نحوه اپروچ به آقای ۵۰ ساله با سابقه سنگ کلیه در درمانگاه پزشکی خانواده

ارایه دهنده: دکتر فاطمه آقاجانلو کارورز پزشکی خانواده

استاد راهنما: استاد طاوسیان دانشیار گروه اورولوژی

CHIEF COMPLAINT

آقای ۵۰ ساله با سونوگرافی مبتنی بر سنگ کلیه

PRESENT ILLNESS

آقای ۵۰ ساله با سابقه سنگ کلیه و سونوگرافی مبتنی بر سنگ جهت کنترل و تنظیم داروهای فشار خون به درمانگاه پزشکی خانواده مراجعه کرده است. در حال حاضر هیچگونه علائم ادراری اعم از دیزوری، فریکوئنسی، هماچوری و درد فلانک ندارد. بیمار سابقه سنگ کلیه اسید اوریکی و دو اپیزود رنال کولیک سابقا داشته است که با درمان حمایتی بهبود پیدا کرده است. آزمایشات و سونوگرافی دوره ای کلیه انجام داده و با جواب آنها به درمانگاه مراجعه کرده است. سابقه ای از نقرس ذکر نمیکند. فشار خون بیمار با داروهای مصرفی کنترل می باشد.

PMH: فشار خون

PSH: Neg

DH: (Valzomix) Amlodipine/Valsartan/HCT 5/160/12.5

AH: Neg

FH: Neg

HH: smoking

PHYSICAL EXAMINATION

V/S: BP= 124/70
Ht= 172 cm / Wt= 97 kg / BMI= 32.8

بیمار هوشیار و اورینته بود. در ظاهر ILL و TOXIC نبود.
ملتحمه Pale نبود و اسکلرا Icteric نبود.
سمع ریه‌ها قرینه و Clear بود. دیسترس تنفسی نداشت و ویز و رال سمع نشد.
معاینه قلب نرمال بود.
نبض اندام‌ها پر و قرینه بود.
در معاینه شکم اسکار جراحی مشاهده نمیشد، تندرنس، ریباند تندرنس و گاردینگ نداشت.
فلانک تندرنس نداشت.

W.B.C	٦,٥٨
HB	١٥,٥
RBC	٥,٠٥
PLT	١٨٤
fbs	117
urea	٣٠,١
Blood urea nitrogen	14.7
creatinine	١,٠٩
Uric acid	٦,٥
cholesterol	١٤٥
triglycerides	٤٥٠
calcium	8.86

ferritin	٢٠١,٥٢
PSA	١,١٥
Free PSA	٠,٢٧
Free PSA/PSA	٢٣,٤٨
T4	74.16
TSH	4.84
Direct bilirubin	0.24
Total bilirubin	1.2
ast	٢١
alt	39
alkp	١٨٢

Stone Analysis

Test	Result	Unit	Method	Reference value
Urinary Tract Stone	-			
Piece of calculi	5			
Color	Brown			
Size	7*3*2 mm			
Weight	0.1 gr			
Surface	Rough			
Calcium oxalate	%10			
Other	%5			
Tri-Calcium phosphat	%5			
Uric Acid	%75			
Calcium Hydrogen phosphat	%5			

* = Confirmed by Repeated Analysis

انجام آزمایش ها در این مرکز با دستگاههای پیشرفته و مدرن انجام می شود .

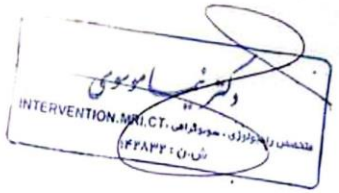
Dear Dr: JALALI ۱۴۰۴/۰۳/۲۱

On sonography of the abdomen, pelvic cavity and the retroperitoneum (transabdominal approach using 3.5 MHz curved probe);

The liver is normal in size and has diffusely increased echogenicity with normal vascular borders suggesting diffuse fatty liver grade I-II.

