



FAQs in Small Animal Theriogenology

Common reproductive
problems in
spayed/neutered pets

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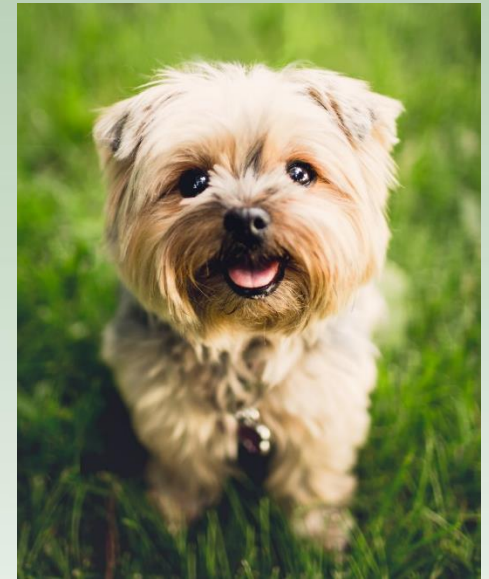
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The Future of Animal Reproduction





Top Therio challenges in spayed/neutered pets

- 1) Ovarian remnant syndrome
- 2) Vaginal discharge/vaginitis
- 3) Priapism
- 4) Paraphimosis





Ovarian remnant syndrome (ORS)

Spayed female with signs of estrus:

How do I start with the workup?



Hyperestrogenism in dogs

- Swollen vulva
- +/- vaginal discharge
- Dogs should **only** be under the influence of estrogen during estrus (heat)
 - ~ q. 6 months
 - ~ 7-21 days
- Should **never** be under the influence of estrogen following OVH or OVx





Ovarian Remnant Syndrome?

- Case 1: Lena
 - 5 yr old Chinese Crested
 - OVH at another clinic 3 yrs prior adoption
 - Bloody vaginal discharge in a “seasonal” pattern





What is the most common cause of bloody vaginal discharge in female dogs?

- A. Estrogen (estrus/heat)
- B. Estrogen (estrus/heat)
- C. Estrogen (estrus/heat)





What test can we use to confirm the presence of estrogen in a female dog?

- A. Measure blood levels of estrogen
- B. Perform a vaginal cytology evaluation
- C. Measure estrogen in the feces
- D. Measure estrogen in the urine



