

A Case of a Canine Transmissible Venereal Tumor, the Contagious Cancer

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Advisor: Dr. Intile

Signalment/History

**Approximately 2 year
old, spayed female,
mixed breed dog**

**Arrived in United States
from Afghanistan in
July 2008**

**Known to have 1 litter
of puppies**



History

rDVM noted a 1.5 cm raised, ulcerated mass, cranial to vulva

Mass removed during ovariohysterectomy and histopathology consistent with Canine Transmissible Venereal Tumor (TVT)



Presenting Complaint

**Evaluation of a
previously diagnosed
TVT**

**Owner reported blood
spotting and increased
cleaning of vulvar
region**



Initial physical exam was unremarkable

Problem list

Bloody Vulvar Discharge

- **Hormonal**
Estrus
- **Infectious**
Urethritis
Cystitis
Pyometra

- **Trauma**

- **Neoplasm**

- Urinary bladder
- Urethra
- External genitalia

Perivulvar Mass:

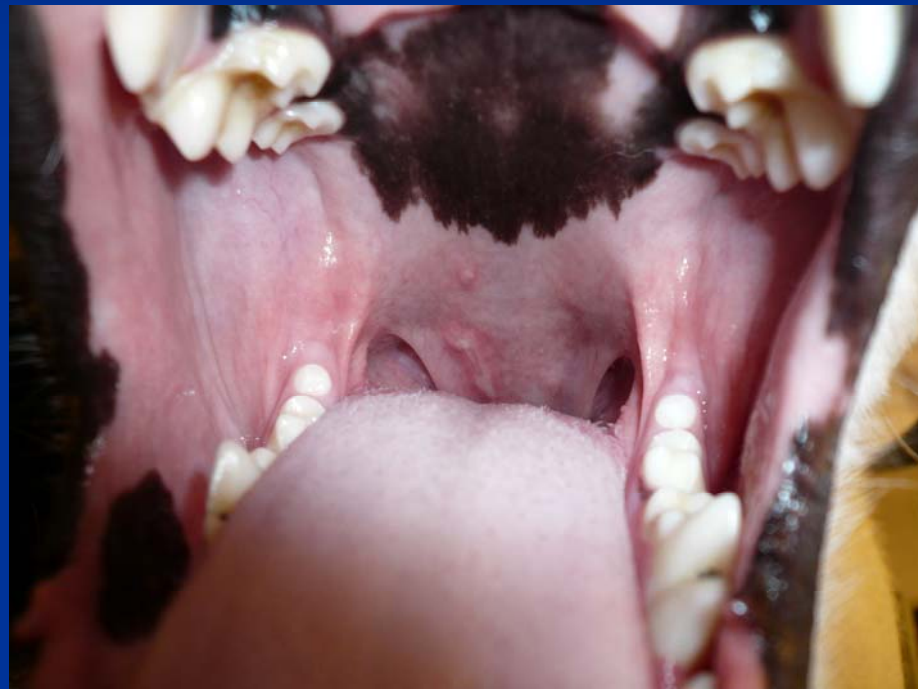
- **Histologically TVT**

Suspicious of Transmissible Venereal Tumor

Physical Exam

Sedated Oral Exam

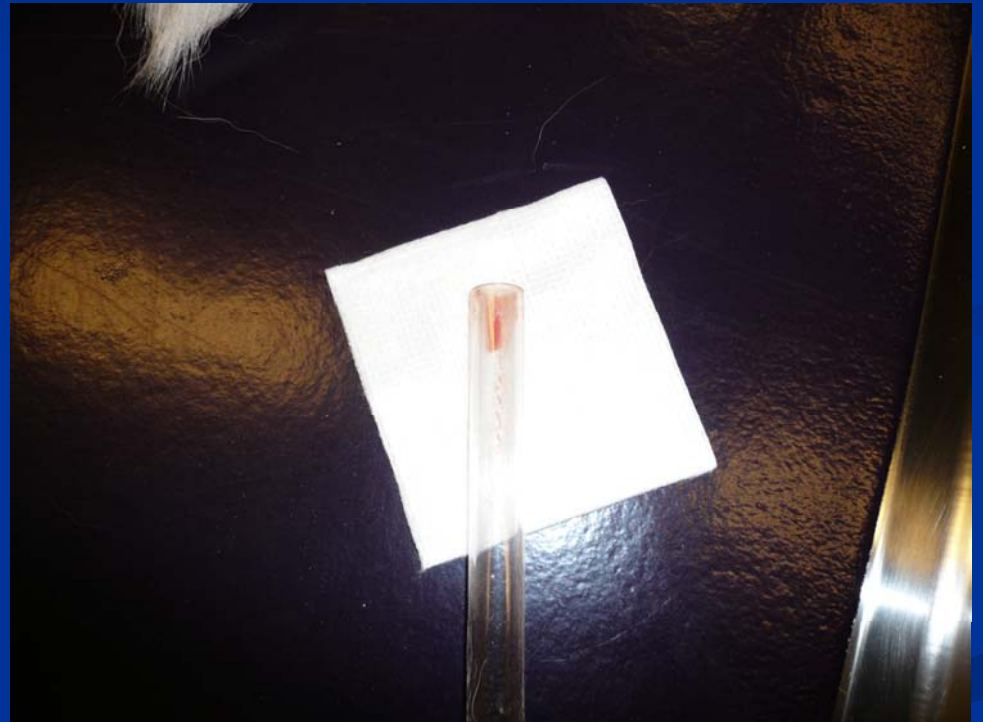
Several small, raised nodules on soft palate



Physical Exam

Sedated Vaginal Exam

Bloody discharge



Biopsy



Digital Vaginal Exam

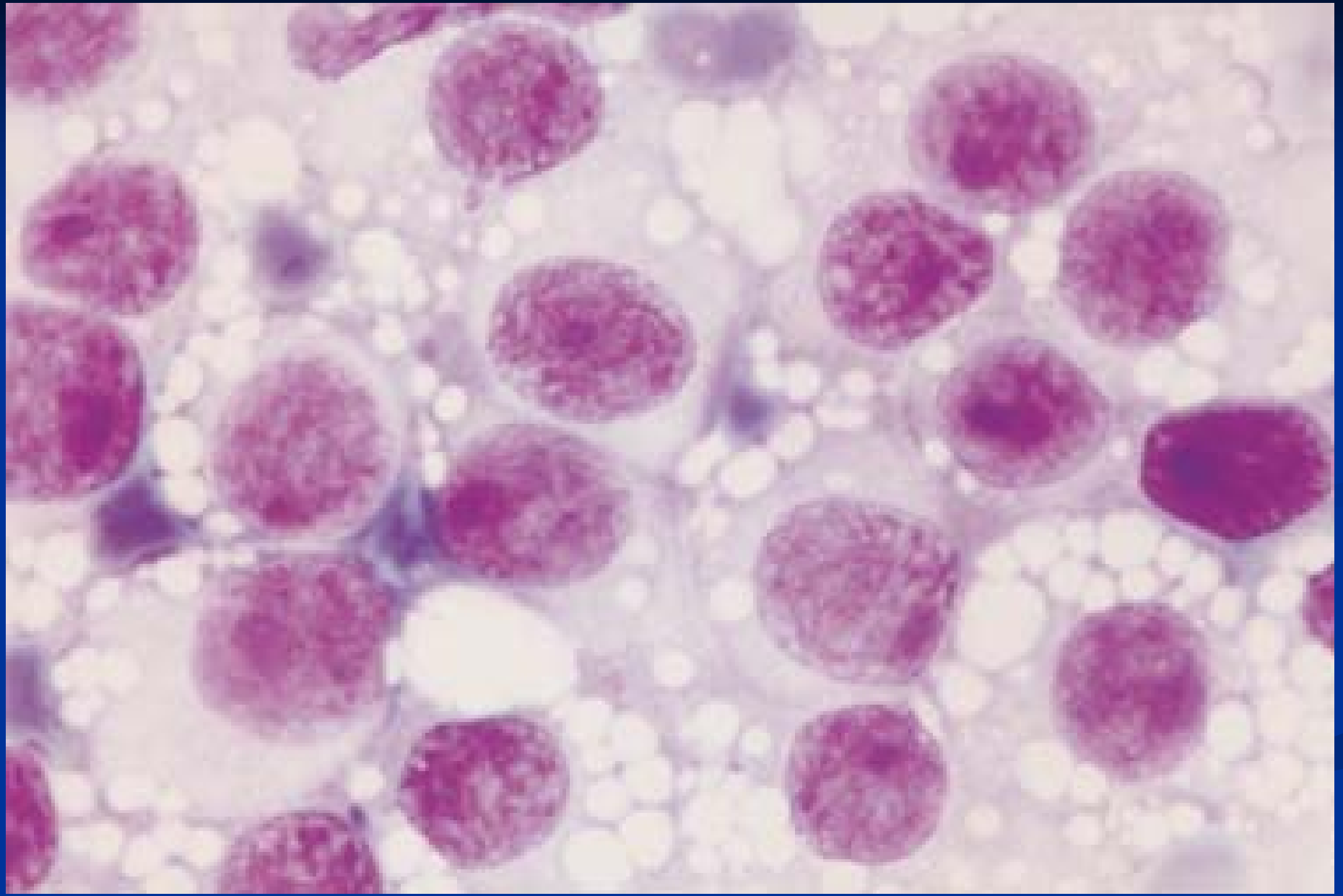
**3 cm mass palpated
on dorsal aspect of
caudal vestibule**

