

Oliguria, anuria & retention of urine

Learning Objectives

- Definition of oliguria and anuria
- Pathogenesis and types
- Causes
 - Prerenal
 - Renal
 - Post renal
- Evaluation
- Management

Oliguria & Anuria

- Anuria – absence of production of urine.
- Oliguria – excretion of urine $< 400\text{ml}$ (300ml, 500ml) – insufficient for waste excretion.
- Normal production mechanism disturbed.

Normal urine production mechanism

- Renal perfusion
 - Blood pressure
 - Oxygen.
- Glomerular filtration
- Tubular reabsorption.
- Collecting system.
- Causes of oliguria / anuria – Prerenal, renal & post renal

Pre-renal

1. Hypovolemia

1. Fluid loss – bowel, bladder skin, 3rd space
2. Bleeding – Internal, external & surgery.

2. Cardiogenic

3. Neurogenic

4. Septic

5. Others

Renal

1. Glomerular

2. Tubular

3. Interstitial

4. Vascular

5. Others

Post-renal

Site – bilateral ureteral obstruction, unilateral in a SFK, or bladder outlet obstruction

Causes of ureteral obstruction

1. Calculus
2. Necrotic papilla
3. Crystalluria
4. Primary and secondary tumors
5. RPF
6. Iatrogenic
7. Schistosomiasis

[Next](#)

[Previous](#)

[Last Viewed](#)

[See All Slides](#)

[Zoom In](#)

[Custom Show](#) >

[Show Presenter View](#)

[Screen](#) >

[Pointer Options](#) >

[Start Subtitles](#)

[Subtitle Settings](#) >

[Keep Slides Updated](#)

[Update Slides](#)

[Help](#)

[Pause](#)

[End Show](#)

Evaluation

What

- Is it anuria or urinary retention?
- What is the cause?
- What is the magnitude of the problem?

How

- History
- Examination
 - General
 - Abdomen
 - Genital, P/R P/V
- Investigation
 - Lab
 - Imaging
 - Endoscopy



