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## The Blog of Michael R. Eades, M.D.

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### **How to get rid of gallstones without surgery**

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One of the first patients I saw as a medical student was a nice lady, who presented to the university hospital outpatient clinic with colicky, cramping abdominal pain. She described the pain as coming on after a meal, and said that it doubled her over with pain. The pain came and went, but had gotten worse over the past few days.

I took a long history from her and performed a physical exam, which included examining her abdomen. When I pushed on her right upper quadrant, she all but yelped and grabbed at my wrist. At that point in my medical education, I knew just enough to be dangerous, so I excused myself, left the exam room and presented this lady's case to the medical resident running the clinic that day.

He asked me a few questions, which, I, in my ignorance, had failed to ask the patient. A couple of the questions he asked, however, I did know the answers to. The patient was in her forties, she was blond, overweight, and had three children.

The resident then told me she fit the description of the four Fs of gall bladder disease: Fat, fair, forty and fertile. (As I was to learn later, there is actually a fifth F, which is female, and my patient fit that description as well.)



*Woman suffering the cholic*  
*etching by G. Cruikshank, 1819*  
Courtesy of the **Wellcome Library**

We went back to the exam room together, and the resident took over the exam. He asked about diet, family history, any history of previous occurrences of similar pain, and a few other questions. He said he would send her for some gall bladder studies to make sure, but he was relatively certain she had gall stones.

She asked what would have to be done if she did have gall stones. The resident told her she would require surgery to remove her gall bladder. She instantly burst into tears.

She told us her aunt had died during gall bladder surgery, and that she was terrified to undergo the surgery herself. She asked if there was any other way she could be treated besides surgery.

The resident replied that there was, but that it didn't work very well. He told her to get the gall bladder studies done, and if they were positive, he would set her up with the surgery department for further evaluation. And that they would discuss with all the options with her.

I never saw this patient again, so I don't know how her case ended up.

I did, however, ask the resident what this non-surgical treatment was. He told me it was some sort of drug that dissolved gall stones. I asked him if the drug really worked. He said he thought it did. I then asked why taking the drug wouldn't be better than fairly major abdominal surgery.

He replied that although the drug did dissolve gallstones, it didn't treat whatever the underlying problem was causing the gallstones in the first place. Patients who took the drug, got rid of their stones, but as soon as they went off the drug, the stones redeveloped. He said the only effective permanent treatment of gallstones was to remove the gallbladder.

Over the next few years of my medical education, I learned this was the common wisdom on dissolving gallstones. It can be done, but what's the point? The stones will simply come back.

## **Treating gallstones**

Turns out, however, that there may well be a way to avoid surgery, get rid of gallstones and, most importantly, keep them gone.

I'm going to lay out the approach I would take myself, should I ever develop gallstones, or would recommend to any family member with the same problem.

Before we get into the nuts and bolts, let's briefly discuss what gallstones are and why they develop.

The gallbladder is a little sack tucked up under the liver that acts as a bile reservoir. Bile is a thick yellowish-green liquid, made in the liver, stored in the gallbladder, and used to help break down or emulsify fat. A duct system runs between the liver and the gallbladder and the gallbladder and the upper end of the small intestine. Whenever fat leaves the stomach and enters the small intestine, the gallbladder contracts and squirts out a measure of bile that then mixes with the fat and starts breaking it up, so the fat can be more easily digested.

One of the major components of bile is cholesterol. Under certain circumstances, if bile sits around in the gallbladder, the cholesterol becomes supersaturated and can form stones called, appropriately enough, cholesterol stones. There is another type of gallstone called a pigment stone, but these kinds of stones are rare in non-Asian countries.

There are a number of conditions that lead to the formation of cholesterol stones in the gallbladder. You can read about them in more detail in this brief article about gallstones and gallbladder disease.

