

## Gallstones

### What are gallstones?

Gallstones are solid lumps of cholesterol crystals or pigment material that form in the gall bladder.

### What is the gall bladder and what does it do?

The gall bladder is a pouch that sits beneath the liver and stores bile, which is a greenish-yellow fluid produced by the liver. When we eat, the gall bladder releases bile into the small intestine where it helps to digest fats.

### How are gallstones formed?

Certain fats (such as cholesterol) are not easily dissolved in bile. When there is too much of these components in bile, they precipitate and form solid crystals. These clump together forming gallstones - also known as cholelithiasis.

### Are all gallstones the same?

No. There are different types of gallstones, depending on which component of the bile has solidified. Some gallstones are black pigment material. Also, the stones can vary in size ranging from tiny, sand-like particles less than one millimetre in diameter to more than four centimetres in diameter.

Almost 90 per cent of gallstones are composed of cholesterol; the remainder consists of pigment material (bilirubin). The reason for the formation of pigment stones is not yet fully understood; however, some people with chronic liver disease (e.g., cirrhosis) or red blood cell destruction, such as hemolysis (e.g. sickle cell anemia) are at risk for developing pigment stones.

### Who is at risk of developing gallstones?

- Gallstones occur in up to 20 per cent of Canadian women and 10 per cent of men by the age of 60.
- Women between the ages of 20 and 60 are three times more likely to develop gallstones than men, and women who have had multiple pregnancies are also more likely to develop gallstones.
- The prevalence of gallstones increases with age and with obesity.
- The incidence of gallstones is higher in certain racial groups. For example, in Canada 70-80 per cent of the First Nations population is affected with this disease.

## What symptoms are associated with gallstones?

Patients with symptomatic gallstones experience severe abdominal pain, and may suffer further complications such as jaundice (yellowing of the skin and eyes), and inflammation of the gall bladder, bile ducts, liver or pancreas. In contrast, about 80 per cent of people who have gallstones never develop any symptoms. These people are said to have so-called "silent" gallstones with no associated pain. Gas and indigestion are not specific symptoms of gall bladder or gallstone disease.

## How are gallstones diagnosed?

Gallstones are usually diagnosed by ultrasound. Other procedures, such as x-rays, may also be used. Often silent gallstones are detected incidentally during the investigation of another problem.

## How are gallstones treated?

Silent gallstones do not require treatment. Several gallstone therapies are available to people with symptomatic gallstones. There are two surgical methods to remove the gall bladder and its gallstones under general anesthesia:

- Open cholecystectomy is the classic surgical treatment for gallstones which requires an abdominal incision. The patient is usually hospitalized for five to seven days to recover.
- Laparoscopic cholecystectomy was introduced in 1990. Surgeons remove the gall bladder through small abdominal incisions using a lighted tube (called a laparoscope). The surgeon views the entire procedure on a television monitor. Because there is no cutting through the muscle of the abdominal wall, the recuperation period is much shorter.
- In a minority of patients, medical therapy can get rid of the gallstones, leaving the gall bladder intact. Cholesterol gallstones can be dissolved using a medication, ursodeoxycholic acid, taken by mouth, thus avoiding surgery. It is therefore suitable for patients for whom surgery may be risky. The rate of success is variable (40-80 per cent) and treatment usually requires at least six to twelve months.

With this medical therapy, there is a high risk of recurrence; in about half of the patients stones will recur after five years. The best candidates are those with very small gallstones and those who have mild symptoms. This treatment is now rarely used as surgery is relatively safe, quite cosmetically pleasing and very effective.

## How can gallstones be prevented?

Because obesity is a risk factor, people should aim to maintain an ideal body weight. Otherwise there is no specific diet for gallstone disease. Very obese individuals who are attempting drastic weight reduction are at risk for developing gallstones. They should lose weight under medical supervision. Ursodeoxycholic acid is used to prevent gallstone formation during the acute weight loss, particularly for the very obese individuals who are having bariatric surgery.

*Reviewed 2015*