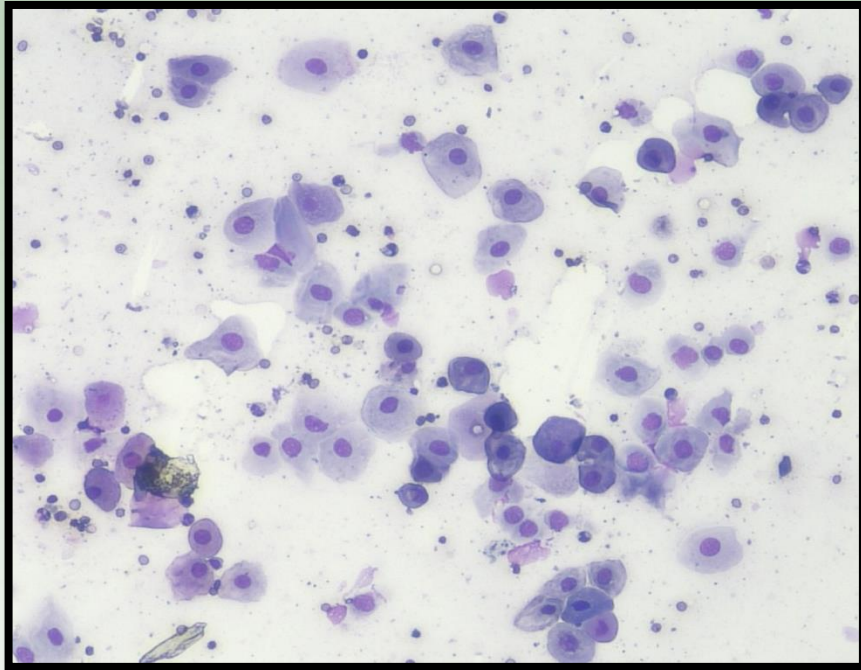


Vaginal cytology slides

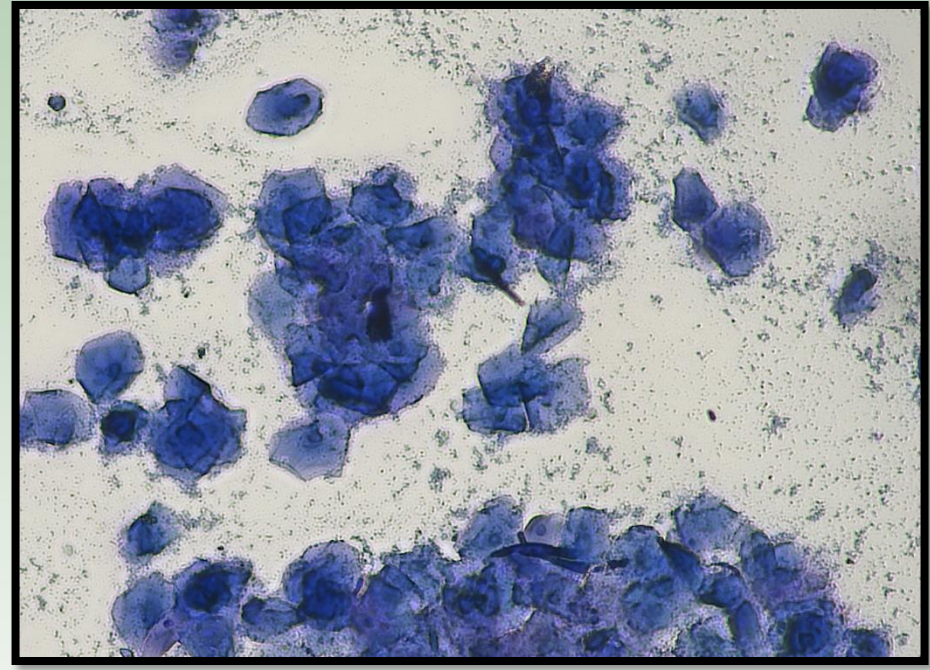




VAGINAL CYTOLOGY



No estrogen

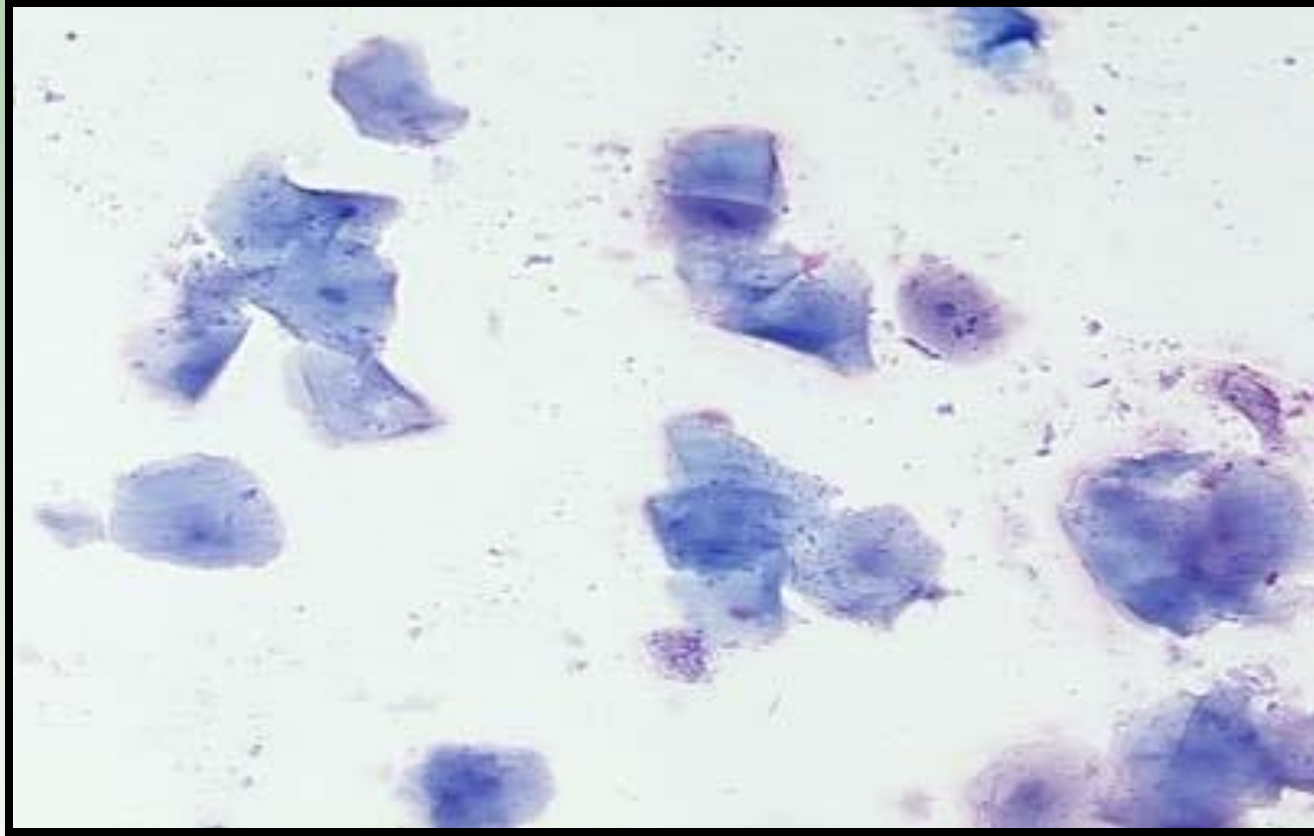


Estrogen





Estrus cytology





Ovarian Remnant Syndrome?

- Testing:
 - Vaginal cytology: 80% cornification
 - Progesterone: 2.4 ng/ml
 - 1 week later: 5.6 ng/ml
 - AMH testing: Positive
 - Anti-Mullerian Hormone
 - UC Davis Endocrinology Lab
 - Cornell Endocrinology Lab
- Dx: **Ovarian Remnant Syndrome (Intact Female)**





Ovarian Remnant Syndrome?