## **Risk factors for developing gallstones**

- **Hormone replacement therapy and birth control pills.** Estrogens tend to increase the amount of cholesterol in the bile and reduce the contracting movement of the gallbladder.
- **Some cholesterol lowering drugs.** Typically not statins. There is some evidence that treatment with statins might actually lower the risk of forming gallstones, but the jury is out until more research comes in. Certainly not a reason to start a statin.
- **Female.** During the reproductive years, women produce plenty of estrogen. Women suffer gallbladder disease at more than three times the rate as men. As many as 20 percent of women have gallstones by the time they are 60 years old.
- **Obesity.** Obesity, especially abdominal obesity, leads to increased levels of cholesterol in the bile. At higher concentrations the cholesterol will be more prone to precipitate out into gallstones.
- **Pregnancy.** The extra estrogen from pregnancy can, as with HRT or birth control pills, increase the cholesterol in bile and reduce the activity of the gallbladder.
- **Weight loss, especially rapid weight loss.** Lack of fat intake allows the bile a chance to sit in the gallbladder and form stones. This last risk we shall cover in more detail.

## How gallstones form during weight loss.

When you consume a fatty meal, the fat goes through the stomach and into the small intestine. The bile-filled gallbladder then gets the signal that fat is present and contracts, releasing its contents through the duct into the small intestine to combine with the fat-rich food as it enters the bowel. The bile then begins the emulsification and breakdown process. The liver makes more bile and sends it to the gallbladder to store, awaiting the next fatty meal coming down the pipe.

But what happens if there is not much fat in the diet?

Then there can be trouble. The gallbladder doesn't contract, and the bile inside becomes more concentrated. If the gallbladder isn't emptied, then cholesterol can become supersaturated and a stone could form. Stones that form can stay in the gallbladder causing irritation or can move down through the duct. If a stone gets stuck in the duct, it usually causes severe pain and requires surgery to fix.

From what you know so far, it should have occurred to you that keeping fat coming down the GI tract will ensure the gallbladder contracts regularly and will keep the bile from supersaturating with cholesterol. No supersaturation, no stones.

What kind of diet keeps fat moving down the GI tract? Obviously *not* a low-fat diet.

But a low-carb diet does keep fat moving down the GI tract throughout the day, emptying the gallbladder and pretty much preventing the formation of stones.

## Low-carb versus low-fat and gallstone formation.

About 15 years ago, MD and I ran the largest study group in the world looking at a drug called orlistat (Xenical, now Alli) as a weight loss maintenance drug. We recruited a large number of subjects, put them through thorough physical exams and an exhaustive battery of tests; those who passed, we entered into the rigid study protocol.

Here's how the study worked.

The drug company insisted that all subjects go on low-fat, calorie-restricted diets, which they were to follow for six months. If the subjects lost four percent of their body weight after six months, they were then to be randomized into one of three doses of orlistat or placebo.

Most of the subjects recruited were in the 200 pound range weight-wise. Which meant each had to lose at least eight pounds (4% of body weight) over the six months of low-fat, calorically-restricted dieting. It was amazing to MD and me how many patients could not lose even that small amount over six months on a low fat diet and had to be dropped from the study.

The other thing we found amazing was the number of subjects who developed gallstones over the six month period.

One of the battery of tests the subjects had to go through to get into the study was a gallbladder ultrasound, a test that determines the presence of gallstones. Any recruits who were found to have gallstones were rejected. So we started the study with a large group of subjects we knew were free from gallstones, put them on the low-fat diet, low-calorie diet and followed them for six months. Those who lost the requisite four percent of body weight then went through another round of testing including another gallbladder ultrasound.

We were stunned. I dont remember the exact figure, but somewhere in the range of *15 percent* of these subjects who were gallstone free at the start of the study had developed gallstones within six months.

Thats what a low-fat diet can do for you. Ive seen it up close and personal.

In the many years MD and I have treated countless obese patients with low-carb diets, weve never had a case of gallbladder disease. Ive often wondered if our patients had stones but just no symptoms. Now in the light of a new study in press, it appears that dieters who lose weight on higher fat diets *do not* develop gallstones. So I feel on more stable ground when I say our low-carb, high-fat dieting patients probably didnt have gallstones.

