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Lecture title: Anatomy of urinary system.

Lecturer Affiliation:

Summary:

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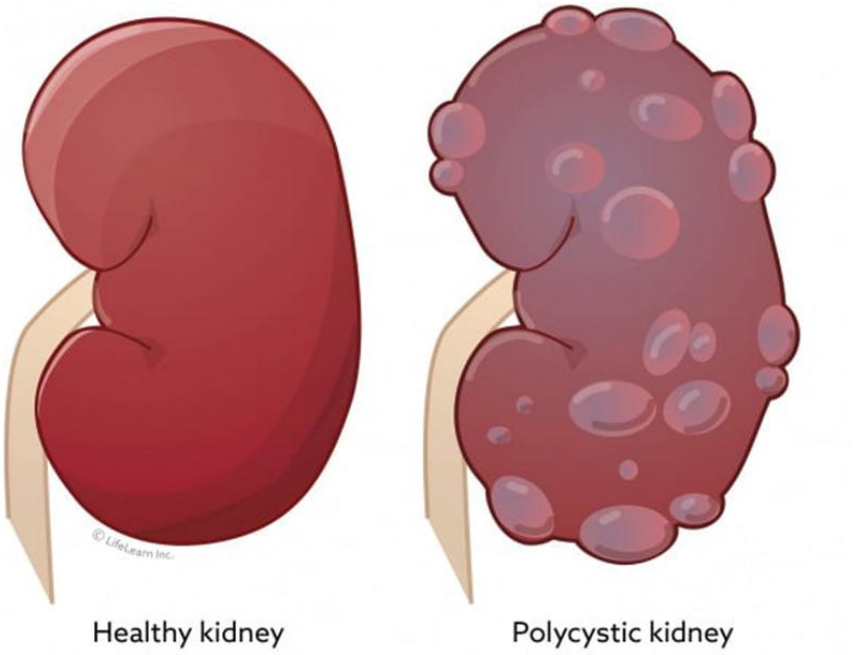
Surgery | 5th year **2025**

Renal polycystic diseases

- Multiple cysts form within the renal parenchyma.
- The traditional anatomical explanation attributes renal cysts to non-union of secretary and collecting tubules

  , secretary tubules dilates and become cyst
- Microdissection studies results that polycystic can due to dilation and hyperplasia of collecting ducts, replacement parenchyma by multiple cyst.

- Such kidneys are usually grossly enlarged on palpation.
- This condition may be associated with hepatic biliary cysts
- Development cysts apply pressure to the surrounding normal tubules and compromise their function
- Prognosis –Bad.
- Clinical signs : Polycystic kidneys may cause no clinical signs or may lead to progressive renal failure, abdominal pain ,fever, pyuria, colic and leucositosis
- Diagnosis based on physical and radiographic findings, ultrasonic examination, or exploratory laparotomy.
- Pyelonephritis may be seen concurrently and precipitate renal insufficiency
- Treatment: Nephrectomy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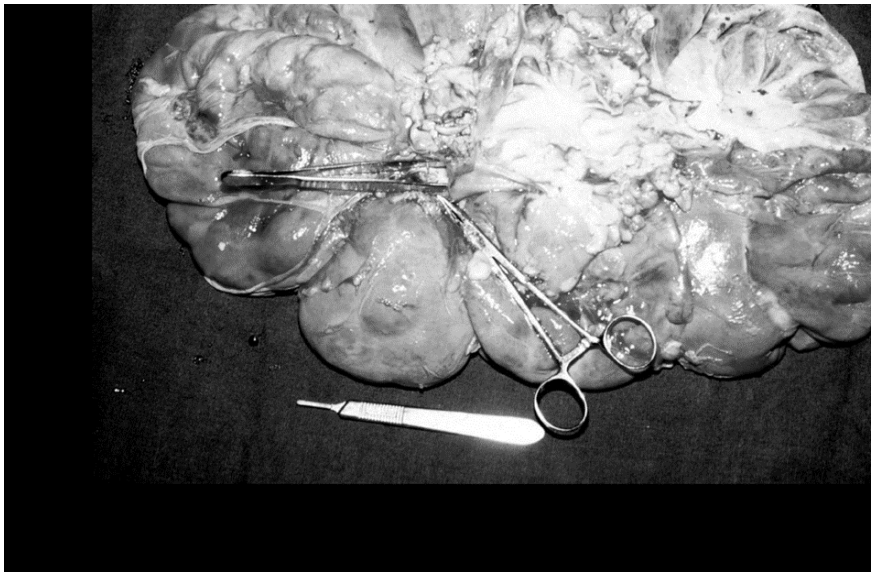
Healthy kidney
Polycystic kidney