F.G. DIAGNOSTIC IMAGING

C5-2 40R Abd/General

03 Oct 07

10:20:20

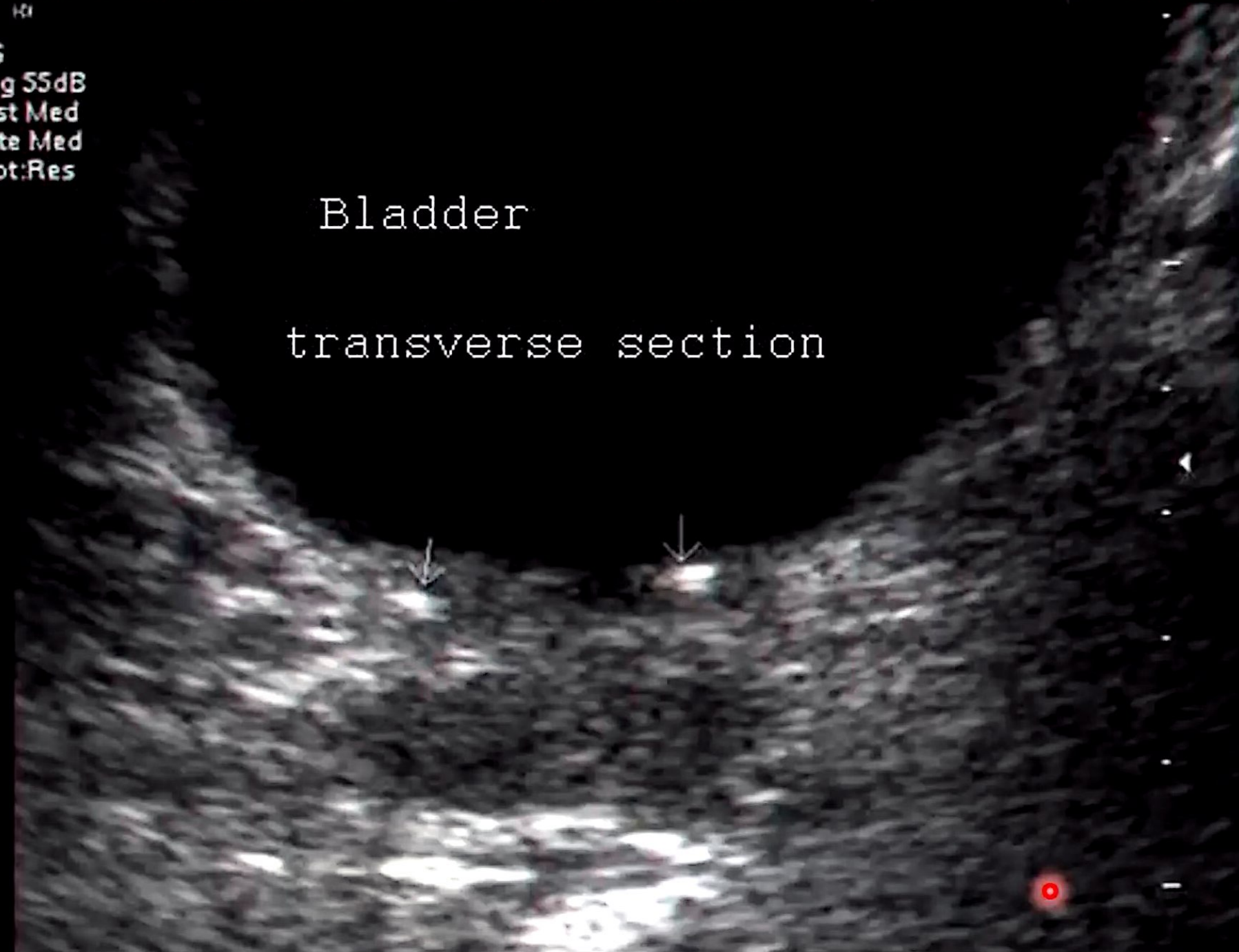
Tls 0.3 MI 1.1

F# 219 13.7cm

Map 6
DynRg 55dB
Persist Med
Fr Rate Med
2D Opt:Res

Bladder

transverse section



TOSHIBA

Pure

T 1

Pure

T 2

P100

R

6C3

T4.6

19fps

DR60