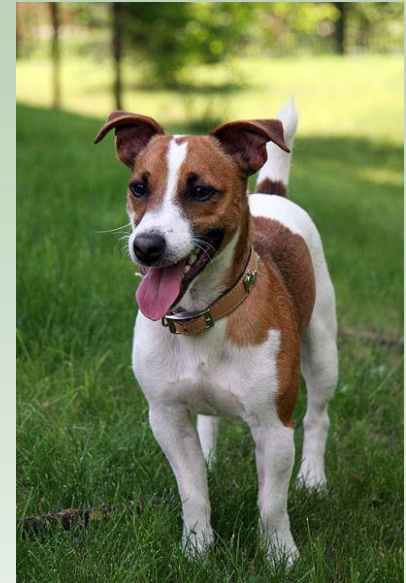
- Case 2: Lizzie

- Signalment:

- Jack Russell Terrier
- 7 yrs old
- Female/spayed (6 mo old)

- Presenting complaint:

- Vulvar swelling noted by owner
 - Started 5 months ago
 - Consistently present (doesn't wax/wane)





Physical Exam

- Exam WNL, except:
 - Vulvar swelling
 - Alopecia
 - Generalized
 - Symmetrical
 - Non-pruritic
- *Not noticed by owner...*







What is the most common cause of vulvar swelling in female dogs?

- A. Estrogen
- B. Estrogen
- C. Estrogen



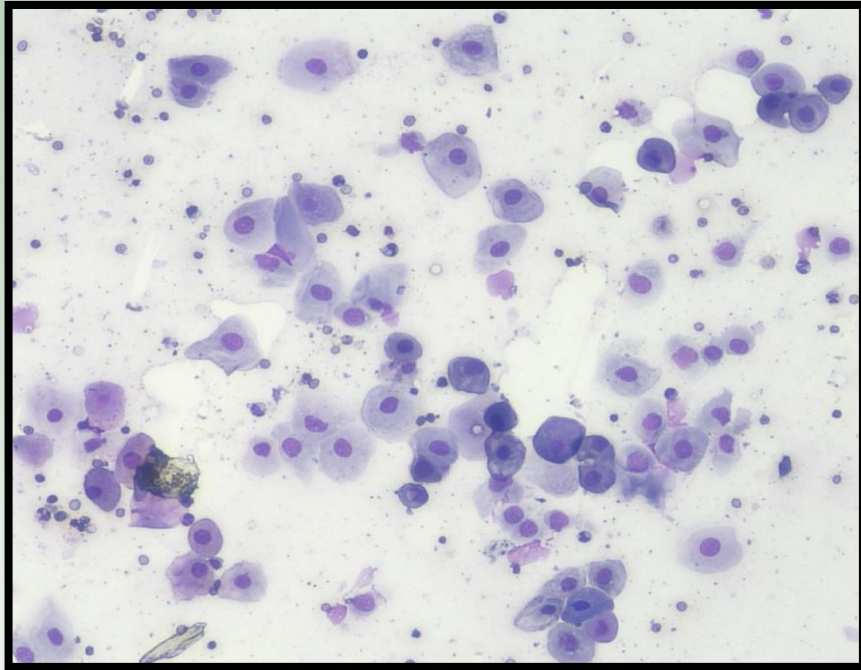


Vaginal cytology

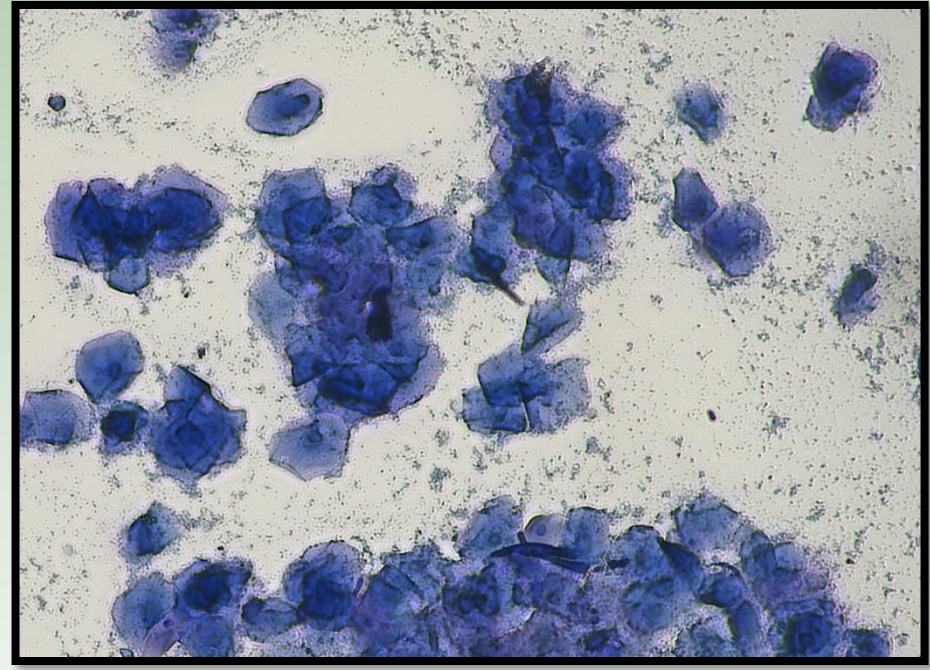




VAGINAL CYTOLOGY



No estrogen



Estrogen





Why would a spayed female have estrogen present?

