UROLITHIASIS

EVALUATION/PREVENTION

Risk Factors

**LOW FLUID INTAKE**

- Diet: Increased animal protein
- Increased oxalate- tea, chocolate, leafy green vegetables, peanut butter
- Increased sodium

Immobilization

Obstruction

Biochemical:

- Absorptive Hypercalcuria
- Resorptive (hyperparathyroidism) Hyperoxaluria
- *Renal leak*
- Primary (congenital-rare) Hyperuricosuria
- Enteric (regional enteritis, colitis, short bowel etc.) Hypocitraturia
- *Dietary* Hyperuricosuria
- With or without gout Hypocitraturia
- RTA
- Chronic diarrhea
- Thiazide Rx
- *Idiopathic*

Metabolic Evaluation

**URINE:** 24 hour volume, pH Calcium, phosphorous, uric acid
**BLOOD:** Ca, phos, uric acid Oxalate and citrate Electrolytes (RTA)

Medical Treatment:

1. **INCREASED FLUID INTAKE**
2. **Diet:** Restrict animal protein and sodium
   - Do not restrict calcium (osteoporosis + increased oxalate excretion)
1 & 2 are universally applicable. In addition, specific metabolic abnormalities are treated:

3. Hypercalcuria
   - Thiazides
4. Hyperoxaluria
   - Restrict oxalates (see above)
   - Consider calcium supplement
5. Hypocitraturia
   - Potassium citrate (Urocit-K)
6. Hyperuricosuria
   - Alkalinate urine (Urocit-K, Na Bicarbonate)
   - Allopurinol

STRUVITE STONES

1. Associated with infection with urea splitting bacteria: Proteus, Klebsiella, Pseudomanas, Enterococci, Staph. **Never** E.Coli
2. Stones tend to be bulky. Staghorns
3. Successful Rx requires eradication of both stone and infection.
4. Treatment Modalities:
   - PCNL
   - ESWL (with small stone burden)
   - “Sandwich” PCNL>ESWL>PCNL
   - Anatrophic Nephrolithotomy (open renal surgery)
   - Nephrectomy

URIC ACID STONES

- Non-opaque on X-ray
- Can be seen on CT scan or ultrasound
- Only occur in acid urine.
- Can be dissolved by alkalinization