Hydronephrosis

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Hydronephrosis: is an aseptic dilatation of the kidney due to partial or complete obstruction to urine outflow.

Unilateral hydronephrosis : (due to ureteric obstruction) causes include:

- **Extramural obstruction**: tumour from adjacent structure (colon , cervix , prostate, rectum) , idiopathic retroperitoneal fibrosis, reterocaval ureter.
- **Intramural obstruction:** congenital stenosis, PUJ obstruction, ureterocele, stricture, ureteric tumours or bladder tumours obstructing the ureteric orifice.
- **Intraluminal obstruction:** ureteric or renal pelvic stone, sloughed papilla due to papillary necrosis.

Unilateral hydronephrosis(Clinical features)

- Insidious onset of mild pain or dull aching in the loin, made worse by high fluid intake.
- Attacks of acute renal colic with no palpable swelling.

Bilateral hydronephrosis:

usually due to urethral obstruction (or the causes mentioned above occurring on both sides).

The causes includes:

- **Congenital: congenital stricture of the external urethral meatus, phimosis, posterior urethral valve, bladder neck contracture.**
- **Acquired:** BPH, CA of the prostate, urethral stricture.

Bilateral hydronephrosis(Clinical features):

- From lower urinary obstruction: symptoms of bladder outlet obstruction.
- From bilateral upper urinary tract obstruction: similar to those of unilateral obstruction (but on both sides).
- From pregnancy: dilatation of the ureter and the renal pelvis occurs early in the pregnancy, and becomes more marked until the 20th week. The condition results from the effects of high levels of circulating progesterone on the ureteric smooth muscle or from mechanical obstruction, the ureters return to their normal size within 2 weeks after delivery.

lmaging:

- U/S
- Excretory urography: dilated pelvis, clubbed calyces (normally are cupped), poorly functioning kidneys.
- Isotope renography.

Treatment : removal of obstruction and the aim is to conserve the renal parenchyma.

Renal Trauma

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* Renal trauma is generally caused by falls, road traffic accidents, blows, sporting accidents, stab wounds and gunshot wounds.
* Renal trauma can be classified as either blunt (non penetrating) or penetrating.

Classification of Renal Injuries:

* **GRADE I:** contusion or contained sub-capsular hematoma, without parenchymal laceration.
* **GRADE II:** non expanding confined peri-renal hematoma or cortical laceration less than 1 cm deep, without urinary extravasations.
* **GRADE III:** parenchymal laceration extending more than I cm into the cortex without urinary extravasations.
* **GRADE IV:** parenchymal laceration extending through the corticomedullary junction and into the collecting system. There can be also thrombosis of a segmental renal artery without a parenchymal laceration.
* **GRADE V:** three situations are possible:
  - Thrombosis of the main renal artery;
  - Multiple major lacerations;
  - Avulsion of the main renal artery and/or vein.

Clinical Presentation:

* The cardinal sign of a renal trauma is haematuria, that can be massive or microscopic, but the extent of the injury cannot be measured by the volume of haematuria or the appearance of wound.
* Lumbar and the abdominal pain, sometimes with rigidity of the anterior abdominal wall and local tenderness.
* Nausea and vomiting can be present. Extensive blood loss and shock may result from retroperitoneal bleeding.

Investigation:

* Excretory urograrn.
* Ultrasonography
* CT scanning The CT scanning can distinguish better a major from minor injury, can identify extravasations that were not demonstrated in excretory urogram. It can also distinguish renal laceration and outline an intrarenal haematoma.
* Arteriography it may reveal the actual bleeding vessel, show occlusion of the main renal artery or its branches, and also renal lacerations.

Treatment:

* Most blunt renal injuries, including all grade I and 2 and most grade 3 and 4 injuries, can be safely treated without surgery. Patients require strict bed rest until gross hematuria has resolved.
* Surgical repair is required for those with persistent bleeding, expanding perinephric haematoma, or a renal pedicle avulsion.

* Penetrating trauma usually requires surgical exploration. although observation may be appropriate for patients in whom the renal injury has been accurately staged by CT, BP is stable. and no associated intra-abdominal injuries require surgery.

Possible Complications:

* Secondary hemorrhage, usually due to infection (I0 to I4 days after trauma)
* Paralytic ileus (4 to 5 days) as a result of retroperitoneal hematoma
* Hypertension as a result of the constricting effect of reorganizing perirenal haematoma.
* Arterio –venous fistula
* renal failure
* renal atrophy
* Hydronephrosis
* Chronic pyelonephritis
* renal calculi
* renal artery stenosis.

Injuries to the ureter

- ***Rupture of the ureter:***

- This is an uncommon result of a hyperextension injury of the spine. there will be loin or iliac fossa swelling
- An excretion urograrn shows extravasations of contrast from the ureter on the injured side.

- ***Injuries to one or both ureters during pelvic surgery***:

* this is far more common & occurs most often during vaginal or abdominal hysterectomy.
* If the injury recognized at the time of operation: one of the following should be done:
  - End to end anastomosis if there is no loss of length
  - Boari bladder flap operation if there is little loss of length.
  - Transureteroureterostomy, interposition of isolated bowel loop or nephrectomy if there is marked loss of length.
* if the injury not recognized at the time of operation:
  - ***Unilateral injury***:- clinically there are three possibilities:
    1. No symptoms, with silent atrophy of the kidney
    2. loin pain & fever (pyonephrosis) - temporary nephrostomy should be done.
    3. Urinary fistula through the abdominal wall or the vagina I.V.U show extravasations of the contrast with or without obstruction to one or both ureters - temporary nephrostomy done followed later after months by surgical repair.
  - ***Bilateral injury*** : - the patient presented with anuria , urgent relief of the obstruction is mandatory.