

UROLITHIASIS IN PREGNANCY

A presentation by Mr Fadi Nuwayhid, Urologist

Anatomic & Physiologic Changes during pregnancy

Hydronephrosis:

Seen in up to 90% of pregnant women by the 3rd Trimester & may persist for as long as 12 wks postpartum

The right ureter tends to be more dilated than the left (derotation of the enlarged uterus) & the dilatation rarely seen distal to the pelvic brim

This Hydronephrosis attributed both

- Smooth muscle relaxing effect of progesterone
- Mechanical compressing effect of the enlarged uterus



Voluson
E8
Exp
HUGHES, KELLIE 17.10.1983

RAB4-8-D/OB
9.3cm / 1.1 / 18Hz

MI 1.2
TIs 0.1

Women's Imaging

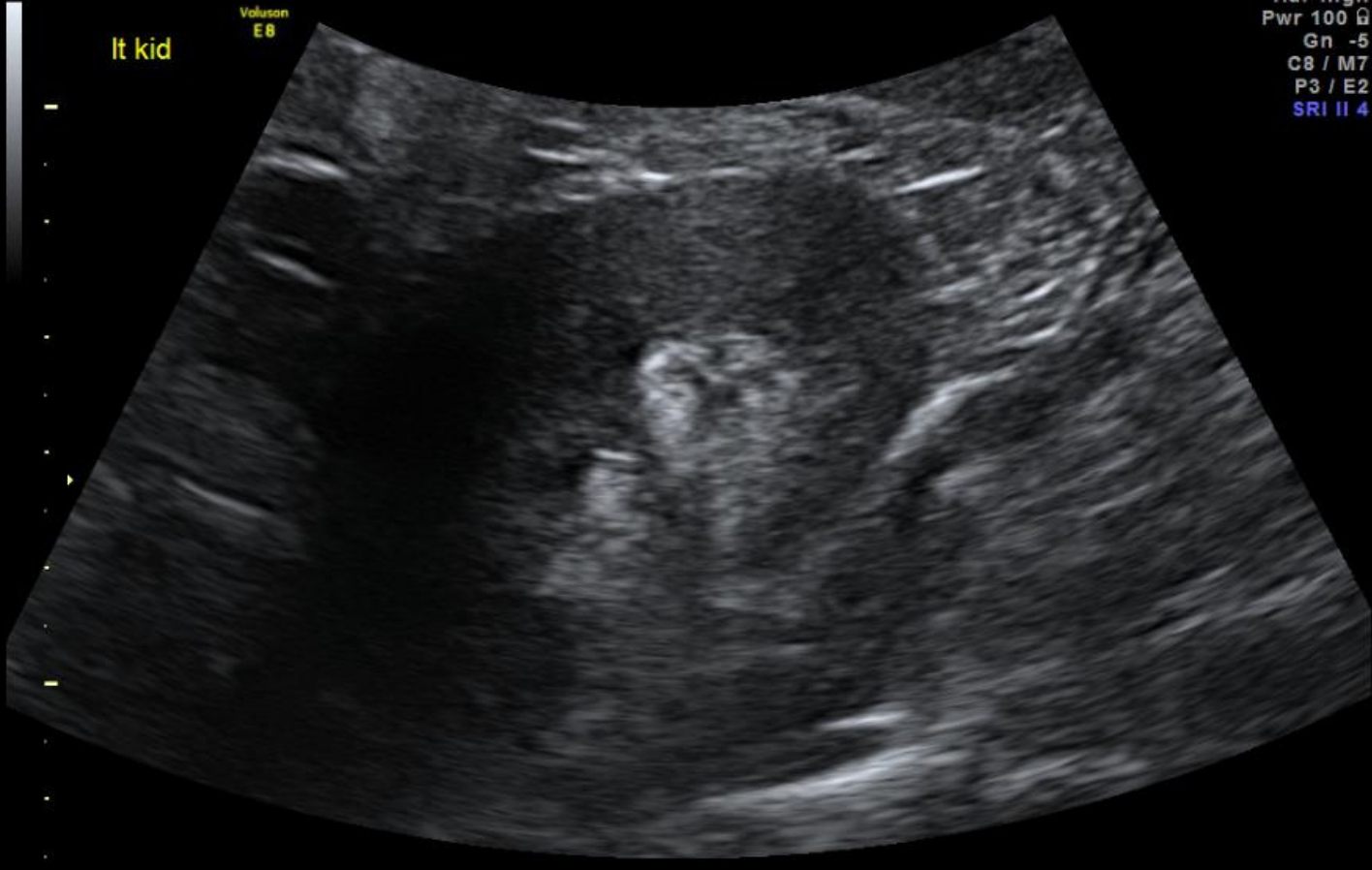
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Routine
Har-high
Pwr 100 G
Gn -5
C8 / M7
P3 / E2
SRI II 4