**Mass was not able to
be exteriorized**

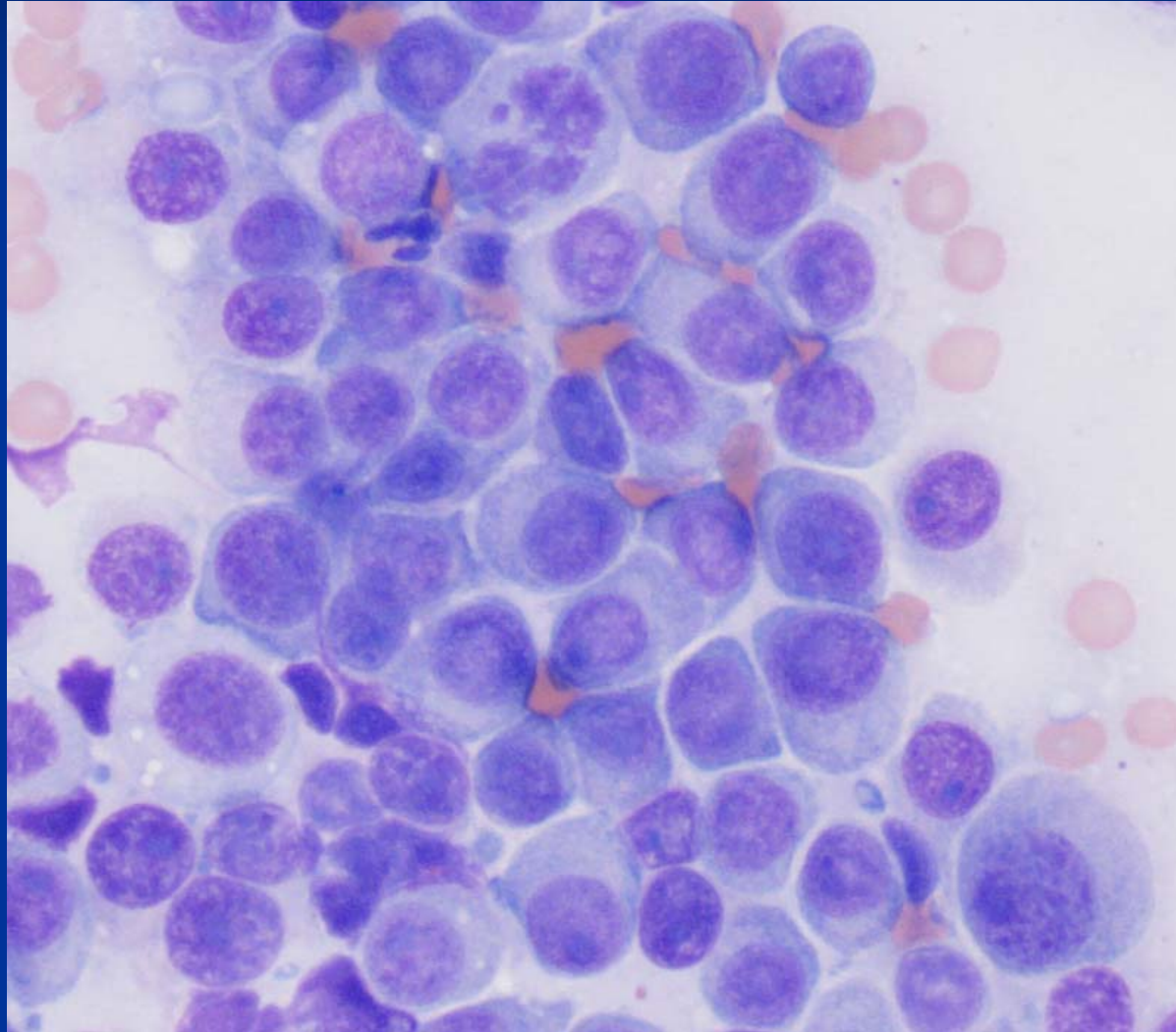


Cytology of TVT's

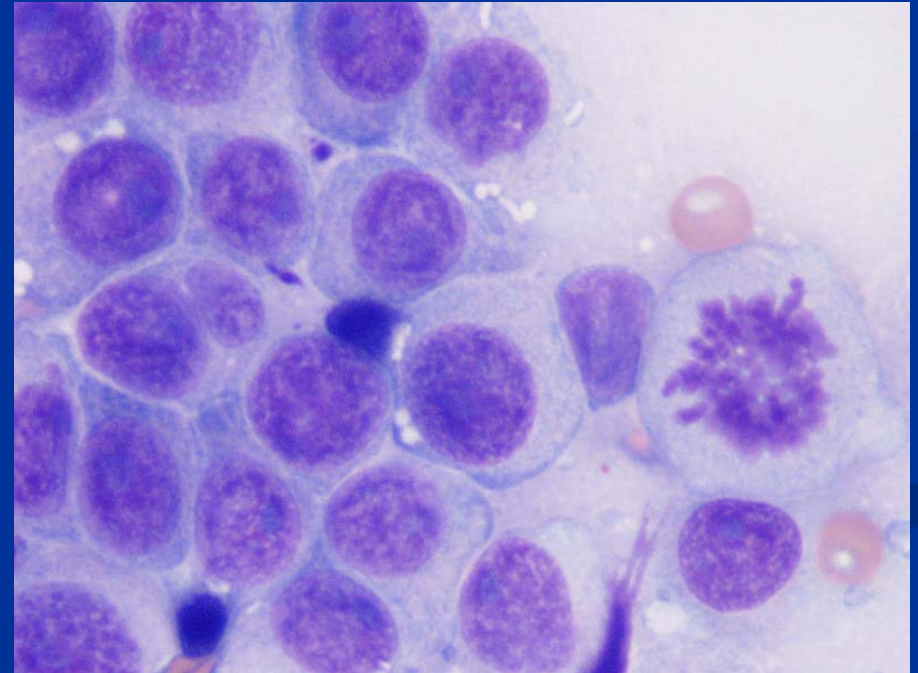
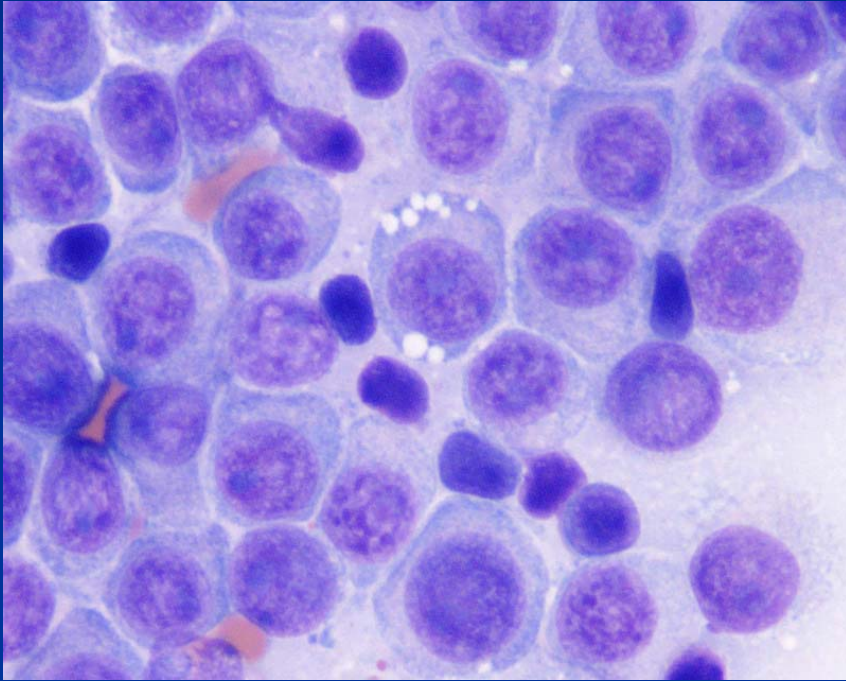
- **Round cell tumor**
- **Exfoliates well with imprint or aspirate**
- **Moderate amount of pale, blue cytoplasm often with small, clear vacuoles**
- **Round nucleus with coarse chromatin and one or two prominent nucleoli**
- **Mitotic figures present**
- **Inflammatory cell infiltrates**