No space-occupying lesion is evident in the liver.
The bile ducts and portal vein are of normal diameter.
The gallbladder is of normal wall-thickness and is devoid of any stone.
The spleen is of normal size (104 x 42 mm) and shows homogeneous echogenicity.
The pancreas is of normal size and echogenicity.
Neither ascites nor para-aortic adenopathy is visible.
Both kidneys are of normal size and echopattern (RK= 116 mm & LK= 116 mm).
Renal parenchymal thickness is in normal range on both sides (15 mm in right side and 16 mm in left side).
-Two stone about 8 mm and 5 mm are seen in middle calyx of left kidney
No detectable hydronephrosis is present.
The bladder wall-thickness is normal size and contain internal echo in favor of RBC-of stone passage or crystalluria correlation with UA/UC exam is recommended
The prostate is upper limit of normal size with 25 cc volume

Yours sincerely,
Dr.Mousavi
Radiologist



Dear Dr: sekhavatimoghadam ۱۴۰۳/۱۰/۳۰

Dear Dr .

ABDOMINAL & PELVIC ULTRASONIC EVALUATION :

The liver shows prominent size and diffusely increased echopattern suggestive of fatty liver (Grade II-III) .
No dilatation is visualized in CBD and portal .
The gallbladder has normal wall thickness and echolucency .
The visible part of pancreas has normal size and echogenicity .
The spleen (115 mm) has normal size and echogenicity .
Both kidneys have normal shape , cortical thickness and corticomedullary echogenicity .
RK =113 mm (Pt :15 mm) *LK = 120 mm (Pt : 16 mm)*
Both pelvicalyceal systems are not dilated .
Stone about 9 mm and 4 mm are seen in middle calyx of left kidney .
Few tiny stones up to 3 mm are seen in both kidneys.
No mass lesion is visualized .
Bladder mucosal wall thickening is normal and no S.O.L is seen .
Prostate has mildly enlarged 30 cc volume with mild heterogeneous echo.

YOURS SINCERELY
M.KORDI.M.D.RADIOLOGIST
95309 ن.پ

LONG-TERM MANAGEMENT OF NEPHROLITHIASIS

Initial assessment

- History
- Basic laboratory tests
- Stone analysis
- 24-hour urine collection
- Imaging

Major risk factors for calcium stones

Urinary
Lower volume
Higher calcium
Higher oxalate (CaOx stones)
Lower citrate
Higher pH (CaP stones)
Anatomic
Medullary sponge kidney
Horseshoe kidney
Diet
Lower fluid intake
Lower dietary calcium
Higher oxalate
Lower potassium
Higher sodium
Higher sucrose
Higher fructose
Lower phytate
Higher vitamin C
Other medical conditions
Primary hyperparathyroidism
Gout
Obesity
Diabetes mellitus
Distal renal tubular acidosis
Inflammatory bowel disease
Malabsorptive bariatric surgery
Short bowel syndrome