lt kid

Voluson
E8



SAB000

25-02-2009-0005
-F-19

Vision College
OB

#123
C3-7ED /

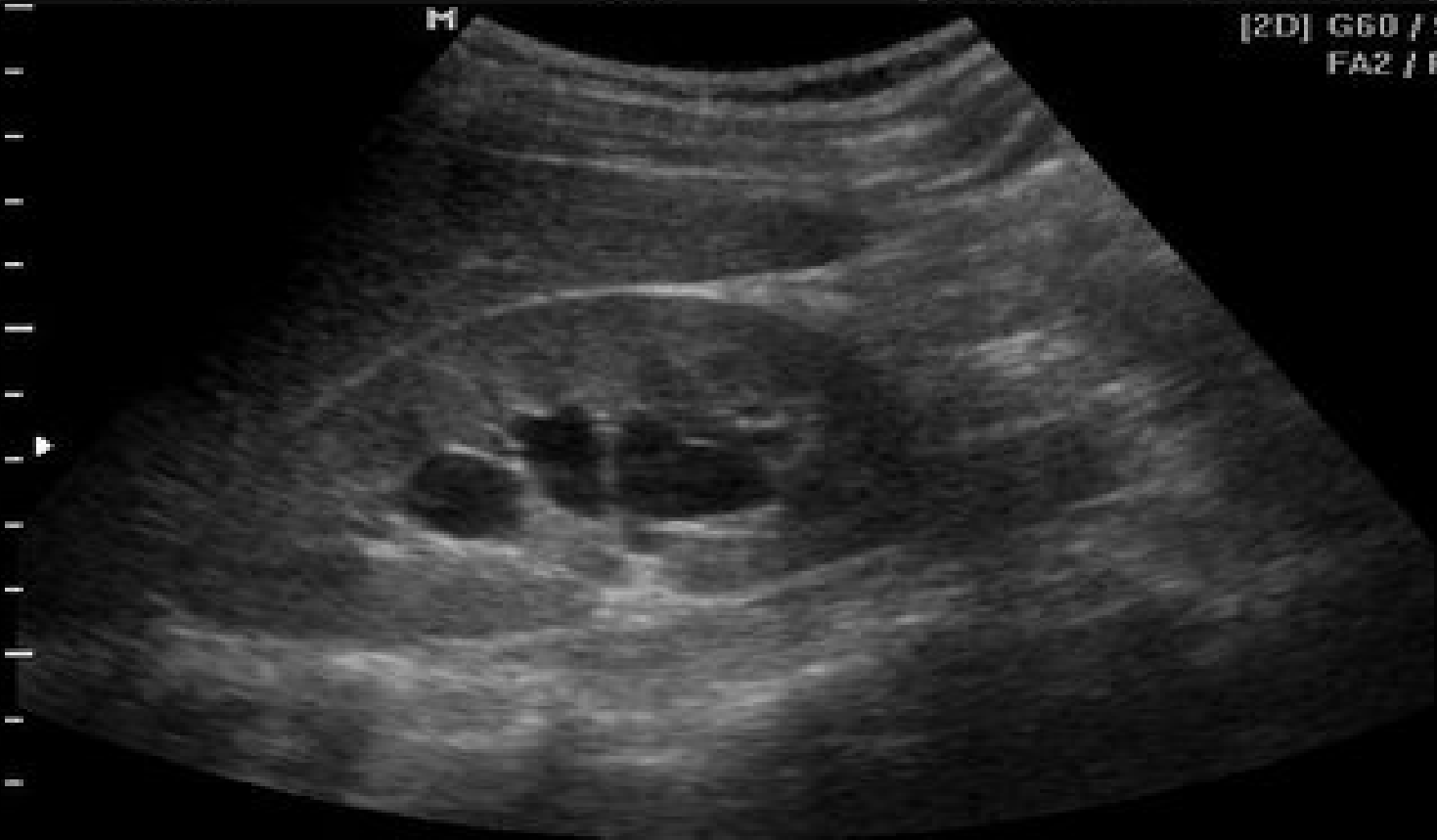
/ 12.0cm MI 0.9 | 25-02-2009
Gen Tib 0.0 | 01:58:45 pm