## Ursodiol and high-fat diets prevent gallstones during weight loss

A paper soon to be published in *Clinical Gastroenterology and Hepatology*, **Ursodeoxycholic Acid and High-fat Diets Prevent Gallbladder Stones During Weight Loss: a Meta-analysis of Randomized Controlled Trials**, looked at a number of strategies to prevent gallstones in adults who lose weight.

Since it is well known that rapid weight loss is major risk factor for developing gallstones, the authors of this paper searched for weight-loss studies in which subjects were checked for gallstones both before entering the trial and upon completion. Their goal was to see if taking ursodeoxycholic acid (ursodiol or UDCA), sold under multiple trade names, would prevent gallstone formation in rapid weight loss diets.

(An earlier form of UDCA was the drug the resident told me about years ago that would dissolve gallstones. The Wikipedia article provides a pretty **good explanation of how ursodiol works.**)

The researchers ended up tracking down eight studies in which subjects consuming low-fat, low-calorie diets were compared to others consuming the same diet with the added gallstone-dissolving drug. They also found five studies that looked at subjects who had just undergone gastric bypass, which is another risk factor for gallstone formation. (In fact, some surgeons take the gallbladder during the bypass surgery to prevent stone formation later.) Half the subjects in these five studies took UDCA post-surgery while the other half didnt.

Finally, for good measure, the authors ended up finding two more studies comparing how subjects fared gallstone-wise on low-fat, low-calorie diets as compared to higher-fat, low-calorie diets. Both diets contained the same number of calories. The diets differed only by fat content.

What were the findings?

Gallstone formation in both the groups of subjects on low-fat diets and post gastric bypass who took UDCA formed significantly fewer gallstones than those who did not take the drug. The effect was a little smaller in the post-gastric bypass group, but still significant.

The observed effect in our meta-analysis seemed to depend in part on the weight loss method, with patients post-bariatric surgery having a smaller benefit than patients on diet alone. UDCA decreased gallstone incidence from 19 to 3% in the diet alone trials and from 28 to 9% in the post-bariatric sugary trials.

How about the subjects on the higher-fat, low-cal diets as compared to those on the low-fat diets?

The lucky subjects randomized into the high-fat arm of the study fared very well. While 45 percent of subjects on the low-fat diet developed gallstones, none developed stones on the higher-fat, low-cal diet. Not a one.

The take-home message from this study is to make sure you get dietary fat should you go on a low-calorie, weight-loss diet. Or, better yet, follow a low-carb diet, which pretty much ensures you get plenty of fat. You want to make sure your gallbladder contracts regularly, so you wont have the cholesterol-rich bile sitting around in there waiting to precipitate.

One other message is that by taking UDCA, you can dissolve your gallstones without having to worry about them reforming *if* you make sure to eat enough fat to keep your gallbladder emptying.

**Caveat:** Those with known gallstones need to watch fat intake at first until the stones are dissolved. Most people with gallstone problems are aware of how much fat they can get away with eating. I wouldnt push it much beyond that until the gallstones are gone. They increase fat intake to keep the gallbladder contracting and new stones from forming.

Back in my surgery days, we did laparotomies (open abdominal surgery) to remove the gallbladder. Today, its typically done laparoscopically, which is a much more benign procedure. But still not without risk, especially since a general anesthetic is required. I dont have gallstones, but if I did, I would do whatever I could to avoid any kind of surgical treatment, so if I were given the option to dissolve my gallstones, I would certainly take it.

I wish I had had this information available when I took care the poor lady discussed at the start of this post. She likely could have avoided the surgery and all the angst that went along with it.

If any readers have had experience with UDCA, I would love to hear about it in the comments.

One last item. Im posting this at about 11:30 my time and boarding a plane tomorrow morning at 5 AM. So, I probably wont get comments posted until about midday tomorrow when I have a layover.

The post **[How to get rid of gallstones without surgery](#)** appeared first on **[The Blog of Michael R. Eades, M.D.](#)**.

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