Types of Renal Stones & Risk Factors

❖ **Calcium oxalate**

most common

Risk: hypercalciuria, low fluid intake, high oxalate

❖ **Uric acid**

Risk: acidic urine, high uric acid, metabolic syndrome

❖ **Struvite**

infection stones

Risk: recurrent UTIs with urease-producing bacteria

❖ **Cystine stones**

Risk: hereditary cystinuria

❖ **Drug-induced stones**

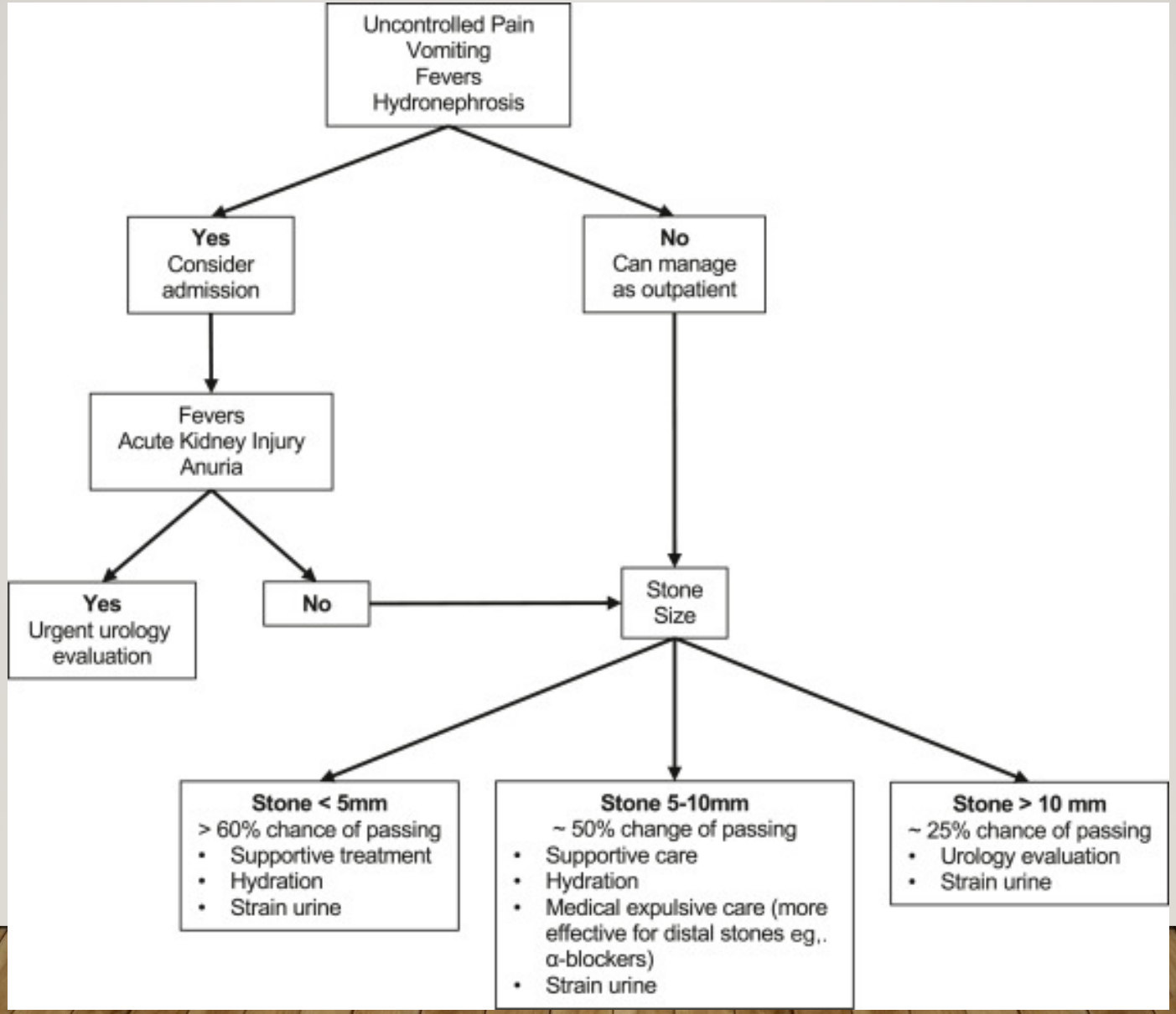
Indinavir, Topiramate, loop diuretics, vitamin C

	CAUSES	PRECIP.	CRYSTAL SHAPE	X-RAY/ CT SCAN	TREATMENT
CALCIUM (OXALATE/ PHOSPHATE)	• Hypercalciuria • Ethylene glycol ingestion • Vitamin C overuse • Malabsorption (Crohn disease)	Oxalate: ↓↓ urine pH Phosphate: ↑↑ urine pH	Envelope	Radiopaque	• Thiazide diuretics • Citrate
STRUVITE (AMMONIUM MAGNESIUM PHOSPHATE)	• Urease + bacteria (Staph, Proteus, Klebsiella)	↑↑ urine pH	Coffin lid	Radiopaque	• Eradicate bacterial infection
URIC ACID	• Hyperuricemia • Gout • Leukemia • ↓↓ urine volume	↓↓ urine pH	Rhomboid	Radiolucent	• Urine alkalinization ($NaHCO_3$)
CYSTINE	• Cystinuria	↓↓ urine pH	Hexagonal	Faintly radiopaque	• Urine alkalinization ($NaHCO_3$)

