

Minnesota Urolith Center * UNIVERSITY OF MINNESOTA

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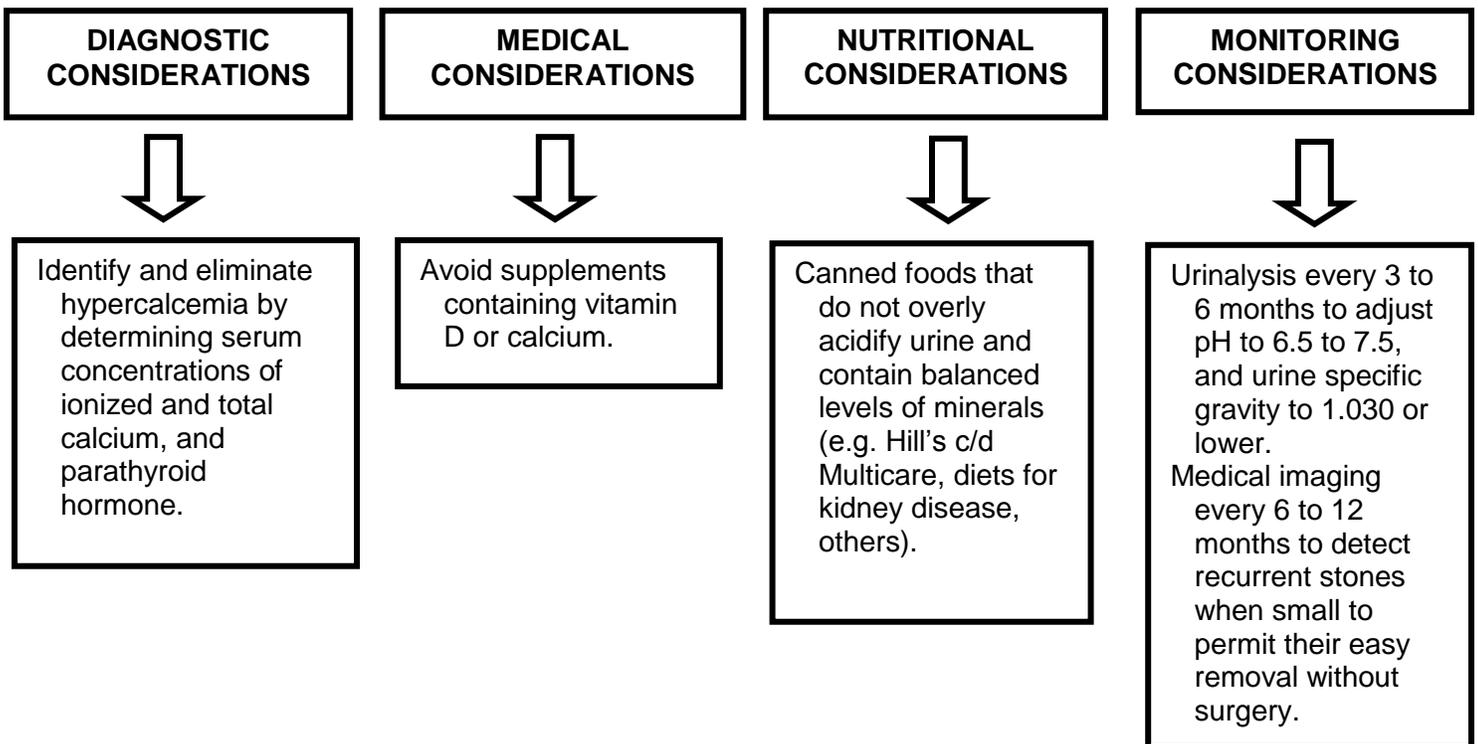
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FELINE CALCIUM PHOSPHATE

Calcium phosphate uroliths (hydroxyapatite, brushite, whitlockite, and octacalcium phosphate) are uncommon in cats. Common conditions associated with these minerals include hypercalcemia, hyperparathyroidism, and dystrophic and ectopic mineralization of vital tissues (i.e. blood clots, urothelium, etc.).

PREVENTION



** We advise reviewing manufacturer's literature regarding selected therapeutic foods to determine indications and contraindications. For pets with multiple health concerns, we suggest that the selection of diet should take into consideration all health needs of the pet.

In depth recommendations and references are available on our website: urolithcenter.org under the resources tab.

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I will not use the knife, not even on sufferers from stone, but first will consult with individuals engaged in this work.

Modified from the Hippocratic Oath

FELINE CALCIUM PHOSPHATE UROLITHS

The most common forms of calcium phosphate observed in feline uroliths are hydroxyapatite and carbonate-apatite. The name carbonate-apatite is derived from the fact that carbonate ion may displace phosphate ion in some uroliths. Less common forms of calcium phosphate include calcium hydrogen phosphate dihydrate (Brushite), tricalcium orthophosphate (Whitlockite), and octacalcium phosphate.

Calcium phosphate is commonly found as a minor component of struvite and calcium oxalate uroliths. Uroliths composed principally of calcium phosphate are uncommon in cats. Calcium phosphate uroliths have been found in association with primary hyperparathyroidism in humans and dogs, and this association has also been made in cats.

We have documented nephroliths composed of blood clots mineralized with calcium phosphate. Formation of highly concentrated urine in patients with gross hematuria may favor formation of blood clots. Mineralized blood clots may remain inactive for long periods, thus surgical removal is not always warranted.

Protocols designed to dissolve or prevent calcium phosphate uroliths in cats have not yet been developed. Surgery remains the most reliable way to remove active uroliths from the urinary tract. We emphasize that surgery may be unnecessary for clinically inactive calcium phosphate uroliths.

Based on results of studies in other species, limiting dietary protein, calcium, phosphorus, and sodium may minimize hypercalciuria. Enhancing formation of dilute urine by feeding a canned diet, or encouraging drinking may also be beneficial.

There has been little clinical experience in the use of drugs in dogs and cats with calcium phosphate uroliths. However, medications which can enhance calcium excretion such as glucocorticoids, diuretics, and those containing large quantities of sodium should be avoided if possible.

If uroliths should recur despite control of risk factors, they may be removed non-surgically by voiding urohydropropulsion if detected early.¹ Uroliths removed by voiding urohydropropulsion should be quantitatively analyzed.

All prevention recommendations should be adjusted to meet individual patient's needs. We recommend follow-up urinalyses, serum chemistry profiles, and radiographs on a periodic basis.

Further references:

¹Lulich JP, Osborne CA, Unger LK, et al: Nonsurgical removal of urocystoliths by voiding urohydropropulsion. In Journal of the American Veterinary Medical Association. Vol 203, pp. 660-663, 1993

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