



Calcium Oxalate Stone Prevention

What you can do

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Calcium oxalate stones are the most common kidney stones in Western society. It is known that 40% of first time stone formers will develop another stone within two years of the initial attack. The information that follows is a guide to help you prevent another stone. Some people who develop calcium oxalate stones have a specific medical condition which is causing the problem. This is not common and will have been looked for by your urologist. In the absence of a treatable metabolic problem there are still many things you can do.

Calcium and oxalate are present in the diet, so it would seem sensible to exclude these to fix the problem. Unfortunately it is not that simple.

Calcium restriction - this was once the advice given to stone formers, and you may hear this even today. This is no longer recommended because;

1) Cutting down on calcium increases the risk of stone formation.

Most calcium in the diet remains in the gut where it binds to oxalate from food and the liver. The bound oxalate cannot be absorbed and is excreted in the faeces. This means it never enters the bloodstream or the kidneys and never causes stones.

2) Calcium is an essential nutrient
A low calcium diet can lead to osteoporosis, a crippling bone disease seen in many elderly men and women. Osteoporosis is preventable in many people by taking a high calcium diet. bloodstream or the kidneys and

Healthy Foods High in Calcium

- Low fat milk / calcium fortified milk
- Low fat cheese - Swiss, ricotta, parmesan, feta, mozzarella, romano, cottage
- Yoghurt
- Sardines / pilchards
- Tofu
- Tinned salmon with bones
- Low fat ice cream

Oxalate restriction - Oxalate is common in foods, and it is not difficult to consume a large amount of oxalate within an otherwise healthy diet. This can increase the risk of developing stones. Below is a list of common foods high in oxalate. Unfortunately there may be some of your favorites below...

Foods High in Oxalate

- Chocolate
- Tea - including herbal teas
- Worcestershire sauce
- Rhubarb
- Raspberries
- Strawberries
- Soy sauce
- Baked beans
- Peanuts and Pecans
- Beer
- Juices made from berries

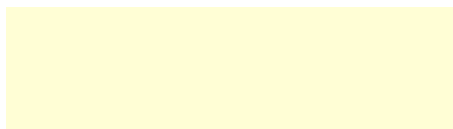
If you feel inspired, see the link below for an exhaustive list of high oxalate foods. Please keep in mind that you still have to eat. You will never have a perfect diet and any of the above in moderation are fine for stone formers. It is excessive intake which is the problem in a few people.

The story does not end with oxalate restriction.

Sodium restriction - a high sodium (salt) diet is one of the strongest contributors to stone disease in western society. Sodium exchanges for calcium in the kidney. A diet high in salt puts more calcium into the urine. The obvious way to reduce salt intake is not to add it to your cooking and remove the salt shaker from the table. Restriction of salty foods like preprocessed or take-away foods is also very helpful!

Protein restriction - the western diet is high in protein. This creates a large amount of acid in the body which the kidneys must excrete. Long term this results in extra calcium in the urine and the depletion of bone calcium, which causes osteoporosis. Food high in protein include all meats, nuts, soy and dairy products. You can try having vegetarian pasta or pizzas with low fat cheese instead of the typical meat and three vegetables meal.

Fluids - there is no doubt that water intake is important to stone formers. Stones can develop within a few minutes in the laboratory if the components are found in a high enough concentration. In the body stones may progressively grow during favorable times i.e. after a high oxalate / protein load on a hot day. If you can consistently drink enough water to keep your urine a pale to transparent colour you will significantly reduce the risk of stones. Aim for the colour below.



Rather than...



Uric Acid - some patients who form calcium stones have no other detectable abnormality than a high blood or urine uric acid level. Uric acid can form stones in its own right, but causes calcium stones by consuming inhibitors normally present in the urine. See the uric acid stone prevention page for more information.

Vitamin C - vitamin supplementation is becoming more popular. Vitamin C has been recommended in very high doses by some practitioners. Vitamin C is broken down in the liver into oxalate and normally 40% of body oxalate comes from this source. Studies in normal people have shown conflicting evidence on the effect of vitamin C on urinary oxalate. Most vitamin C is in the form of sodium ascorbate, giving a high dose of salt also. Whilst vitamin C appears safe it may contribute to stones in a few people, with the high doses of sodium another negative.

What medical therapies are available?

If you are found to have a specific metabolic problem treatments are available. For those who are found to have a high urinary calcium or low citrate other treatments are now available. Diuretics (fluid tablets) - thiazide diuretics and other diuretics such as indapamide can help lower the amount of calcium in the urine. They

will make you pass more water. Thiazides have a tendency to cause you to lose potassium, citrate and magnesium. Although this is not ideal, thiazides are a successful means of reducing stone risk.

Citrate - Citrate is a complexor of calcium in solutions. Citrate binds to calcium in the urine to dissolve it. Low citrate is a common finding in recurrent stone formers. (15-63%) Low citrate occurs because of drugs (thiazide diuretics), low magnesium diet, high protein diet and increased salt. Citrate supplementation can restore urine citrate to normal.

Trials have shown that potassium-magnesium-citrate reduced the risk of stone recurrence by 85%. *Ettinger B, Pak, CY, Citron JT et al Potassium-magnesium-citrate is an effective prophylaxis against recurrent calcium oxalate nephrolithiasis. J Urol. 150(6):2069-73, 1997*

Citrate is found naturally in citrus fruits and juices. Lemonade made up of lemon juice and water in a 1:20 ratio can effectively raise urinary citrate levels.

Seltzer MA, Low RK, Mc Donald M et al Dietary manipulation with lemonade to treat hypocitraturic calcium nephrolithiasis. J Urol 156(3):907-9, Sep 1996

Magnesium - Magnesium in the urine binds citrate to keep it in the water where it can bind calcium. It is best given as part of a citrate regime.

So what are the sensible things I can do?

- Drink more fluid
- Limit salt intake
- Limit oxalates
- Reduce protein intake
- Eat more citrus fruits
- Keep eating calcium

Where can I get more information?

Visit the web site at
www.hollywoodurology.com
 for more detail and links to support groups and various information site.

All information provided is aimed to supplement and not replace the advice given from your treating doctor.
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