10cm



Acquired affections of kidney

Hydronephrosis:

1. This condition results in the progressive dilatation of renal pelvis and progressive atrophy of renal parenchyma.

2. Its may be unilateral or bilateral, partial or complete

3. This condition results in dilation of urinary tract proximal to the obstruction and in eventual destruction of the kidney parenchyma
   - Hydronephrosis may be complicated by infection, resulting in clinically manifested pyonephrosis, and is treated as for pyelonephritis.

- Etiology
- 1. External pressure on ureter by space occupying lesion (tumor and abscess), hematoma and cyst.
- 2. Congenital or acquired ureter stenosis
- 3. Urolithiasis.
- 4. Inflammatory lesion in the bladder and ureter.
- 5. Accidental ligation of ureter during ovariohystrictomy.
- 6. Artesia of ureters or urethra.

- Diagnosis
- 1. Clinical signs

- 2. Radiographic examination
- 3. Laboratory examination

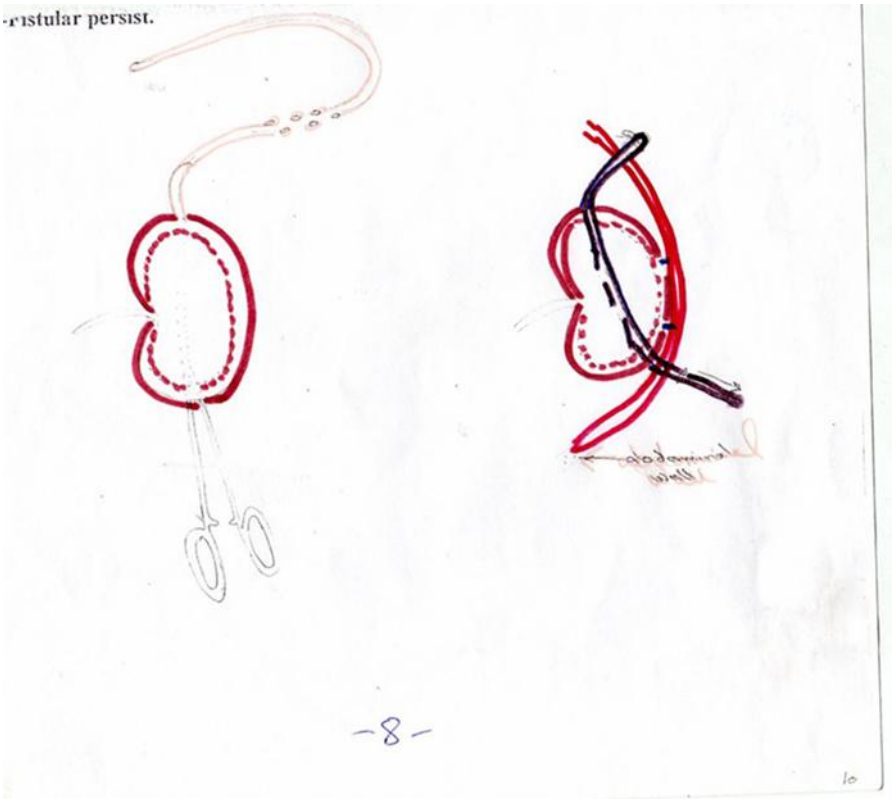
- Clinical signs
- 1. Unilateral hydronephrosis produce no characteristic signs unless enlarge kidney and led to distension of abdomen, fever, bacteremia and frequent urination lack of kidney function.
- 2.Bilateral the signs are impair urine formation, increase in blood urea nitrogen and reduce appetite.

