taken to the bile duct. The main advantage of the ERCP method is that if gallstones are detected in your bile duct, the gastroenterologist can remove them simultaneously.
* Magnetic resonance cholangiopancreatography (MRCP): It is a special kind of MRI test that produces detailed images of the liver, gallbladder, bile ducts, pancreas, and pancreatic duct, and any inflammation around. Your healthcare provider would look at the gallstones that have moved from the gallbladder to the common bile duct. This method is less invasive as compared to ERCP and one cannot remove gallstones.
* Endoscopic ultrasound: In endoscopic ultrasound, a combination of ERCP and ultrasonography methods is used where a tube is inserted via the mouth into the bile duct to identify stones, and then the gastroenterologist will perform ERCP to remove the gallstones.

**TREATMENT BENEFITS:**

* Relief from sudden pain in the abdomen.
* The risk of perforated gallbladder decreases.
* The risk of gallstone ileus decreases when the gallstone travels to the intestine and blocks it.
* The risk of gallbladder abscess also decreases, wherein pus forms in the gallbladder.

**IF LEFT UNTOUCHED:**

Gallstones, if left untreated, might be more severe and complicated and lead to the following issues:

* Inflammation of the gallbladder: If the gallstones get blocked in the gallbladder duct, your gallbladder can get inflamed and lead to a condition (cholecystitis), which can cause fever, gallbladder infection, and pain.
* Blockage or infection of bile ducts: Bile duct inflammation also leads to intense pain in the upper abdomen, fever, and jaundice, which can lead to liver problems.
* Blockage or inflammation of the pancreatic duct: The pancreatic duct is a tube that passes from the pancreas and connects to the common bile duct just before entering the duodenum. A gallstone can lead to pancreatic duct blockage, which can cause pancreatic inflammation (pancreatitis). This causes intense abdominal pain that requires immediate hospitalization and can be life-threatening.
* Gallbladder cancer: Patients with a gallbladder history are at an increased risk of gallbladder cancer, however, it is a rare case, but the possibility of gallbladder cancer is still low, but the cancer is high.
* Jaundice: When the gallstone leaves the gallbladder and enters the bile duct, it blocks the bile flow. This blockage can cause diseases like jaundice and severe symptoms like pale skin (yellow), a white portion of eyes, dark brown urine, and pale stool.