[2D] G60 / 97dB

FA2 / P80

HAF

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Lossy 3:1

RT KIF SG



HUGHES, KELLIE 17.10.1983 RAB4-8-D/OB MI 1.2 Women's Imaging
19529 GA=31w6d 10.1cm / 1.1 / 15Hz TIs 0.1 08.07.2011 9:08:22 AM

Routine
Har-high
Pwr 100 Ω
Gn -5
C7 / M7
P3 / E2
SRI II 4

rt kid

Voluson
E8





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VISION COLLEGE
Renal

#25
C3-7ED

15.0 cm MI 1.2
HRes. TIs 0.1
[2D] G50 / P 100
80dB / FAG

26-03-2009
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CINE

M



rt kid ls

Auto Run One/Loop Start Cine End Cine

Anatomic & Physiologic Changes during pregnancy



Augmented Renal Function:

The transient increases in renal plasma flow induces a 30-50% ↑ in GFR.

As a result, the normal ranges of serum Cr & BUN are approx; 25% lower for the pregnant patient

Increases in the filtered loads of Na, Ca & Uric Acid thus causing a state of Hypercalciuria & Hyperuricosuria

Anatomic & Physiologic Changes during pregnancy



These potentially lithogenic physiologic changes are offset by an ↑ in the excretion of urinary inhibitors such as Mg, & citrate

The overall stone risk of stone formation is similar in gravid & non-gravid women, & stone composition is similar between these two groups

Urolithiasis in Pregnancy

- ❑ Incidence of symptomatic stones during pregnancy ranges from 1/250 to 1/3000 pregnancies.
- ❑ Calculi present with equal frequency on both sides
- ❑ Ureteric stones occur 2 x as frequently as renal stones
- ❑ Majority of patients with symptomatic stones present during the 2nd or 3rd trimester
- ❑ Although renal colic is the most common non obstetric cause of pain & reason for hospital admission during pregnancy, the diagnosis of urolithiasis can be challenging

Urolithiasis in Pregnancy

- ❑ Stothers & Lee reported up to 28% of pregnant patients diagnosed with an obstructing stone were initially & incorrectly, dx with appendicitis, diverticulitis or placental abruption
- ❑ Most common presenting symptom is flank pain, usually accompanied by either micro or macroscopic hematuria & in some cases UTI
- ❑ Persistent UTI
- ❑ Other sx includes irritative voiding Sx, chills, fever, nausea & vomiting
- ❑ Maintain a high index of suspicion