- The degree of dilation can be seen with excretory urography as long as sufficient functioning nephrons are present in the kidney.
- If kidney is not excreting contrast media agent, angiography could indicate hydronephrosis by appearance of an attenuated vascular pattern

Treatment

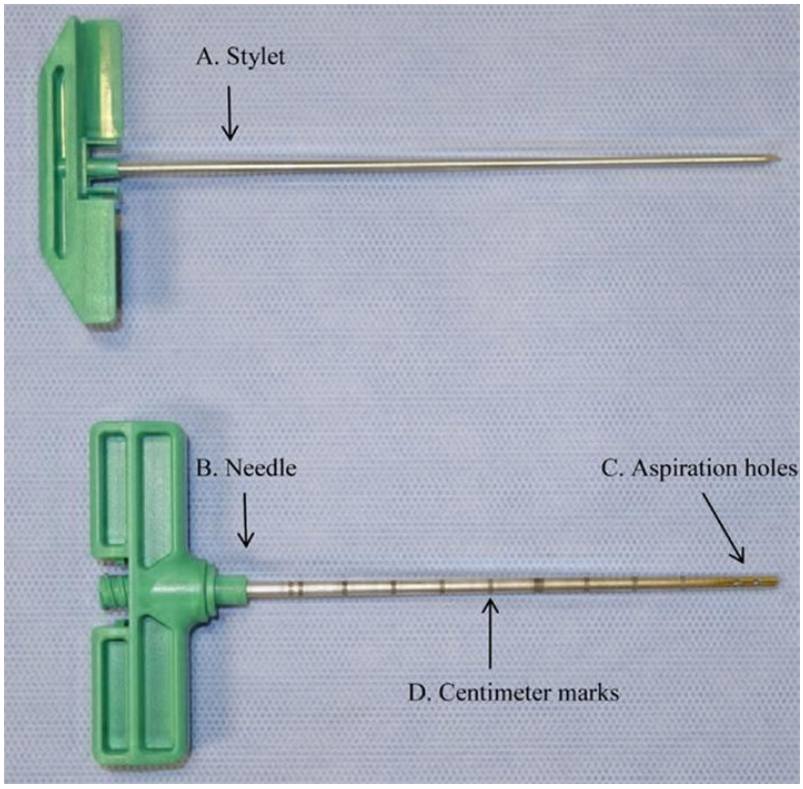
- According to the causes
- 1. Nephrectomy
- 2. Nephrostomy drainage to relief pressure
- Kidney mobilized
- Length fenestrated latex or rubber tube (5cm) in diameter, positional in dilated pelvic

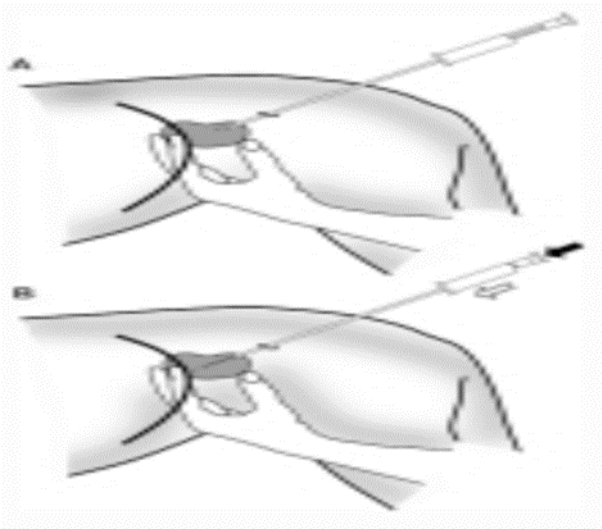
- Catheter exteriorized through abdominal wall, urine diverted through closed catheter
- Few capsular sutures applied
- Fistula persists (a few days, weeks or months)
- Complications of nephrostomy tube placement in dog and cat
- The risk of complications with nephrostomy tube placement is high, especially in the open approach.
- Over 50% of dogs that undergo this surgery may experience postoperative complications.
- These include, but may not be limited to:
- Bleeding, Infection, Urine leakage.
- Insufficient drainage
- Intraoperative trauma to the kidneys
- Tube dislodgement or damage
- Recurrence of the condition.



