

# PATHOLOGIES

Infertility (Impotentia coehendi & generandi)

Testicular

1. Degeneration
2. Cryptocidism
3. Hypoplasia
4. Torsio
5. Neoplasia
6. Orchitis
7. Epididymitis

Unknown origin?

Infection or  
inflammation?

Locomotor System

1. Legs and hoofs
2. Musculoskeletal
3. Femoral & pudental nerve

Urinary system

1. Upper and lower urinary tract infection
2. Urolithiasis
3. Pyelonephritis

Accesory Gland

1. Prostate hyperplasia
2. Prostatitis
3. Vesiculitis

Behavioral

1. Erectile dysfunction
2. Mechanic or physiologic
3. Overdominance
4. Trauma? Age? Metabolic?

# İMPOTENSIYA

İmp. Caudendi



Unable to copulate

İmp. Generandi



Unable to generate

General pyhsical

- Muscle, nerve, tendon, joint

Coxitis, gonitis, miyozit, travma

Reproductive sys.

Paraphimosis, Phimosi,  
Frenulum, priapism, agnesia,  
penile, balloonoposistitis,  
urolithiasis, deviation,  
rupture, fracture, adhesion,  
laceration, abscess, neoplasia

Libido

Stress, dominance, proestrus aggression,  
psychological trauma

Physcological

other

Hereditary, metabolic (BCS), toxin,

Normal sperm  
production



Motility, concentration, vitality, morphology

Anormal  
sperm  
production

Testis

Disease (IBR, TVT, EVA, Brucella,  
campylobacter, trichomoniasis,  
salmonella etc.)



Embryonic death, abortion

Abnormal head  
(vucule, acrosome,  
chromosomal,  
cytoplasmic droplet  
etc.)

Testis,  
epididymis,  
appendix, vas  
deferens

Cryptorchidism, hypoplasia, degeneration,  
thermoregulation, irritation, hormonal,  
age, orchitis, fibrosis, neoplasia  
(seminoma, sertoli and ICCT)