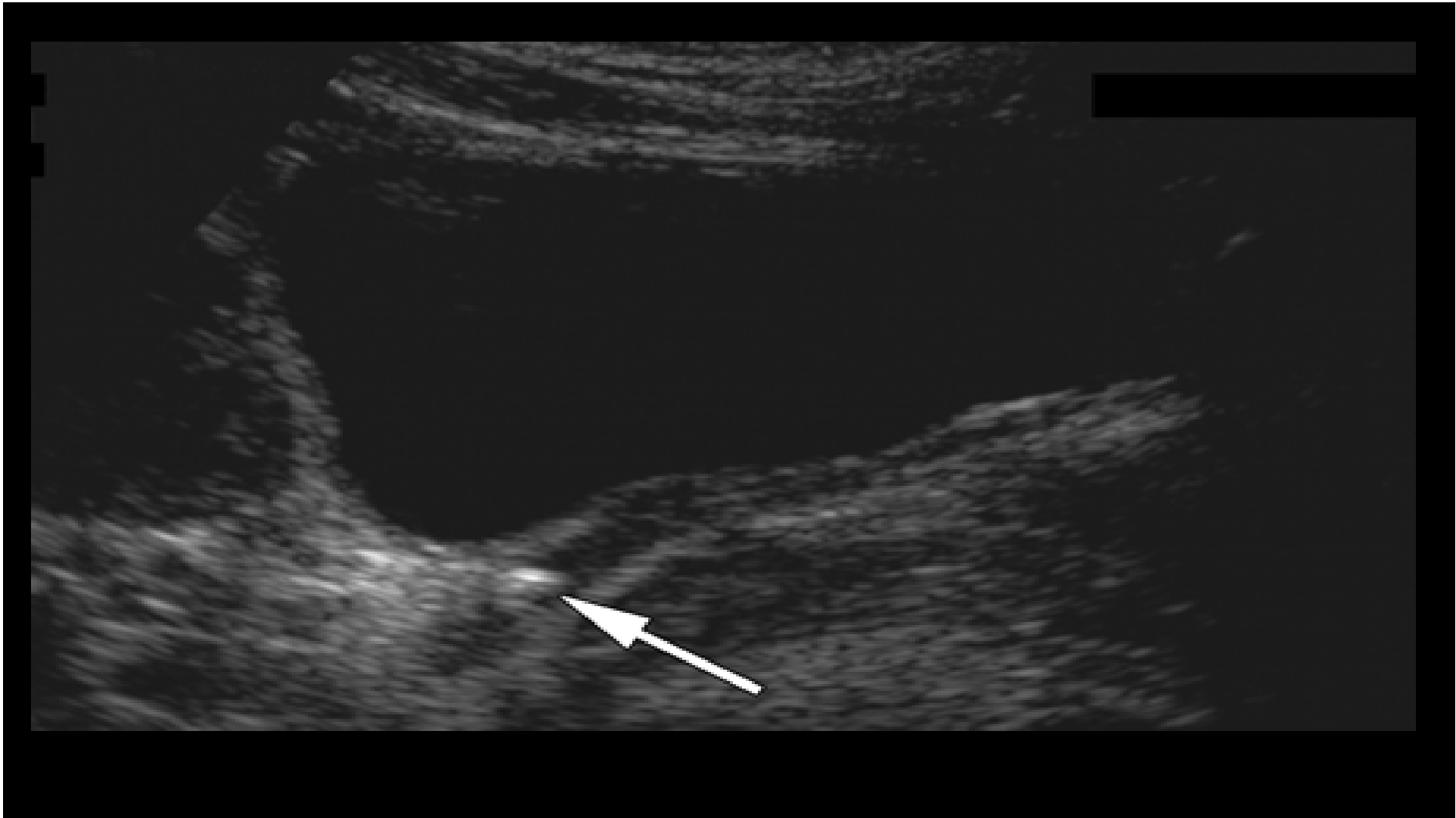
Urolithiasis in Pregnancy

Radiologic Evaluation:

- ❑ The risk of radiation exposure to the fetus
- ❑ The risk depends on: Gestational age & dose of XRT delivered
- ❑ During the 1st trimester, the period of early organogenesis, the embryo is sensitive to the effects of radiation.
- ❑ Although the fetus has diminished sensitivity to the teratogenic effects of radiation in the 2nd & 3rd trimester, such exposure may increase the risk for development of future malignancy.

Urolithiasis in Pregnancy

- ❑ Ultrasound has become the standard initial study in evaluation of pregnant patient thought to be experiencing renal colic
- ❑ It can be difficult to adequately visualize the ureter with USS
- ❑ Several techniques to improve the diagnostic capability of USS Colour Doppler, Ureteric jets, Resistive index
- ❑ Transvaginal USS can provide imaging of the distal ureter