G84

L

6C3

T4.6

19fps

DR60

G84

RT KIDNEY

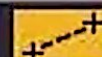
LT KIDNEY

Qscan

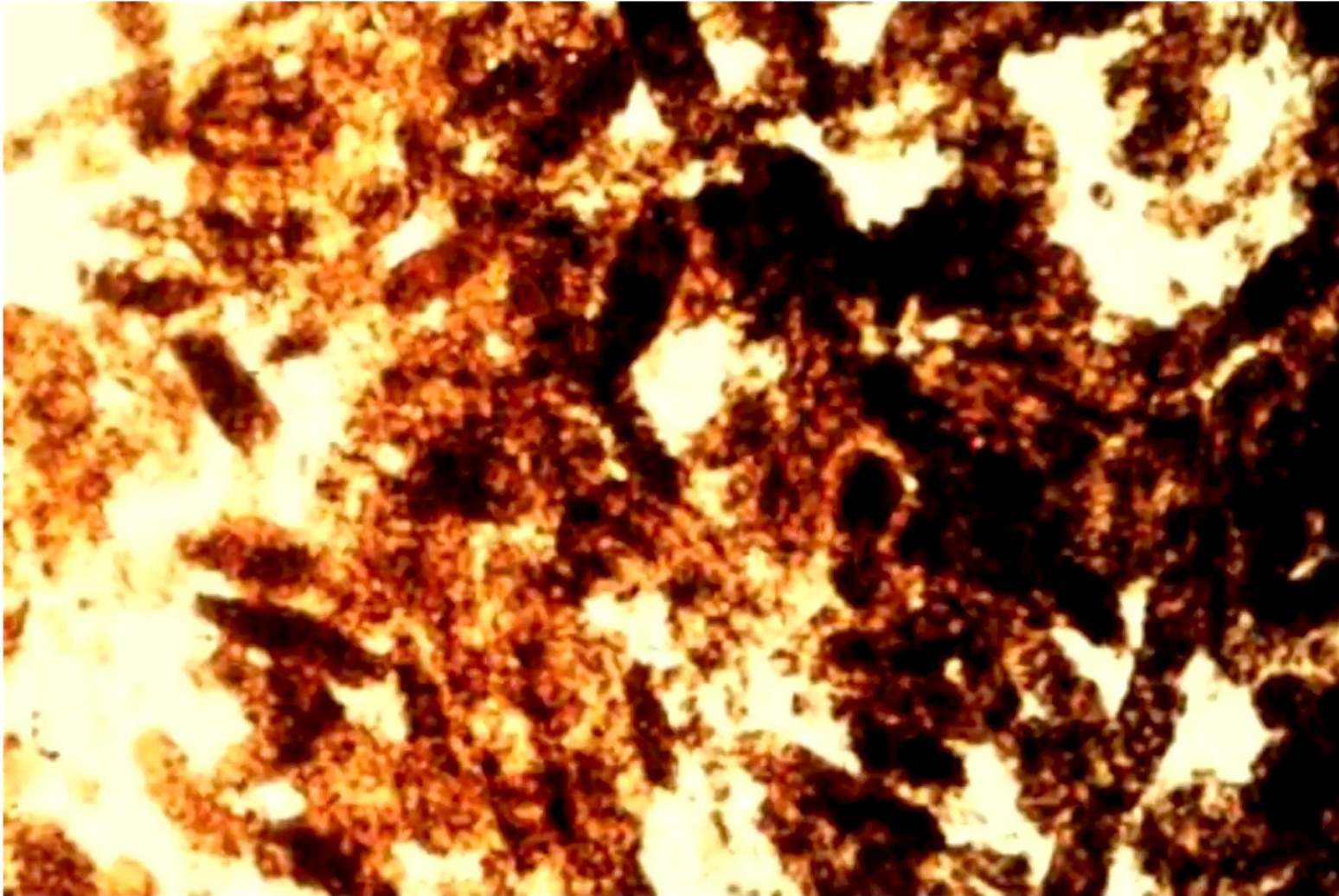
Qscan

Dist A	104.1mm	Dist B	63.8mm	Dist C	108.7mm	Dist D	66.2mm
--------	---------	--------	--------	--------	---------	--------	--------