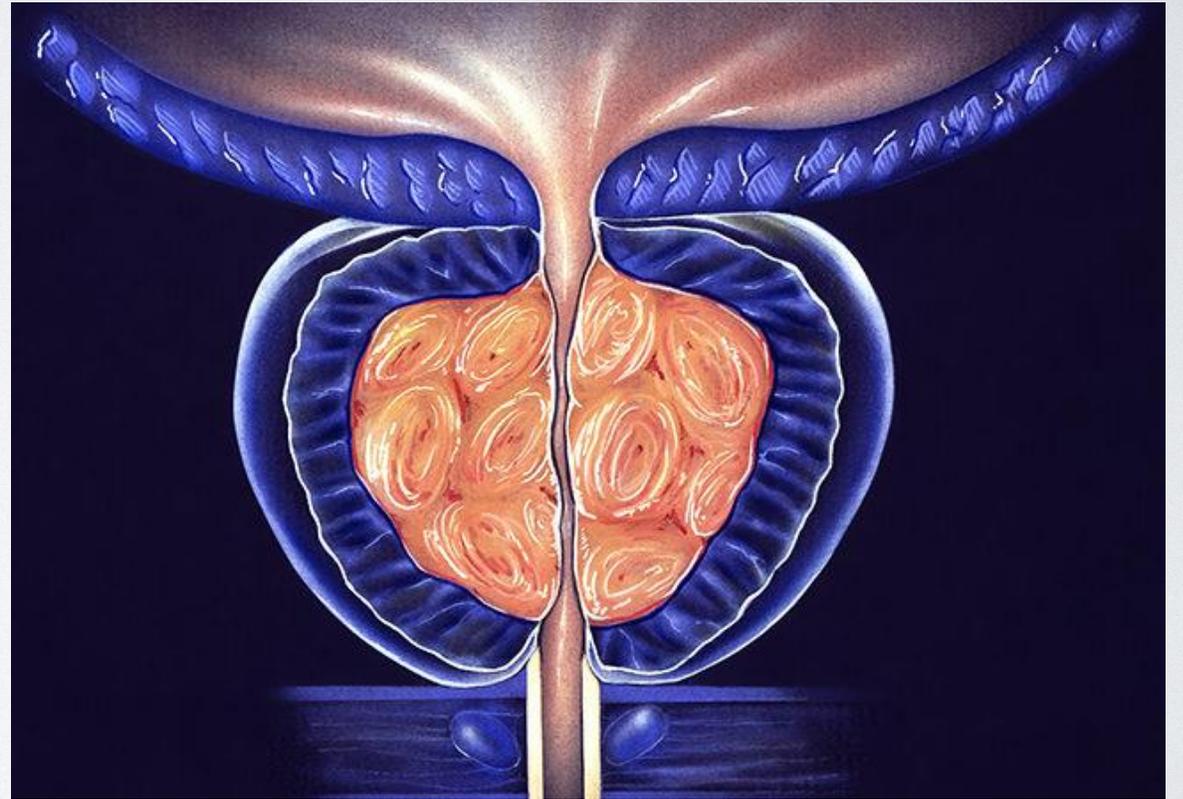
# CLINICAL PATHOLOGIES DOG

- Prostat
- Cryptorsidism
- Behavioral
- Infection and inflammation
- Hereditary



# CLINICAL PATHOLOGIES

- Prostate (Hyperplasia, prostatitis, cyst etc.)
- Testis (degeneration, cryptorchidism, hypoplasia, torsion, orchitis, epididymitis, neoplasia)
- Penis-preputium (Balanitis, penile agnesia, hypospadias, frenulum, para/phimosis, TMT)
- Retrograde ejaculation Behavioral

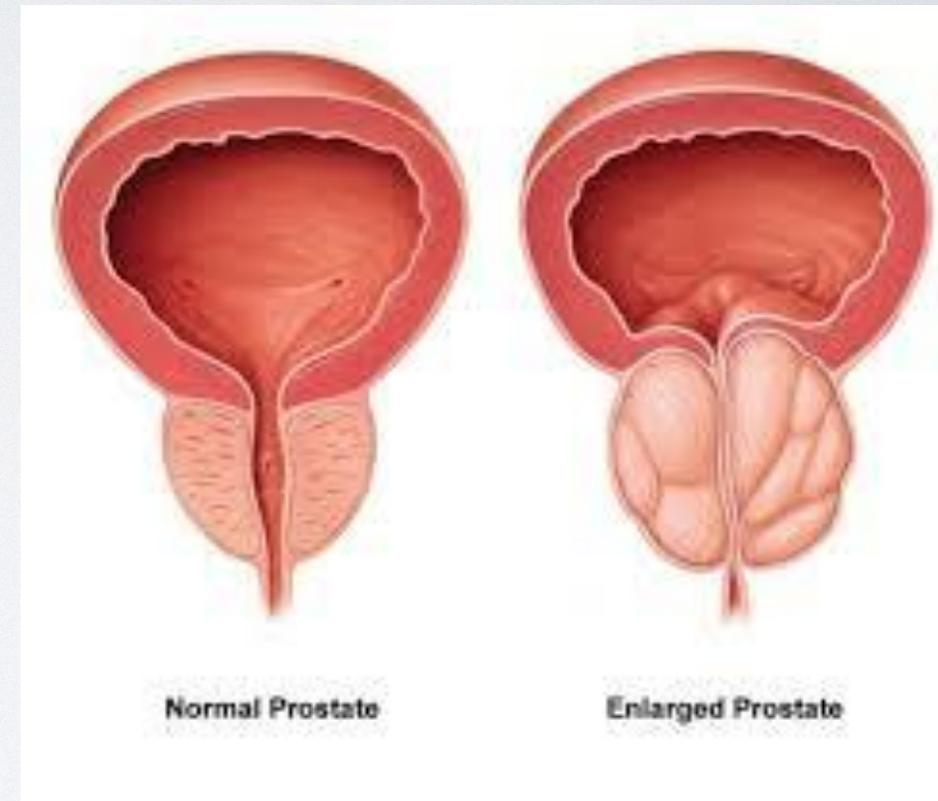


# PROSTATE

Only accessory gland in dogs

In adult dogs, the pelvis is an oval appendage gland with two lobes in the cavity.

The prostate gland is highly sensitive to testosterone, Paraphysiological diseases are very common with advancing age, reducing testosterone