Cytology



Cytology



Histopathology of TVT's

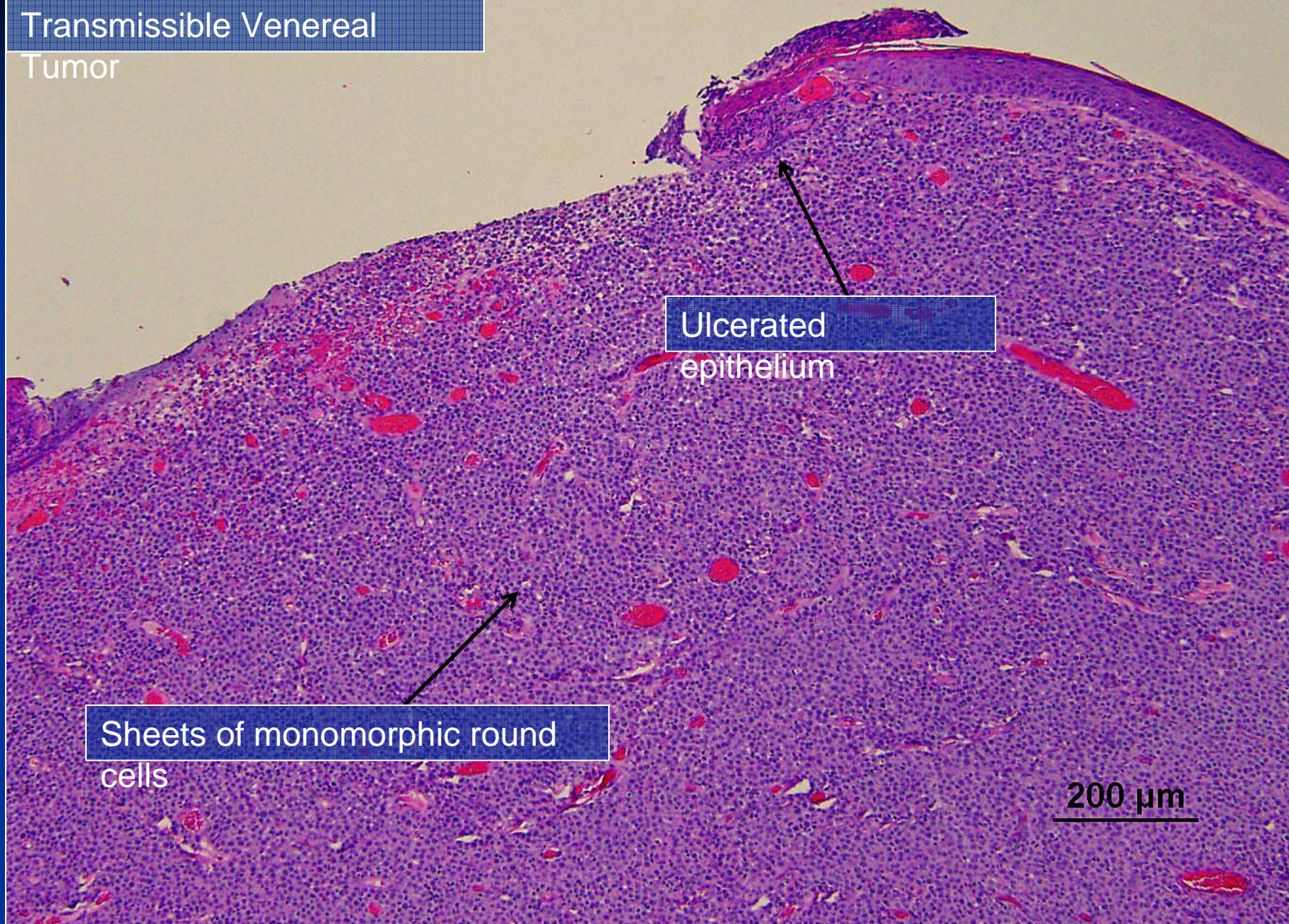
- **Round, ovoid, or polyhedral cells**
- **In compact masses interlaced with delicate vascular stroma**
- **Moderate amount of eosinophilic cytoplasm**
- **Large, round nucleus with eccentrically placed nucleolus**
- **Mitotic figures are numerous**