Ovaries still present

- Ovarian remnant syndrome
 - ~~Come into estrus q. 6 months (just like intact females)~~
 - ~~Signs of heat first seen within 6-12 months of spay~~

Unusual source

- Endocrine tumor
 - Uncommon
- Diet
 - Uncommon
- Owner?
 - **COMMON!**





How do we ask these questions?

- Is anyone in the household using any type of hormonal medication, especially topical creams or sprays?
- We see this commonly in small dogs that are exposed to human medications.
 - Snuggling
 - Co-sleeping





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January



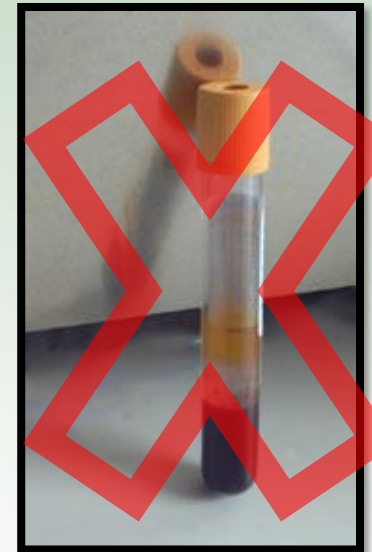
August





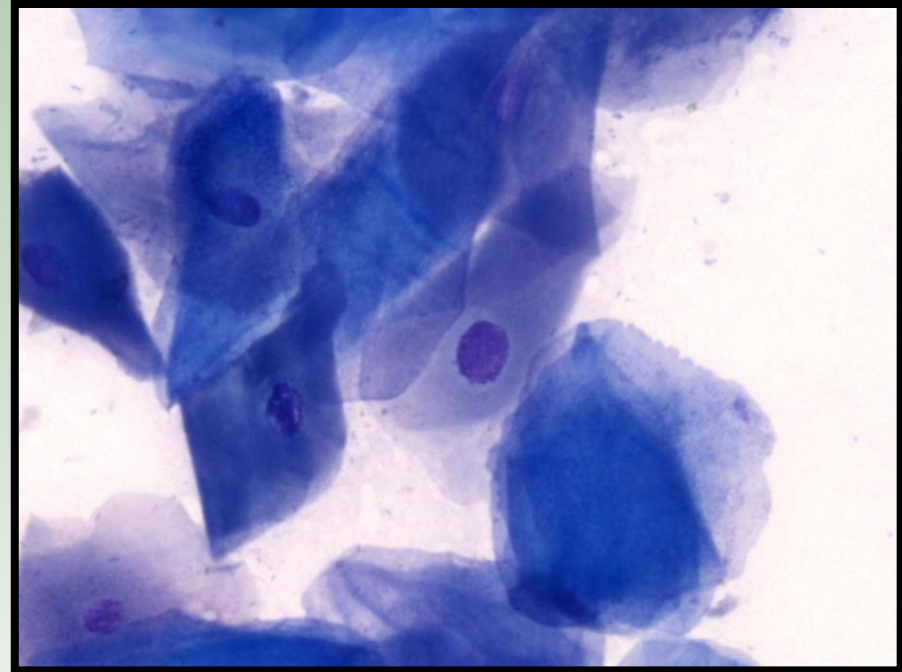
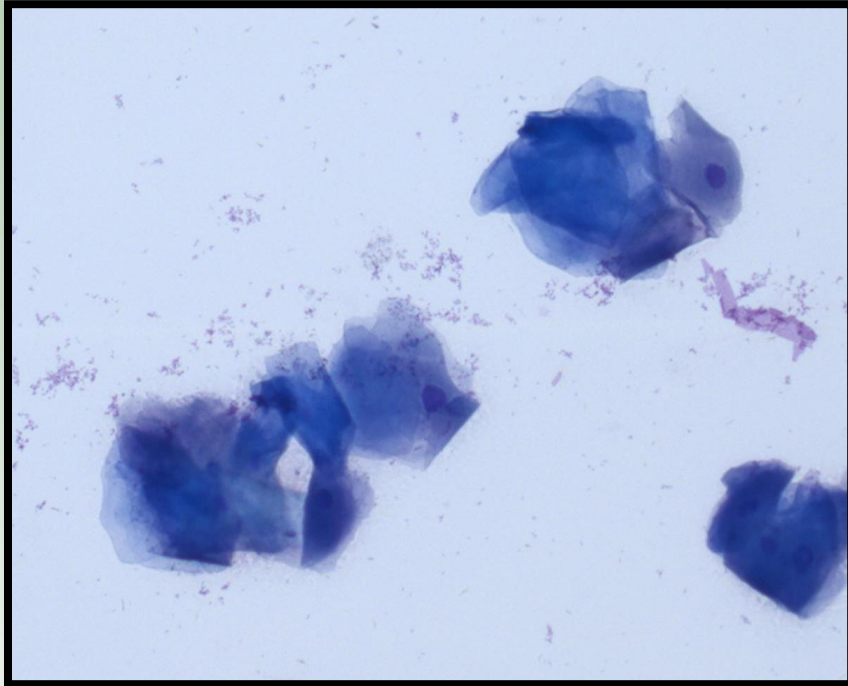
ORS testing protocol for dogs

