Microscopic Sediment – Epithelial Cells

- Epithelial Cells
  - Cells sloughed from the kidney, urethra, bladder and genital track.
  - Unless increased in number or abnormal forms, they are normal part of sediment.
  - Three major types classified according to site of origin: squamous, transitional, and renal.
Microscopic Sediment – Epithelial Cells

- Squamous
  - Physically the largest. Easy to identify. Have abundant cytoplasm, and easy to see under lpf.
  
  - Report in semi-quantitative terms: rare, few, moderate, many / lpf. (Some labs report per hpf.)

  - Originate from vagina and female uretha, and lower portion of male uretha. More often found in urine of females.

  - Increased numbers / appearance of squamous type a sign of poor collection technique; and can obscure other important microscopic findings.
Microscopic Sediment – Epithelial Cells

- Squamous
  - May be rolled-up or folded and appear to be casts.
  - Clue cells – squamous epithelial cells with Gardnerella vaginalis bacteria colonizing the cell – a sign of vaginal infection.
    - Wet prep specimen of vaginal scrapings / washings are most often used in diagnosis.
    - Urine specimen may also demonstrate clue cells.
Microscopic Sediment – Epithelial Cells

- Unstained squamous epithelial cells
Microscopic Sediment – Epithelial Cells

- **Squamous epithelial cells** (stained with Sternheimer-Malbin)
Microscopic Sediment – Epithelial Cells

- Transitional epithelial cells
  - Normally present in low numbers.
  - Originate anywhere from the renal pelvis down to the upper portion of the urethra (male).
  - Shape varies depending on origin.
  - Textbook has pictures of various forms.
Microscopic Sediment – Epithelial Cells

- Transitional epithelial cells
  - Spherical, polyhedral and caudate are terms describing shapes.
  - All have distinct centrally located nuclei.
  - Sometimes called bladder cells, may be more often found in elderly. Can be found as fragments or as reactive.
Microscopic Sediment – Epithelial Cells

- Transitional epithelial cells
  - On left, squamous and transitional cells, hpf, toluidine blue stain.
Microscopic Sediment – Epithelial Cells

- Transitional epithelial cells
  - Spherical forms may be difficult to distinguish from renal tubular epithelial without using supravital stain. Transitional epithelial more often will have centrally located nucleus.
    - Syncytia – term used refer to sheets of cells; and may be more frequently found following manipulation.
  - Use semi-quantitative terminology to report transitional epithelial cells.
Renal tubular epithelial cells (renal cells)
- line tubules, presence in increased number can mean destruction of nephron tubules; smaller and very round - the most significant of the epithelial cells.
- Increased numbers seen in allograft rejection, viral infection, toxic reactions, etc.
- Can absorb pigments such as bilirubin, or can contain vacuoles (non lipid = bubble cells; or lipid = oval fat bodies)
Renal tubular epithelial cells (renal cells)
- Depending on exact location from which they originate, they will / may have different shape, size, and cytoplasmic characteristics; determination of origin may be difficult without use of specific stains.
- Additionally, differentiation from WBCs (especially mononuclear ones) may be a challenge.
- Slightly larger than WBC, and have large, dense, slightly off-center round nucleus
- *Renal tubular epithelial cells & oval fat bodies are pathologically significant* & should be reported as # /hpf.
Microscopic Sediment – Epithelial Cells

- Renal tubular epithelial cells
  - Proximal renal epithelials - rarely found, round eccentric nucleus, may have brushy border. Their trip from the proximal tubule usually results in degrading
Microscopic Sediment – Epithelial Cells

- Renal tubular and transitional epithelial cells
Microscopic Sediment – Epithelial Cells

- Collecting duct renal tubular cells
Microscopic Sediment – Epithelial Cells

- RTEs; 250x magnification
- Also WBC and RBCs
Microscopic Sediment – Epithelial Cells

- Similar in appearance to renal epithelial cells
- 2-4 times the size of WBC
- Few are normally seen, clusters/sheets may be seen following catheterization or bladder washings.
Microscopic Sediment – Epithelial Cells

- Phase contrast microscopy
- WBC, RBC, Epithelial cells, & rod shaped bacteria
Microscopic Sediment – Epithelial Cells

- Wbc & renal tubular epithelial cells