Uric Acid Nephrolithiasis –Pathogenesis

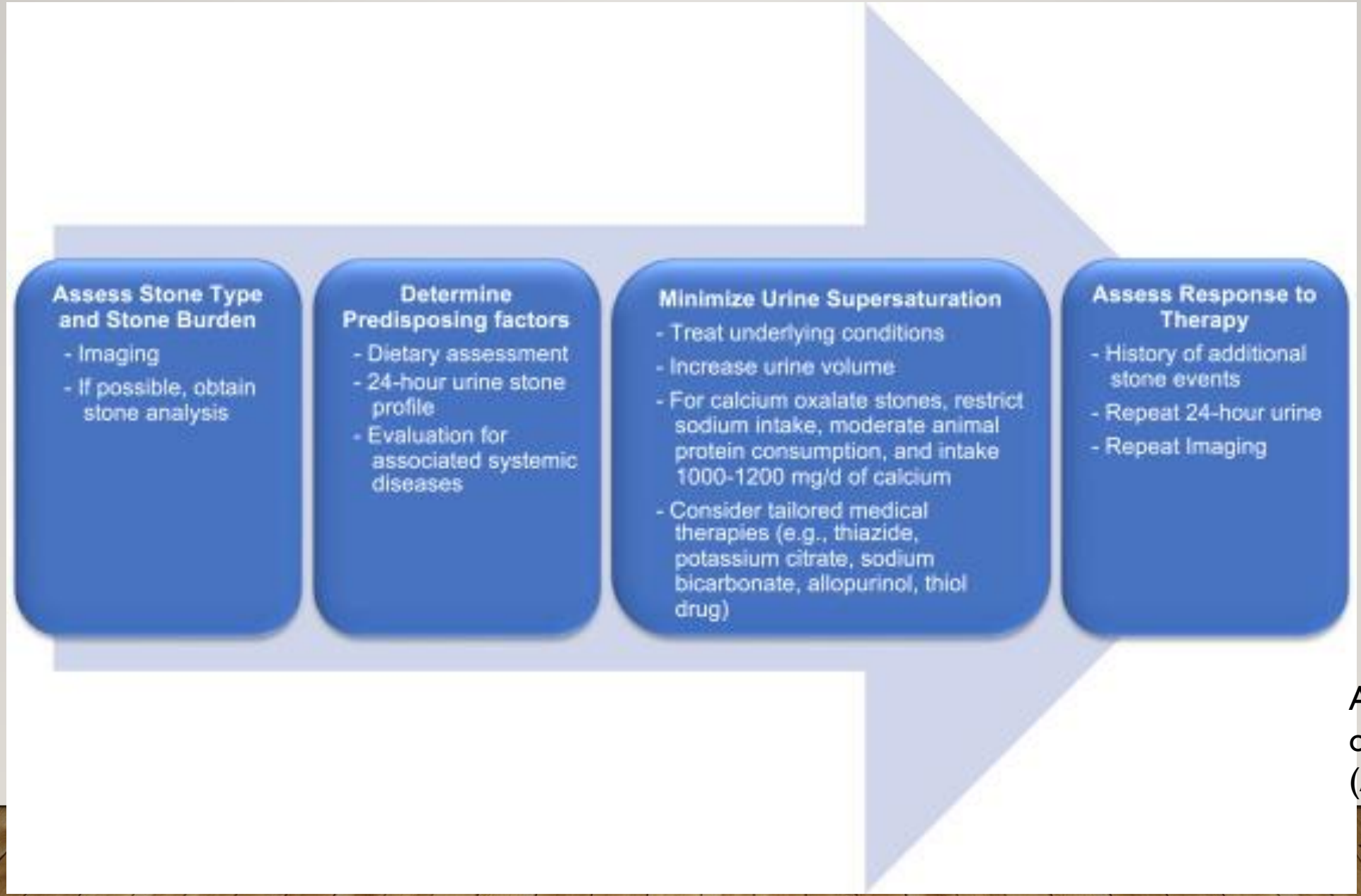
- Low urine pH (<5.5): key factor for precipitation
- Solubility decreases as pH drops
- Common in: gout, diarrhea, metabolic syndrome, dehydration
- Not always linked with hyperuricosuria