- Option 1: AMH + Prog test at any time
***only one needs to be positive**
- Option 2: (preferred)
 - Confirm estrogen with exam and vaginal cytology
 - Ask about topical hormonal products
 - Wait 1 month, then:
 1. Submit serum for progesterone ($>2\text{ng/ml}$ confirms ORS)
 2. Freeze remaining serum in case AMH needed
- Important:
 - ****NO SS/gel tubes****
 - Plain red top (or white top)
 - Allow to clot, centrifuge, put serum into clean tube
 - Freezer for storage





What about cats?



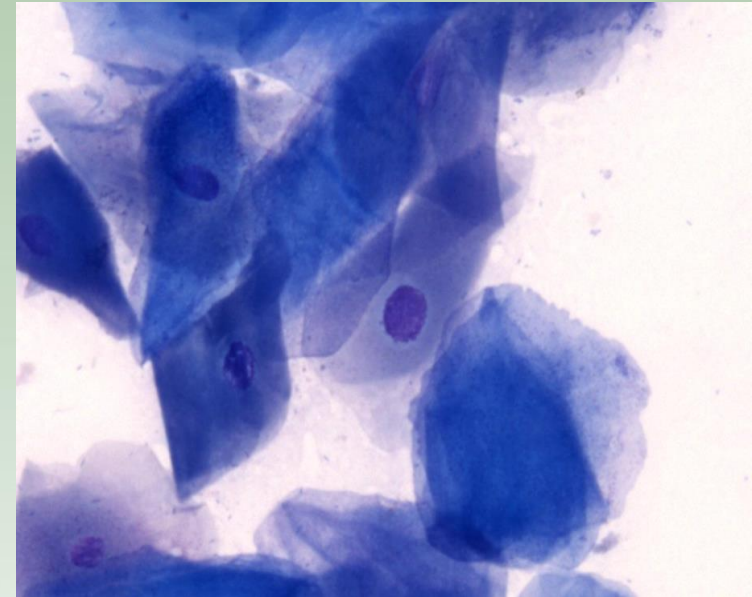
Feline vaginal cytology





What about cats?

- ORS more common in cats
 - Ectopic ovarian tissue?
- Dx made from:
 - Behavior
 - Vaginal cytology
 - **Elevated progesterone**



OR

- **Anti-mullerian hormone (AMH) Testing**
 - UC Davis Endocrinology Lab
 - Cornell Endocrinology Lab

Only one needs to be positive





ORS testing protocol for cats

- Option 1: AMH + Prog test at any time
- Option 2: (preferred)
 - For cats in heat now:
 1. Inject 25 µg of GnRH IM (Zoetis)
 2. Collect a blood sample 10-14 days after GnRH
 3. Submit for progesterone
 4. Freeze remaining serum in case AMH needed
- Important:
 - ****NO SS/gel tubes****
 - Plain red top (or white top)
 - Allow to clot, centrifuge, put serum into clean tube
 - Freezer for storage





Canine Vaginitis

Spayed female with vaginal discharge:

How do I start with the workup?

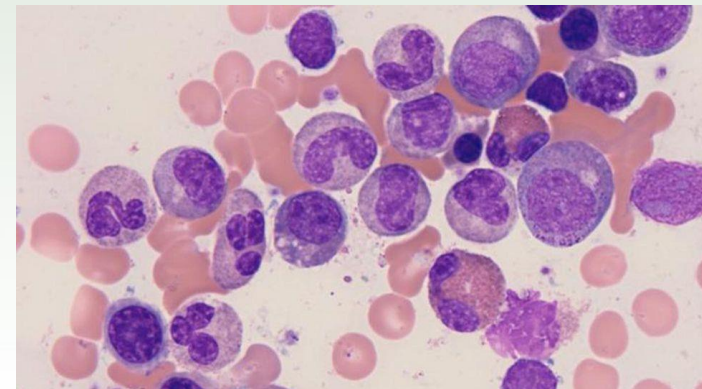




Vaginitis

- History and signalment are critical
 1. Rule out hormones if needed
 - Vulvar swelling?
 2. Rule out UTI
 - *Cystocentesis for sample*
 - Active sediment?
 - Urine culture (much better diagnostic tool than vaginal culture)

- Clear/white mucoid discharge
- Cytology: neutrophils
- Culture??: probably not
- Antibiotics??: probably not