UVIS #120498-08
Transmissible Venereal
Tumor

Ulcerated
epithelium

Sheets of monomorphic round
cells

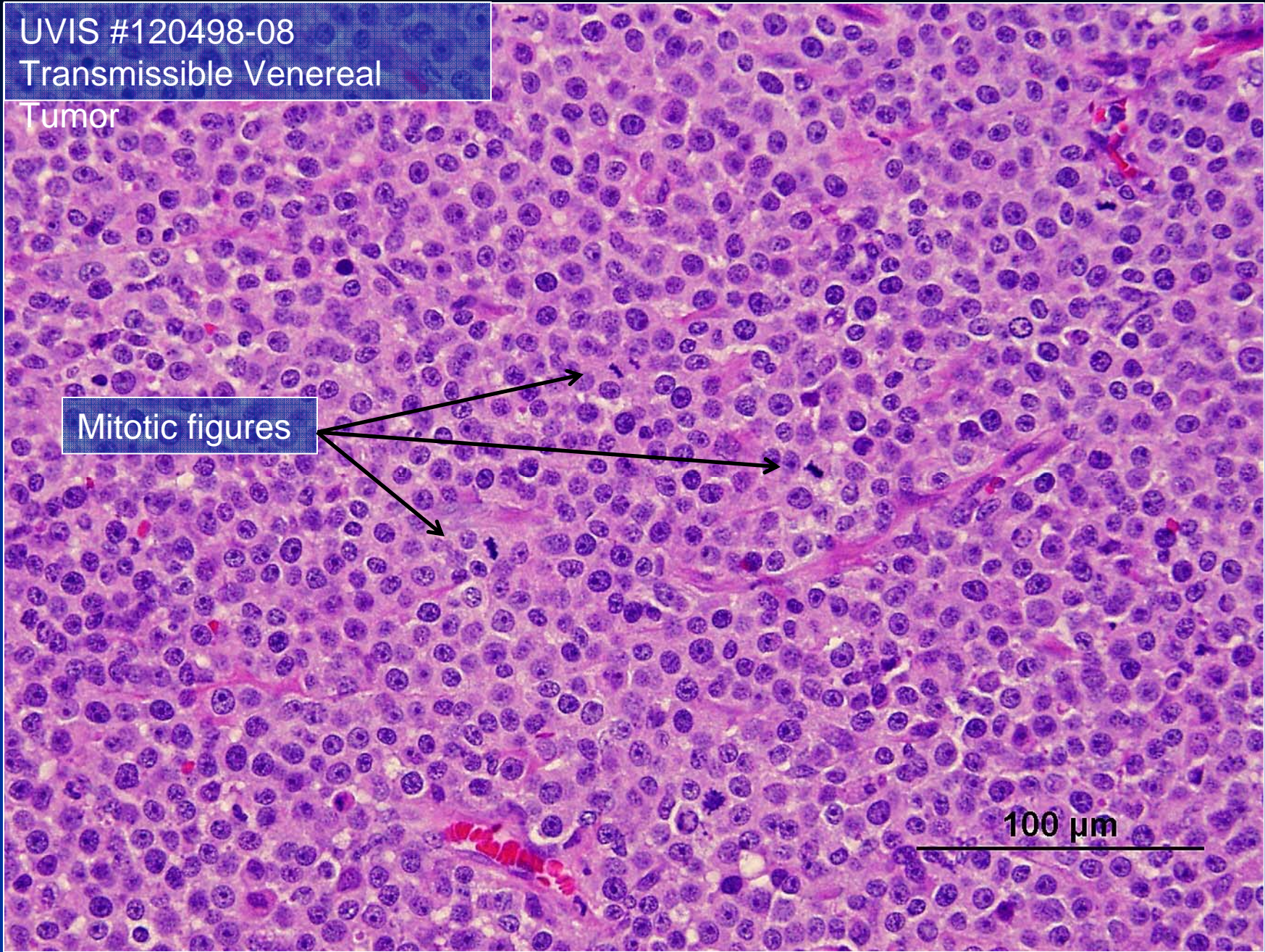
200 μ m



UVIS #120498-08
Transmissible Venereal
Tumor

Mitotic figures

100 μ m



Diagnosis

- **Location of lesion**
- **History**
 - Travel and rDVM
- **Cytology and Histopathology**



1. Complete extrusion of the penis from the preputial sheath in a 3-year-old Labrador retriever revealed a large, friable, bloody, cauliflower-like mass in the region of the bulbus glandis. (Photo courtesy of Tanya Hall, DVM.)

Transmissible Venereal Tumor

Transmissible Venereal Tumor

- **A continually propagated cancer cell lineage that is transmitted by direct transplantation**
- **Evolved from a neoplastic cell into a sexually transmitted disease**
- **Several stable genetic markers make it distinct from its host**
 - 59 chromosomes, microsatellite DNA, mitochondrial DNA, LINE-1

TVT Biology

- **Sexually transmitted, round cell tumor of histiocytic origin**
- **Commonly found in free roaming, sexually active dogs in the tropical climates**
- **Contagious Cancer**
 - Only tumor that is transplantable in adult, immunocompetent, allogeneic dogs.
 - One of two tumor cells that can be transmitted as a graft

