Microscopic Sediment – Miscellaneous

- Miscellaneous urine sediment structures
  - Mucous - threadlike, transparent. Low light is needed in order to be able to see mucous threads. Usually a vaginal contaminant. Do not confuse with casts.
Microscopic Sediment – Miscellaneous

- **Mucous threads** (2 wbc within, 1 rbc within, 1 rbc out)
- 160x magnification
Microscopic Sediment – Miscellaneous

- Mucous threads
Microscopic Sediment – Miscellaneous

- Miscellaneous urine sediment structures
- Bacteria – May be a contaminate from poor collection or transport. *or as the result of spec sitting at RT too long. Make the urine alkaline.* We quantitate but do not describe (*ie rods, cocci, etc.*) or try to speciate. *E. coli* is the most common cause of UTI. *In UTI, usually see increased number of WBCs.*
Microscopic Sediment – Miscellaneous

- Miscellaneous urine sediment structures
  - Squamous epithelial cells and bacteria x250
Microscopic Sediment – Miscellaneous

- Miscellaneous urine sediment structures
- WBC and bacteria, S-M stain x 100
Microscopic Sediment – Miscellaneous

- Miscellaneous urine sediment structures
  - Yeast – May be a contaminant since it is normal vaginal flora. But may be seen in diabetics (since increased glucose in urine), or a patient on antibiotic treatment which suppresses other flora allowing yeast to overgrow.
Microscopic Sediment – Miscellaneous

- Budding yeast with squamous epithelial cell
- 200x (no segs, contamination? vs infection)
Microscopic Sediment – Miscellaneous

- Miscellaneous urine sediment structures
  - Yeast with hyphae, interference contrast microscopy x 160
Microscopic Sediment – Miscellaneous

- Miscellaneous urine sediment structures
  - Parasites – usually a vaginal or fecal contaminant
    - Trichomonas - resembles a WBC but has a flagellum and moves. *Can be found in males or females. A sexually transmitted parasite, can also be picked up in nature.*
Microscopic Sediment – Miscellaneous

- Miscellaneous urine sediment structures
  - Fecal parasites - pinworm (*E. vermicularis*), other intestinal parasites.
  - Urine - bladder parasite *Schistosoma haematobium*
Microscopic Sediment – Miscellaneous

- Miscellaneous urine sediment structures
  - Sperm - whether or not to report in a UA depends on your lab. If in doubt, report. Can indicate prostatic problems. *in older men.*
  - *in ♀ a vaginal contaminant, tells dr that pt is sexually active.*
Microscopic Sediment – Miscellaneous

- Spermatozoa
Microscopic Sediment – Miscellaneous

- Miscellaneous urine sediment structures
  - Oval fat bodies - degenerating or necrotic renal epithelial cells / possibly macrophages contain fat globules (bi-refringent fat droplets) in their cytoplasm.

- Rare, but serious - seen in nephrotic syndrome. If fat is cholesterol will polarize (oval fat bodies, fat casts, uric acid, starch crystals - all sorts of things).
Microscopic Sediment – Miscellaneous

- **Oval Fat Bodies**
  - They are often (but not always) seen in specimens with increased protein (proteinuria) & nephrotic syndrome.
    - Source – fatty degeneration within renal epithelial cell cytoplasm, or possibly macrophages which contain fat (foam cells). (Authors vary, very possibly both exist.)
    - True oval fat bodies demonstrate maltese cross (due to presence of esterified cholesterol in liquid-crystal form) under polarized light.
Microscopic Sediment – Miscellaneous

- Oval Fat Bodies cont.
  - Fat stain may assist in detection, but degenerated cells may also pick up stain.

- Lipiduria
  - Lipid droplets seen as
    - Free bi-refringent fat droplets of various sizes
    - Intracellular fat in ‘oval fat bodies’
    - Within the matrix of the ‘fatty cast’
Microscopic Sediment – Miscellaneous

- Oval fat bodies
  - Hpf, bright field and polarized
Microscopic Sediment – Miscellaneous

- Polarized oval fat bodies (maltese cross)
Microscopic Sediment – Miscellaneous

Case study: lymphoma pt. just started on chemo. pH 8, pos nitrate, pos leu esterase, trace protein, 80 wbc/hpf, 20 rbc/hpf.
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- My thoughts: RTE with neutral fat or trig (since they do not polarize). Suggest fat stain.
Microscopic Sediment – Miscellaneous Artifacts

- Artifacts - powder crystals, fibers, oils, hairs, pollen
  - Cotton fibers
Microscopic Sediment – Miscellaneous Artifacts

- Starch granules
Microscopic Sediment – Miscellaneous Artifacts

- Air bubbles