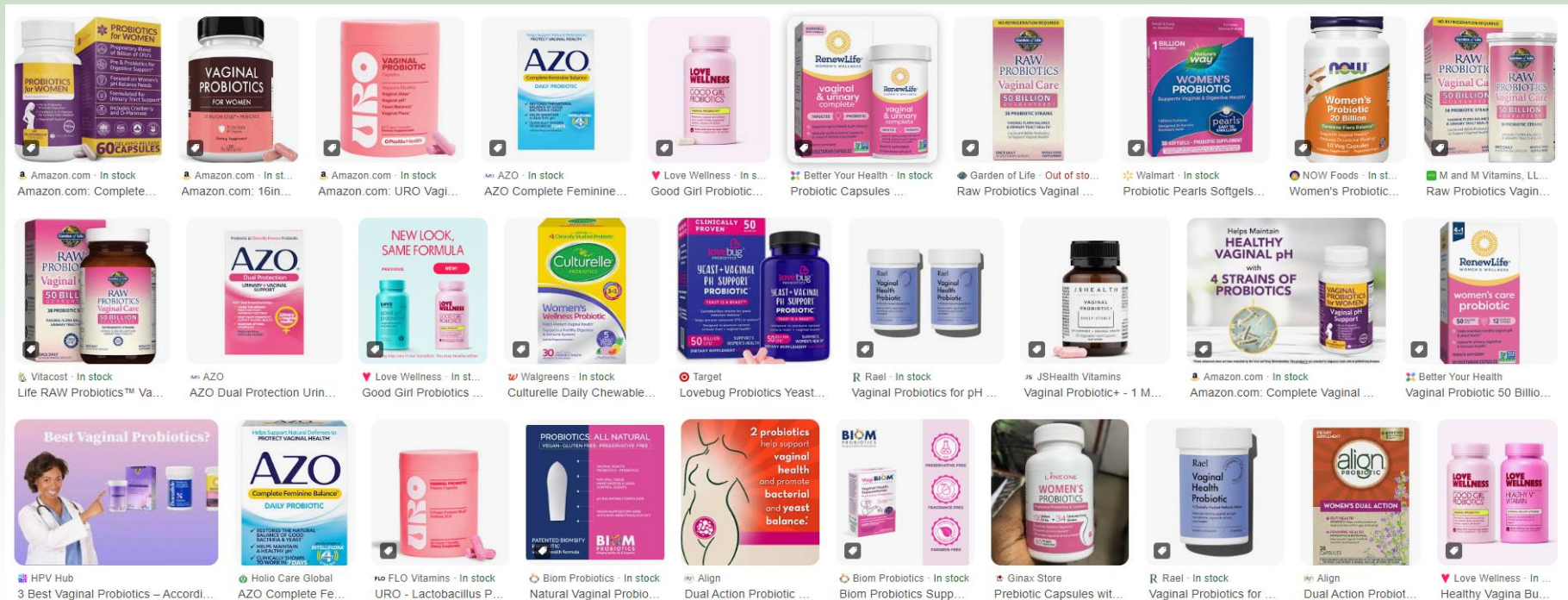




Canine vaginitis

- Principles of probiotic therapy

- “Do no harm”
- Lactobacillus sp
- Competitively antagonizes colonization of pathogenic bacteria
- Byproducts of lactobacillus inhibit growth of pathogenic bacteria and maintain low pH





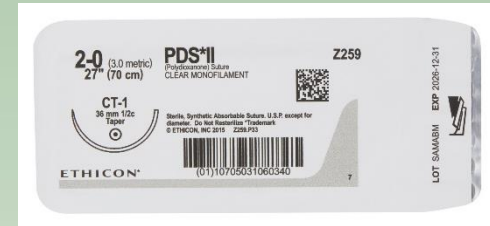
Canine vaginitis





What's the next step?

- Recent OVH?? (~4-8 wks)
 - Suture reaction/breakdown and normal healing
 - ❖ Probiotics for 30-60 days



- Signs of atopy??
 - Ears, feet, etc.
 - ❖ Begin Tx as warranted
 - ❖ Probiotics for 60 days, then taper



- Urinary incontinence??
 - Early signs = mucoid discharge
 - Dx tool: E-collar!
 - ❖ Probiotics for 60 days, then taper





What's the next step?

- Attempt vaginal exam?
- Is it time for sedated exam??
 - Insufflation port





Neutered male with penile
problems:

How do I start with the workup?