CINE REVIEW ▶



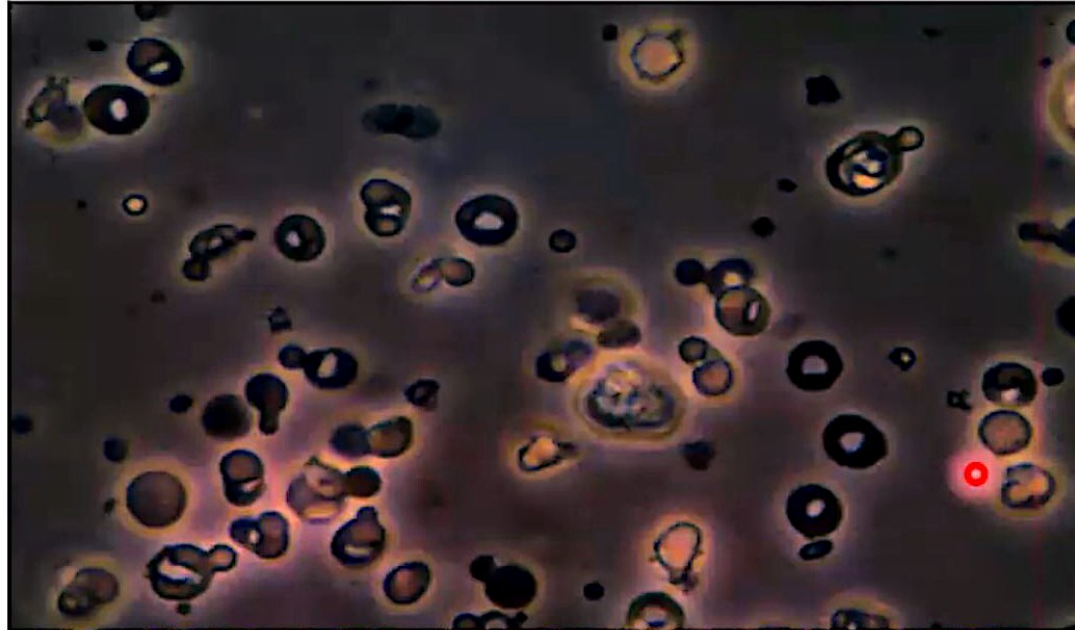
Acute Renal Failure



Muddy Brown Casts: Highly suggestive of ATN.

UpToDate Images.

Acute Renal Failure



**Dysmorph
ic Red
Cells**



**Red
Blood
Cell
Casts**

Acute Renal Failure



Uric acid crystals:

Seen in any setting of elevated uric acid and an acidic urine such as tumor lysis syndrome.

UpToDate Images.



Calcium oxalate crystals:

Monohydrate – dumbbell shaped, may be needle-like.
Dihydrate – envelope shaped.
Seen acutely in ethylene glycol ingestion.

Table

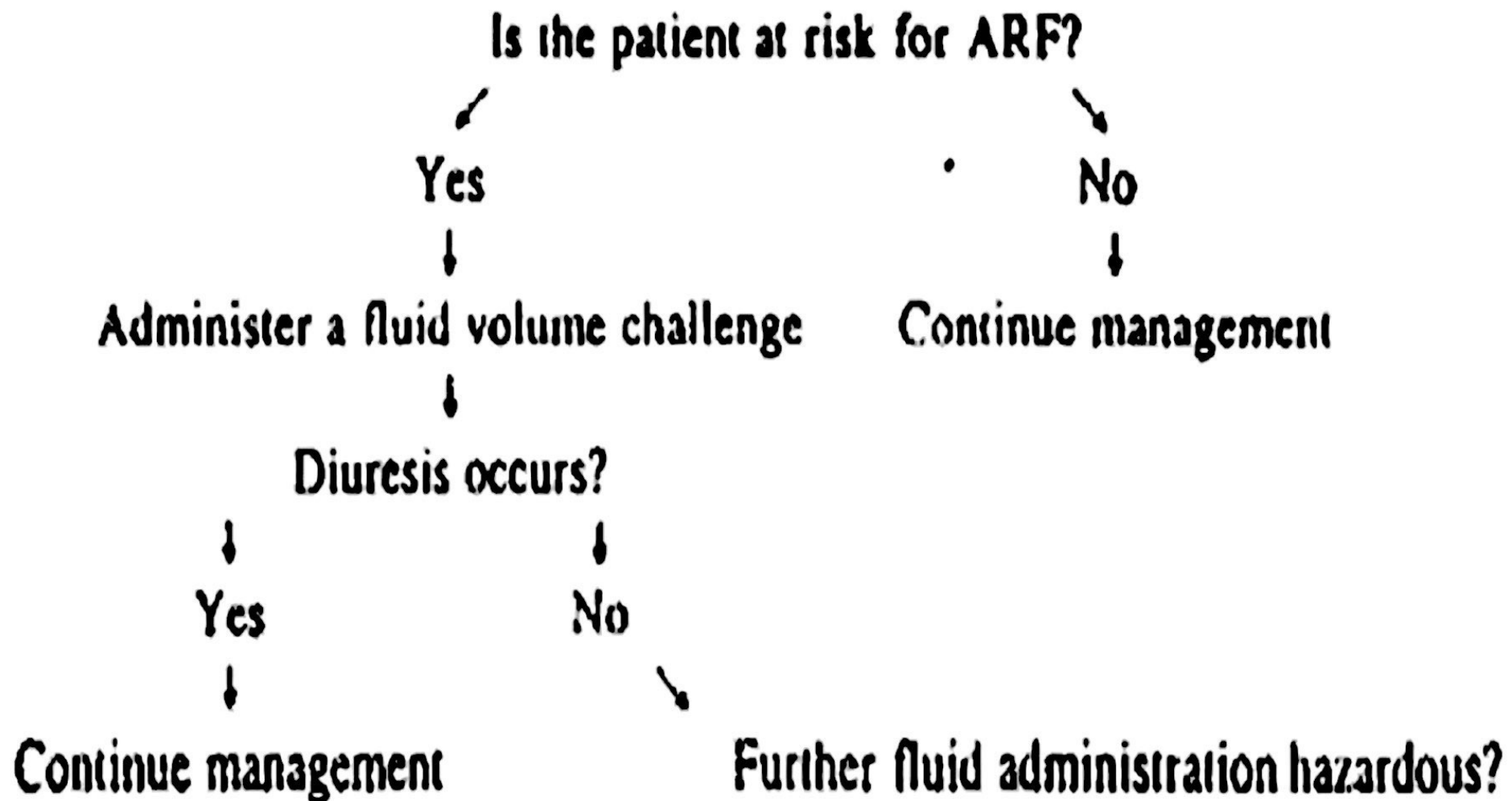
LAB TEST	PRERENAL	RENAL	POSTRENAL
B Urea/Cr	>20	10-20	Varies
Urine Gravity	>1.020	>1.010	Varies
Urine Osmolality	>500	<350	Varies
Urine Na	<20	>40	Varies
FENA (%)	<1	>2	Varies