- Acute renal failure:
- (ARF) describes a sudden reduction in renal function associated with a sudden decrease in the glomerular filtration rate (GFR), and the rapid development of azotemia and uremia.
- Intra-renal causes of ARF include:
- 1. Acute tubular necrosis (nephrosis) resulting from injury due to nephrotoxins or ischemia.
- 2. Acute nephritis, which may be associated with infections such as Leptospira canicola or other bacterial or viral agents
- 3. Acute trauma

    - Initial signs of acute renal failure may be vague and can include:
    - • Lethargy and depression
    - • Anorexia
    - • Nausea and vomiting
    - • Dehydration
    - • Kidney pain in some cases
    - • Oliguria (< 7 ml urine/ kg bodyweight/day)
    - • Occasionally, anuria (< 2 ml urine/kg bodyweight/day) or polyuria
    - Diagnosis
    - 1. Clinical signs
    - 2. Needle biopsy… with out open the abdomen. there are two types:
    - -Franklin – Silverman
    - -Vim tru-cut
    - 3. Blood analysis
    - 4. Biochemistry
    - 5. Urinalysis and Urine Culture


A. Stylet
B. Needle
C. Aspiration holes
D. Centimeter marks


A
B

- Management of acute renal failure
  Make possible to rid the body of metabolic waste products that contribute to the signs of uremia
- Initially, treatment is aimed at the correction of life-threatening abnormalities including:
- • Dehydration,• Hyperkalemia,• Metabolic acidosis(Sodium bicarbonate)

- There are two techniques to ride body from waste
- 1. Hemodyialysis our entire blood is circulated outside your body in a machine placed outside the body known as a dialyzer.
- Removing waste and extra fluids in your body to prevent them from building up in the body
- Keeping safe levels of minerals in your blood, such as potassium, sodium, calcium, and bicarbonate
- Helping to regulate your blood pressure
- 2. Peritoneal dialysis **a treatment for kidney failure that uses the lining of your abdomen, or belly, to filter your blood inside your body**.

- Renal trauma
- 1 Any accident may affects kidney, clinical signs of such damage may not immediately evident.
- 2. Shock may be results of hemorrhage from a parenchymatous organ.
- Injuries may be resulting from automobile accident
- Injuries classified into three categories:
- A. Simple contusion with or with out parenchyma damage.
- B. Major Paranchymal disruption (rupture of the capsule).
- C. Shattered kidney (sever blood loss, shock persistent

- Etiology:
- Rapture of the urinary bladder, followed by rapture of the kidney, urethra and ureter. sharp blow may rupture abdominal wall accidents due to automobile injuries
- Diagnosis: Case of history

- Clinical signs
- 1. Passage of the blood stained urine, plain radiography may enable confirmation of the diagnosis renal trauma.
- 2. paracentesis or abdominal lavage is indicated to confirm the presence of the blood or urine.(large –gauge needle is introduced through the linea alba cranial to the umbilicus , collection of 0.1 ml blood of that does not clot is evident of hemoperitoneum)
- Creatinine in the abdominal fluid quantities greater than the plasma level reflect the presence of urine
- Treatment
- Simple contusion :
- 1. Whole blood transfused
- 2. Antibiotic
- 3. Fluid therapy
- Major parenchymal disruption
- Whole blood transfused is not adequate because there is persistent coolness of the extremities , weakness , rapid shallow breathing , poor capillary refilling time
- Exploratory laparotomy should be performed
- Control hemorrhage.
- Ruptured of renal capsule with hemorrhage from parenchyma often responds well to the minor surgical correction
- The capsule sutured with 3-0 chromic gut , suture should not be tied under tension or they will tear the capsule and cause further damage if tissue is severity bruised and has lost its normal resilience , deep mattress suture are also contraindicated

- Shattered kidney
  1. The kidney should be saved if possible.

- 2. When trauma is limited to one pole and involved less than half kidney, partial nephrectomy can be performed.
- 3. if there are multiple laceration of the renal capsule and parenchyma , a complete nephrectomy should be performed