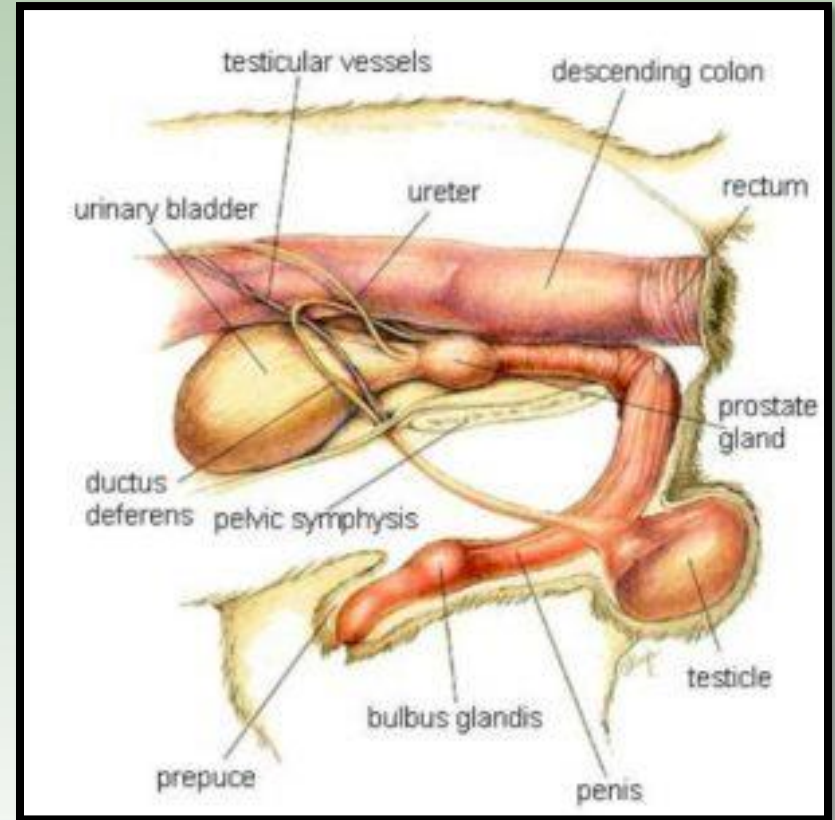
Paraphimosis vs Priapism

- Is it paraphimosis or priapism?
 - Paraphimosis – inability to retract the flaccid penis
 - Priapism – persistent erection
- ❖ Check for engorgement of bulbus glandis





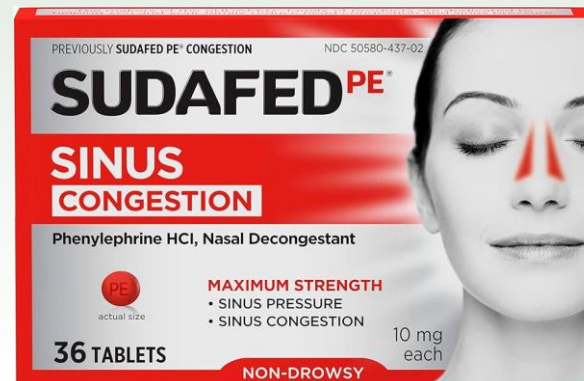
Priapism – Bulbus glandis





Priapism

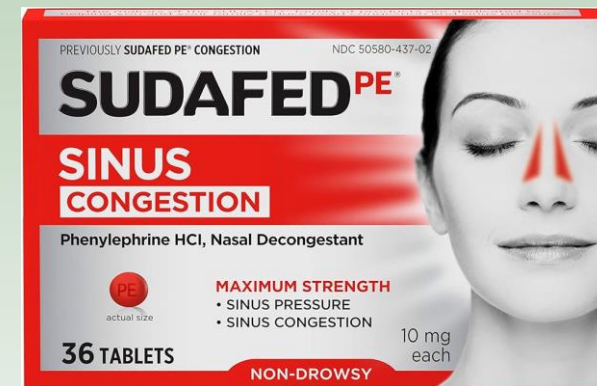
- What is the immediate Tx?
 - Check for trauma
 - Moisten with saline
 - Achieve detumescence
 - Sedation
 - Phenylephrine flush of cavernous tissues
 - Alternatively, place a needle and attempt egress of fluid
 - Epinephrine injection into cavernous tissues
 - Bulbus glandis is separate compartment
 - Oral pseudoephedrine as conservative/maintenance Tx





Priapism

- What is the underlying cause?
 - Straining to urinate:
 - Urolith
 - Enlarged prostate
 - Neurologic:
 - IVDD
 - Lumbar stenosis
 - Idiopathic
 - ****Underlying cause is usually NOT hormonal****
- What is the long-term mgt?
 - *Tx underlying cause*
 - Gabapentin?
 - Pseudoephedrine