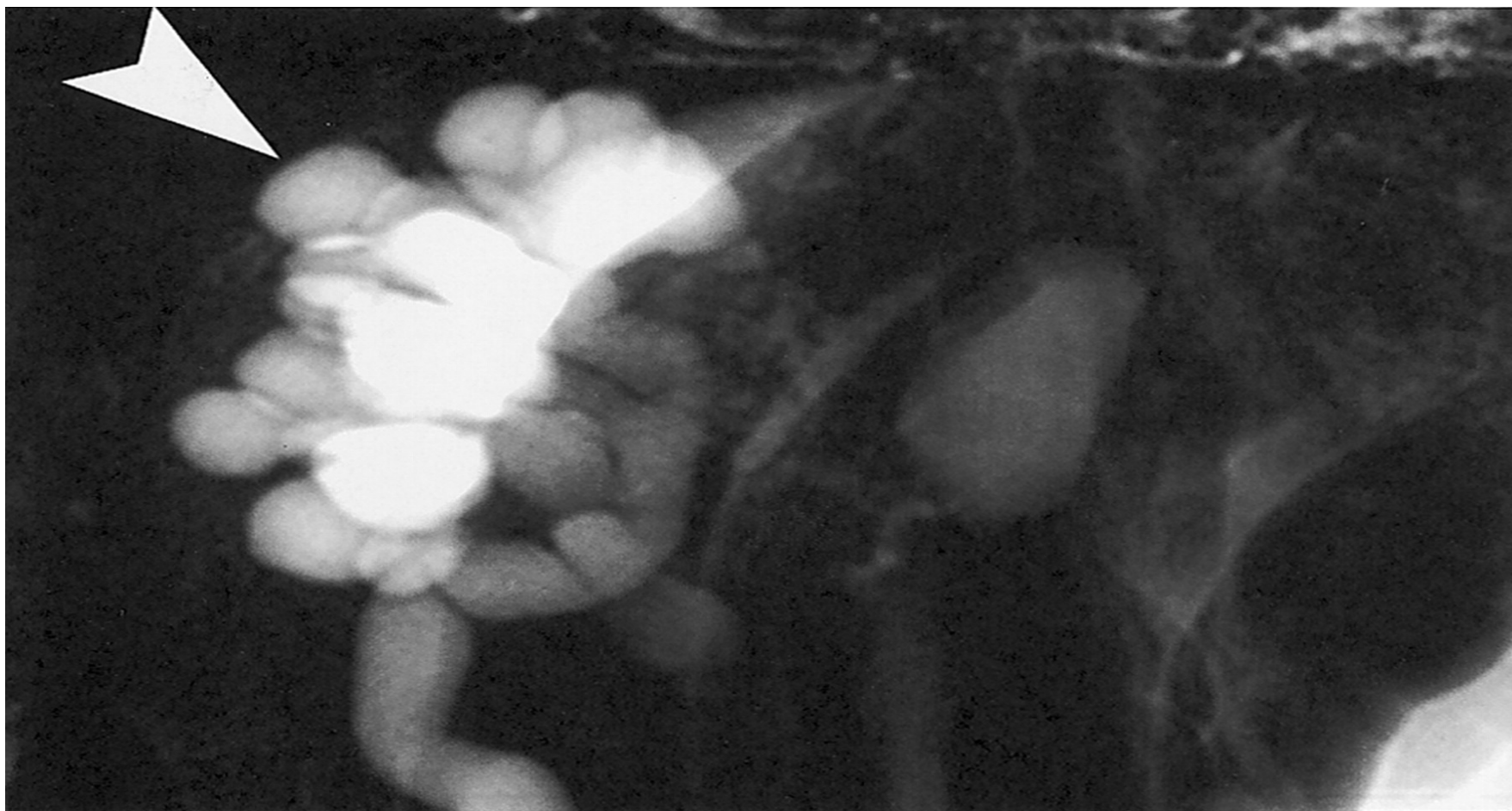
Urolithiasis in pregnancy

- ❑ If USS evaluation is inadequate a limited IVP may be required
- ❑ A limited IVP (KUB, 30 sec & 20 minute films)
- ❑ CT Scan should be avoided because the radiation dose is high
- ❑ MRI does not rely on radiation or contrast medium
- ❑ Stone are seen as filling defects overlying the high signals intensity urine (a small stone can be missed)
- ❑ 50-80% of pregnant patients with symptomatic calculi will pass their stone spontaneously when treated conservatively with hydration & analgesia.





Hydronephrosis of pregnancy in a 25-year-old woman during the third trimester.