Acute management of nephrolithiasis



American journal of kidney diseases (AJKD), 2023

chronic management of nephrolithiasis



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Chronic Stone Follow-Up and Evaluation

- Annual imaging: Ultrasound (CT if clinically indicated)
- Urine analysis (volume, pH, uric acid, citrate)
- Monitor BP, glucose, BMI
- Stone composition analysis guides management
- Check medication list for stone-promoting agents

Long-Term Management: Uric Acid Stones

First line:

↑hydration (urine output >۲٫۵ L/day)

Urinary alkalinization: Potassium citrate or bicarbonate

Target pH: ۷–۶٫۵

If recurrent stones despite alkali:

Add xanthine oxidase inhibitor (e.g. allopurinol)

Avoid sodium-based alkali due to calcium stone risk

Family Practice Recommendations & Patient Education

Lifestyle:

Hydration, weight loss, reduce salt/protein/oxalate

Monitoring :

Urine dipstick pH at home

Yearly ultrasound

Education:

Warning signs (pain, hematuria, infection)

Adherence to alkali therapy

Minimize stone-promoting drugs

Diet to Prevent Calcium Kidney Stones

Category	Recommended	Limit / Avoid	Why
Fluids	Plenty of water (2.5-3 L/day) fresh lemon or citrus juice	Sugary drinks cola sodas	Dilutes urine, lowers stone-forming substances
Dietary Calcium	Low-fat dairy (yogurt, milk, white cheese) low-oxalate greens	Calcium supplements without doctor's advice	Calcium in food binds oxalate in the gut and reduces its absorption
Protein	Plant-based protein, poultry fish in moderation	Excess red meat, organ meats, processed rreals	
Salt	Less than 5 g/day	Processed and saity foods	High sodium → more urinary calcium excretion
Fruits & Vegetables	Wide variety of fresh produce (except high-oxalate ones in excess)	Spinach, rhubarb, beets, large amounts of nuts	
Grains & Fiber	Whole-grain bread, oats, brown rice	Very large amounts of raw wheat bran	Soluble fiber reduces oxalate absorption
Fats	Olive oil, nuts in small amounts	Fried and high-fat foods	

- Urine should be mostly clear or very pale vellow.
- include some calcium-containing food with each meal (to bind oxalate in that meal)
- Reducine salt is just as important as drinking enough fluids.

Levels of prevention

- Primordial Prevention
- Primary Prevention
- Secondary Prevention
- Tertiary Prevention
- Quaternary Prevention

Primordial Prevention

- Promote healthy lifestyle habits in the general population such as adequate hydration, balanced diet low in sodium and oxalate-rich foods, and regular physical activity.
- Educate communities on avoiding high salt intake and excessive consumption of animal protein, which can contribute to stone formation.
- Encourage policies that improve access to clean drinking water.

Primary Prevention

- Counsel patients with a family history of kidney stones to increase water intake to produce at least ٢ liters of urine daily.
- Advise dietary modifications like reducing salt, oxalate-containing foods (e.g., spinach, nuts), and excessive animal protein.
- Manage medical conditions that predispose to stones, such as hyperparathyroidism or metabolic syndrome.

Secondary Prevention

- Screen patients with recurrent urinary symptoms or family history using urine analysis or imaging to detect asymptomatic stones.
- Manage identified stones early through medical therapy or referral for lithotripsy to avoid obstruction or infection.
- Monitor metabolic abnormalities in patients with prior stones to prevent recurrence.

Tertiary Prevention

- Provide appropriate treatment for complications such as infection, obstruction, or renal damage (e.g., surgical removal of stones).
- Manage chronic kidney disease that may arise from recurrent stones.
- Educate patients on lifestyle and medical adherence to prevent further episodes.

Quaternary Prevention

- Avoid unnecessary imaging or invasive procedures in patients with low-risk or asymptomatic stones.
- Counsel patients about the risks and benefits of interventions, preventing anxiety and overtreatment.
- Promote shared decision-making and evidence-based care to minimize harm.