Paraphimosis







Paraphimosis





Untreated Paraphimosis



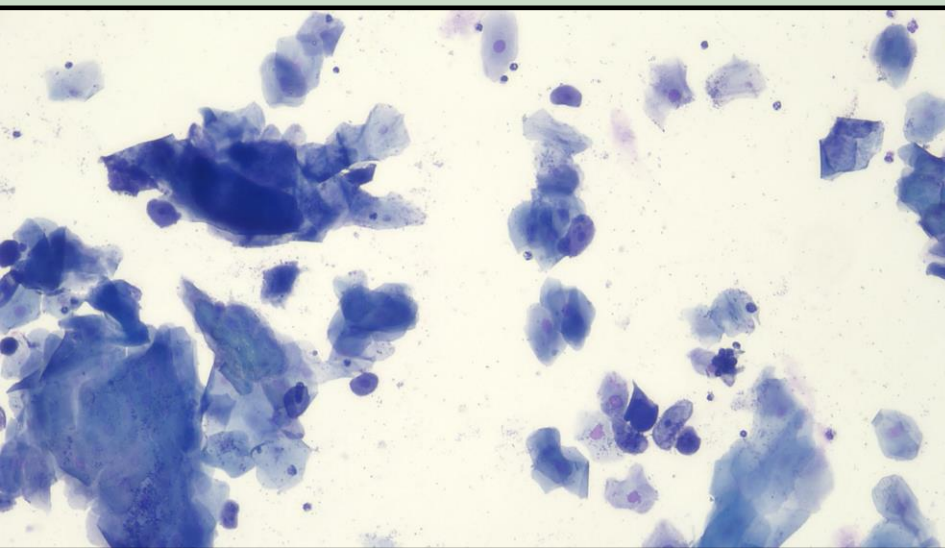
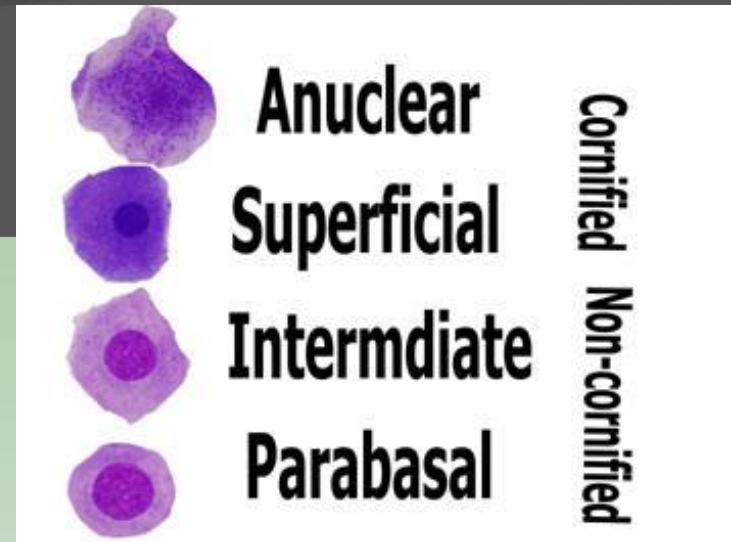


Paraphimosis due to estrogen exposure

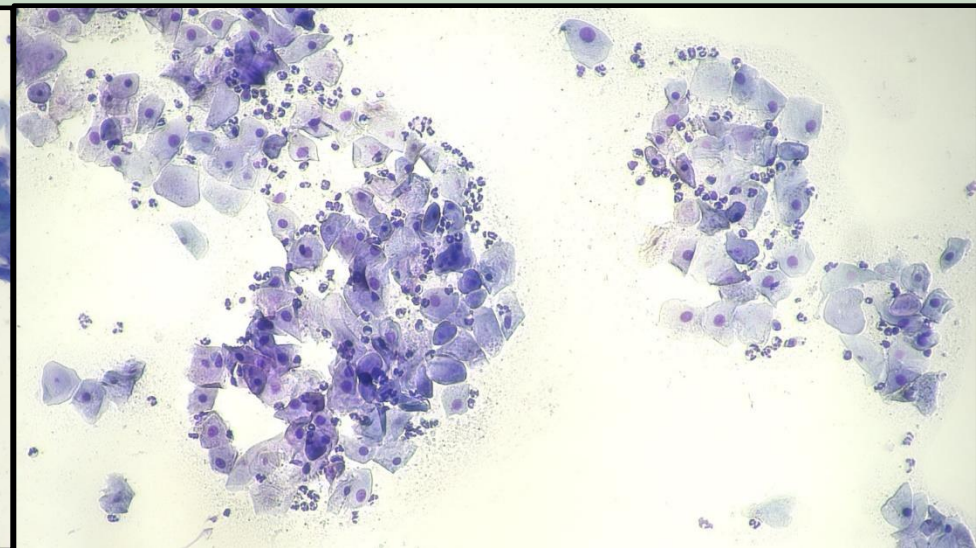




Comparison of Preputial Cells



5 y/o M/N Chihuahua;
estrogen exposure



6 y/o M/N Chihuahua; normal





Paraphimosis

- What is the immediate Tx?
 - Lubricate
 - Check for trauma
 - Replace/retain (+/- pursestring)

- What is the underlying cause?
 - Neurologic deficits/IVDD?
 - Spinal rads, NSAIDs or steroids, cage rest
 - Unsupervised sexual activity
 - Engorged → detumesced outside of female → dry → unable to retract
 - Estrogen exposure
 - Edema within sheath = unable to retract penis
 - Older dogs lacking muscle tone
 - Can consider preputial advancement surgery





Take home points

- Ovarian remnant syndrome
 - Vaginal cytology confirms estrogen
 - Ask about topical hormone use in household
 - Progesterone +/- AMH
- Vaginitis
 - Probiotics over antibiotics
 - Consider suture reaction, atopy, early incontinence (E-collar for Dx)
 - Sedated exam as last resort; otoscope with insufflation port
- Priapism/paraphimosis
 - Distinguish if erect using palpation of bulbus glandis
 - Epinephrine/pseudoephedrine to resolve erection
 - Dx/Tx underlying cause
 - Pros/cons of pursestring
 - Preputial advancement surgery





Questions?

The End