Urolithiasis in pregnancy

- ❑ Intervention is required in approx 1/3 of patients usually when pain uncontrolled by analgesia or signs of persistent obstruction & infection
- ❑ Once intervention is elected, some advocate temporary measures, such as ureteric stent placement or percutaneous nephrostomy, with definitive management deferred until after delivery
- ❑ Advantage can be placed using local anaesthesia under USS.
- ❑ Disadvantage accelerated encrustation & occlusion can necessitate frequent replacement

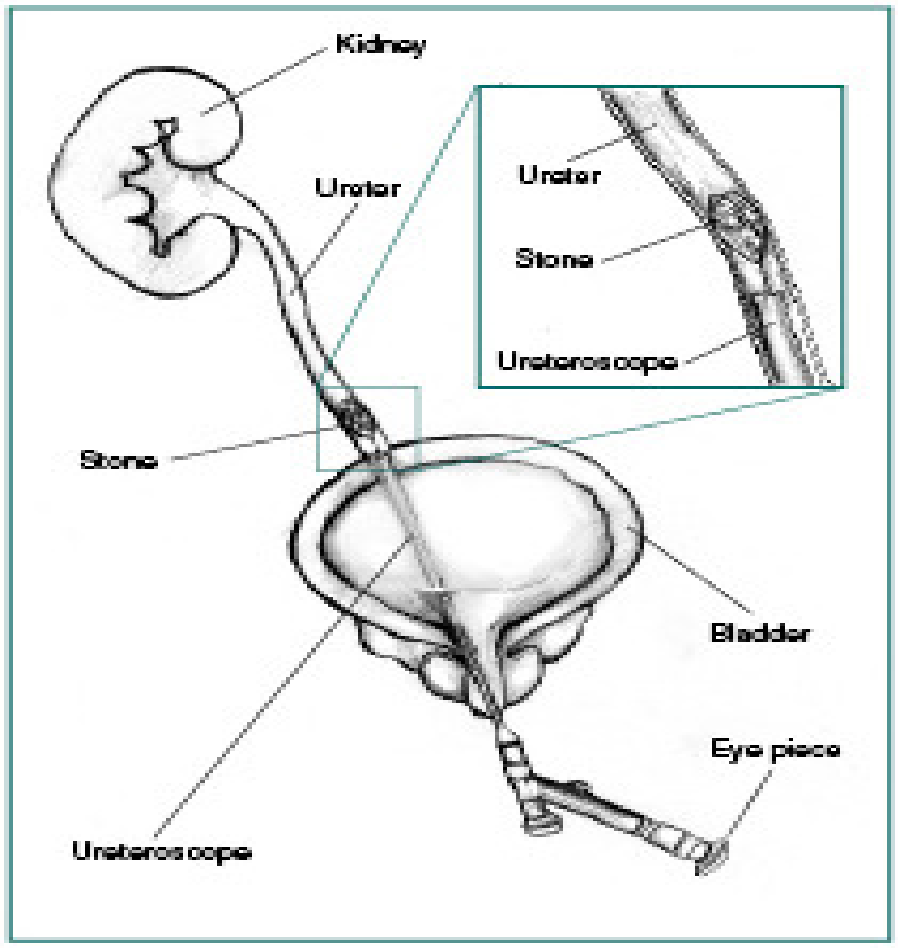


Urolithiasis in Pregnancy

- ❑ Improvements in ureteroscopic technology & intracorporeal lithotripters have made it possible to access & to treat any stone in the upper tract successfully, even in the pregnant patient.
- ❑ Most calculi can be extracted with a basket or grasper device
- ❑ If Lithotripsy is required not all methods of intracorporeal lithotripsy are compatible with pregnancy
- ❑ EHL should be avoided because the peak pressures generated are transmitted some distance from the probe

Urolithiasis in Pregnancy

- ❑ Ultrasonic Lithotripters should be avoided as the high pitched audible sound may induce hearing injury to the fetus
- ❑ Holmium: YAG Laser is the intracorporeal modality of choice in the pregnant patient because of its excellent safety profile
- ❑ Stone free rates with holmium laser are greater the 90% with no episodes of preterm labor





Urolithiasis in Pregnancy

- ❑ Other treatment modalities that are effective in the non pregnant patient are not appropriate for this population
- ❑ ESWL is absolutely contraindicated in pregnancy.
- ❑ PCNL should be deferred until after birth because this procedure often requires prolonged anaesthesia & radiation exposure