Devil Facial Tumor Disease

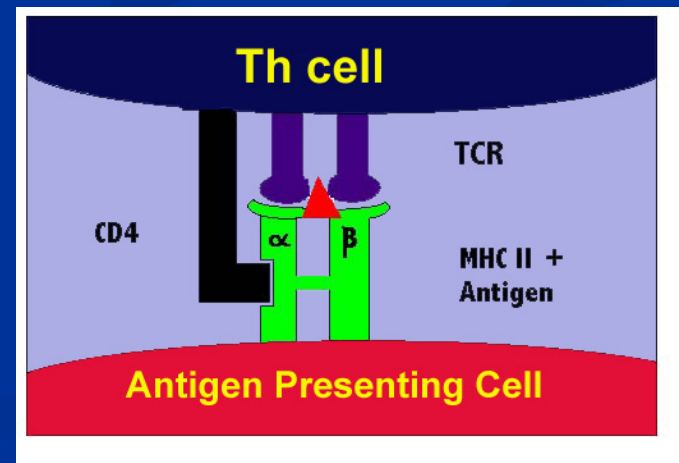
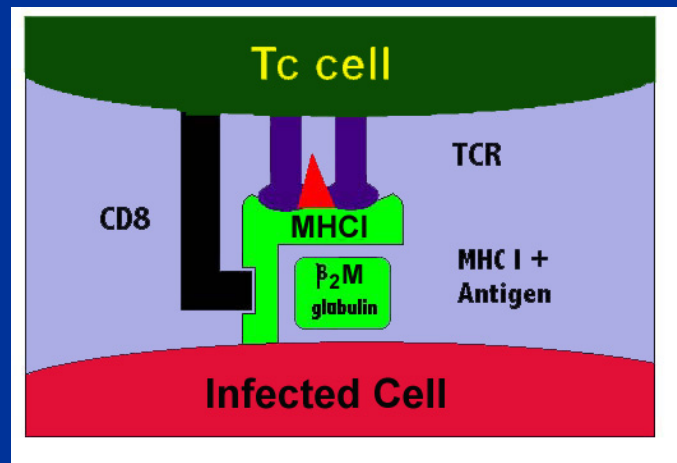


How do T_H1's escape immunosurveillance?

- **Major histocompatibility complex (MHC)**

Not expressed (Cohen et. al., 1984)

Downregulated (Murgia et. al., 2006)



How do T_VT's escape immunosurveillance?

➤ **Secretion of molecules that inhibit the host's immune response**

➤ **TGF-*B*1**

➤ **Soluble Substances** (Liu et. al. 2008)

Impair differentiation of DC

Inhibit antigen uptake and presentation by APC

Cause apoptosis of B-cells, monocytes and DC

Prognosis

- **TVT is responsive to a variety of treatments**
 - **Surgery – not effective**
 - **Radiation therapy – highly effective, but limited availability and anesthesia required**
 - **Chemotherapy – highly effective, available**
 - **Vincristine, vinblastine, cyclophosphamide, methotrexate, and doxorubicin**

Treatment

Indicated because spontaneous regression is not expected in clinical cases

Vincristine

Highly effective as a single agent therapy

4-8 weekly treatments (0.5 mg/m²)

>90% remission rate even if metastatic

Vincristine

➤ Mitotic inhibitor

- Causes dissolution of tubulin, a key protein in microtubules
- Mitotic spindle cannot form and cells cannot divide



➤ Side Effects

- GI upset most commonly
- Myelosuppression possible
- Local tissue injury with drug extravasation

Vincristine administered at rDVM



Treatment Date	Neutrophil count	Remission Status
1 - 9/22/08	6.8 mm ³ (N)	Active disease Oral lesions Genital mass
2 - 9/30/08	2.8 mm ³ (L)	Partial remission No oral lesions Genital mass
3 - 10/8/08	2.9 mm ³ (L)	Partial remission No oral lesions Genital mass
4 - 10/22/08	3.9 mm ³ (N)	Complete remission No oral lesions No genital mass
5 - 10/31/08	2.2 mm ³ (L)	Complete remission No oral lesions No genital mass

Follow up

Trixie is in complete remission. She is with her owner who just returned from his tour of duty last week.



Thank You

Dr. Joanne Intile
Dr. Tracy Stokol
Dr. Duncan Russell

Trixie and the
Richardson family



References

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Questions?