Management of acute renal failure (Oliguria / anuria)

Management of pre-renal cause

- Resuscitate
- Treat cause to restrict fluid / blood loss
- Monitor
- Urine output – if low – further vol correction & inotropes
- Avoid frusemide! Worsens!!
- Supportive measures

Flowchart for ARF- Immediate Management



Further fluid administration hazardous?

Yes

No

Measure pulmonary artery occlusion pressure or CVP

Administer additional fluids

Normal-to-low

Elevated

Administer additional fluids

Initiate dopamine infusion

Diuresis occurs?

Yes

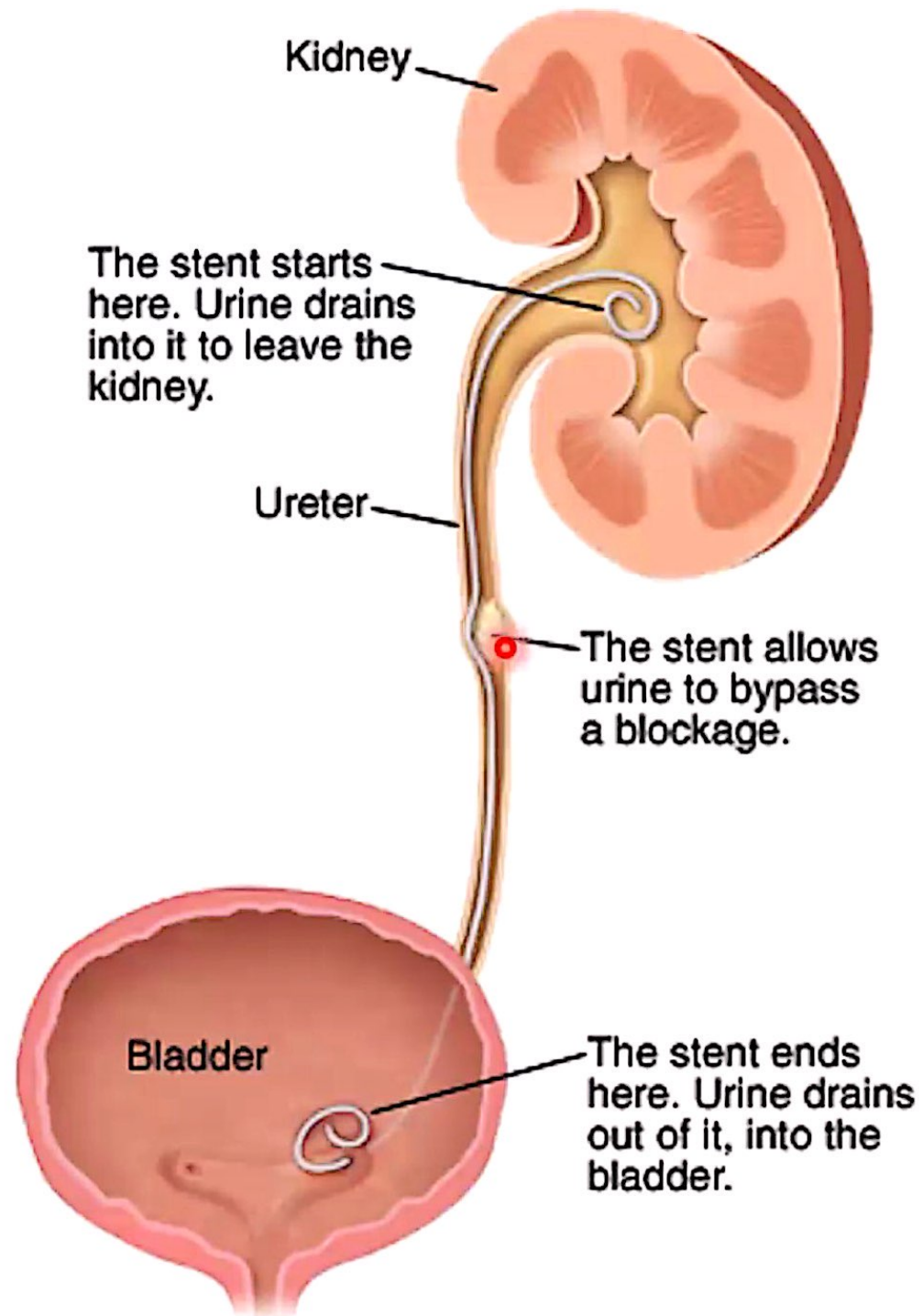
No

Continue management

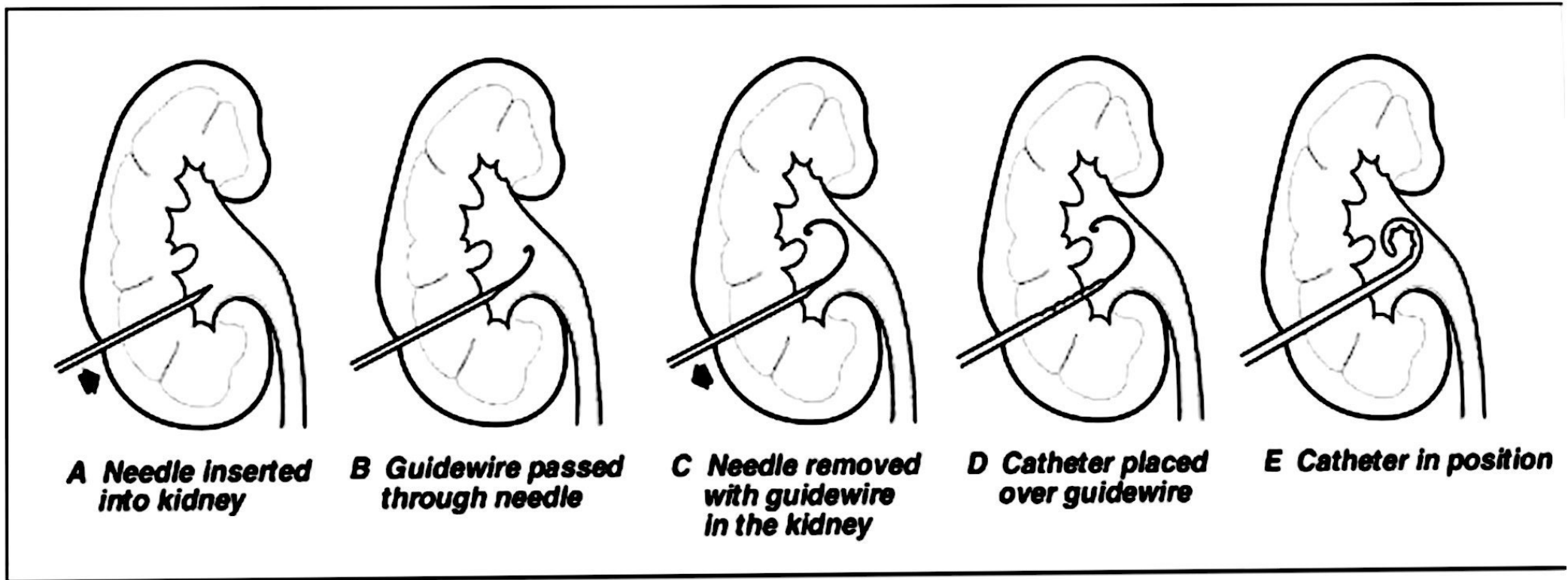
**Administer diuretics while
continuing infusion
of dopamine and fluids**

Management of post-renal cause

- Optimise patients condition by medical management /dialysis.
- Drain – catheterise / upper tract diversion
 - Stent
 - PCN
 - Open nephrostomy
- Treat cause – stone, cancer, RPF, injury etc.



Percutaneous nephrostomy



Retention of urine

- Definition
- Inability to pass urine
 - Acute – sudden onset
 - Chronic – gradual onset – long standing
- Acute urinary retention

Is it anuria or urinary retention?

- Painful desire to void present but unable to void.
- Visible/palpable/percussible bladder – sensation induced.
- Ultrasound or catheterise.

Both genders

Anatomical

- Urethral luminal obstruction
 - Calculus, Necrotic papilla, foreign body
- Urethritis
- Primary urethral & bladder tumors
- Secondary urethral & bladder tumors
- Extrinsic compression from pelvic tumors

Functional

- Post operative
- Spinal cord injury
- Neurogenic bladder
- Drugs
- Acutely painful anal or perineal conditions
- Fecal impaction
- Detrusor atony

Causes - Adults

Male

- Phimosis
- Meatal stenosis
- Urethral stricture disease
- BPH
- Prostate cancer

Female

- Retroverted gravid uterus
- Urethral diverticulum
- Bartholin abscess
- Tumors of the female genital tract

Cervical, Vaginal,
Vulvar cancer

Evaluation

History

- Voiding difficulty LUTS
- Hematuria
- Graveluria
- Genital spinal trauma
- Urethral catheterisation, instrumentation/ surgery
- Neurological symptoms
- Neurological diseases
- Diabetes
- Drugs

Examination

- Systemic
 - pallor, BP, edema other uremic signs
 - Level of mentation and distress
 - Fever
- Abdominal
- Genital
- Rectal or vaginal
- Focused neurological examination if relevant

Management

- Reassure
- Antimicrobials at least one dose pending final management plan
- Analgesic
- Catheterise
- Measure volume, color and send for culture
- Treat cause and infection

Spontaneous & Precipitated AUR (BPH)

- *Precipitated* AUR - following a triggering event, such as non-prostate-related surgery, catheterization, anesthesia, or drugs - sympathomimetic or anticholinergic effects, antihistamines, or others.
- All other AUR episodes - *spontaneous*.
- The importance of differentiating the two types of AUR -the ultimate outcomes of patients.
- Spontaneous AUR
 - 15% of patients had another episode of spontaneous AUR
 - 75% underwent surgery
- Precipitated AUR
 - only 9% had an episode of spontaneous AUR
 - 26% underwent surgery

Post-operative urine retention

Causes

- Pelvic surgery
- Perianal surgery
- Pain
- Elderly – BPH, Bladder hypo contractility
- Posture
- Privacy
- Spinal analgesia
- Drugs

Management

- Privacy
- Posture
- Pain
- Warmth
- Tap
- Catheter – indwelling!
- Clean intermittent catheterisation – nursing intensive!