# WHY THERE IS BPH?



## Underlying Cause

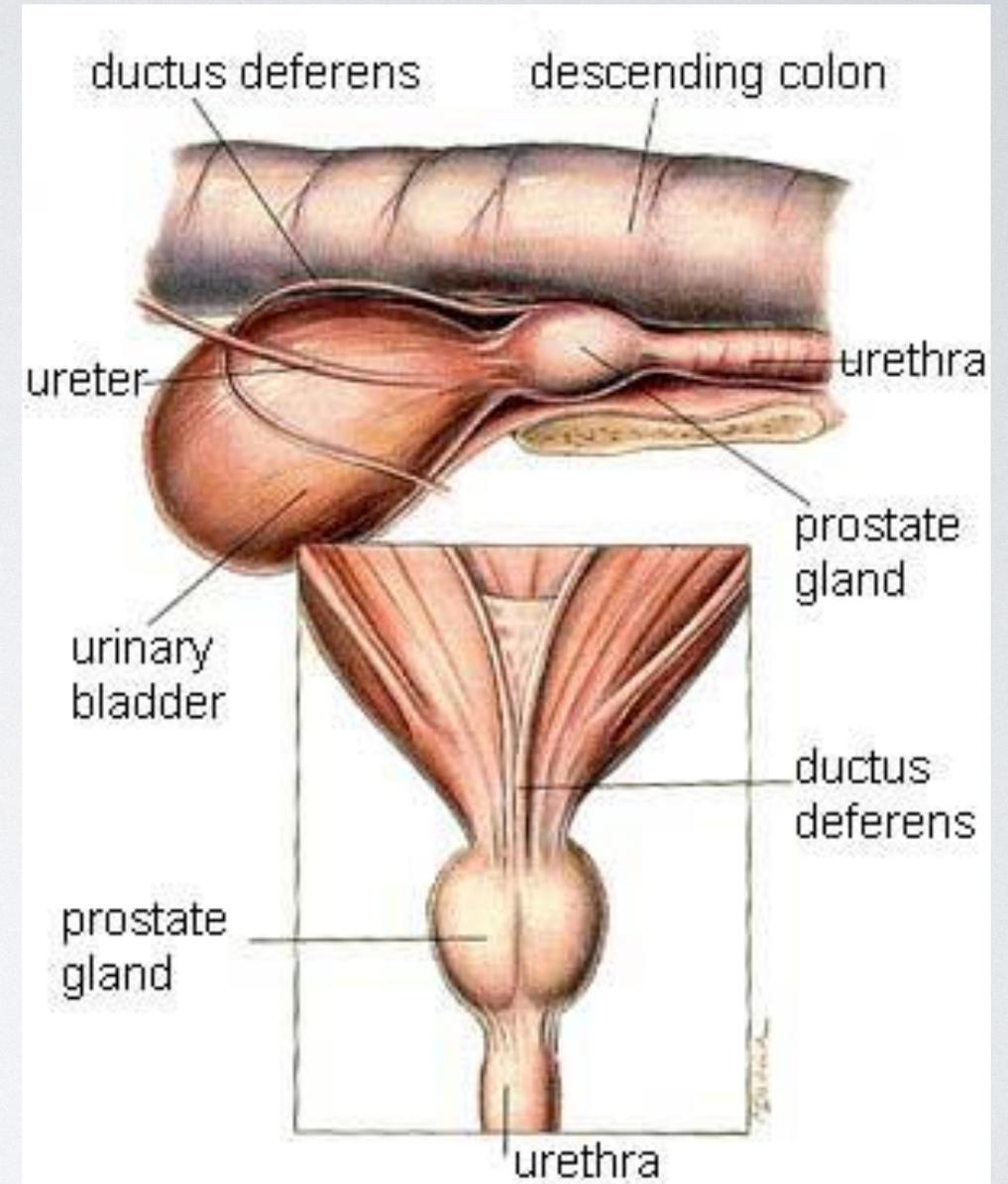
- **Androgens**, especially **dihydrotestosterone (DHT)**—a potent derivative of testosterone—are the main drivers.
- In aging intact male dogs, circulating testosterone is converted to DHT in the prostate by the enzyme **5 $\alpha$ -reductase**.
- DHT stimulates **prostatic cell proliferation**, leading to **hyperplasia (increased number of cells)** and gland enlargement.

## Risk Factors

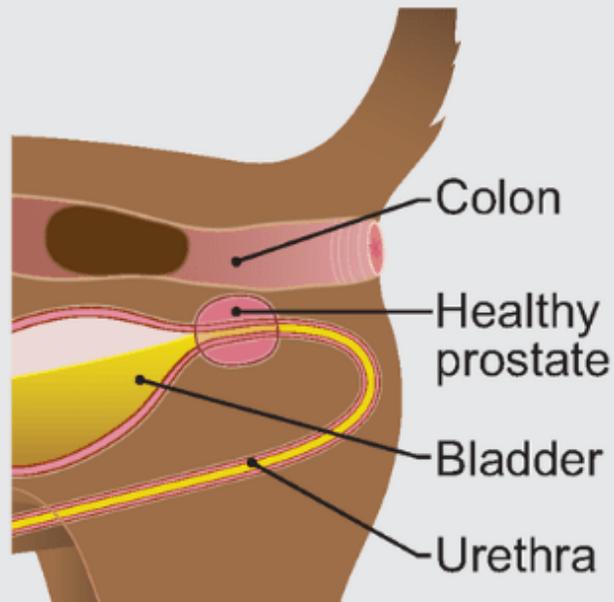
- **Age:** >80% of intact male dogs over 5 years show histological signs of BPH.
- **Intact status:** Castration reduces DHT and usually results in prostate involution.

## Pathophysiology Summary

1. Testosterone → DHT (via 5 $\alpha$ -reductase in the prostate)
2. DHT → Prostatic glandular & stromal hyperplasia
3. BPH develops, often with symmetrical prostate enlargement

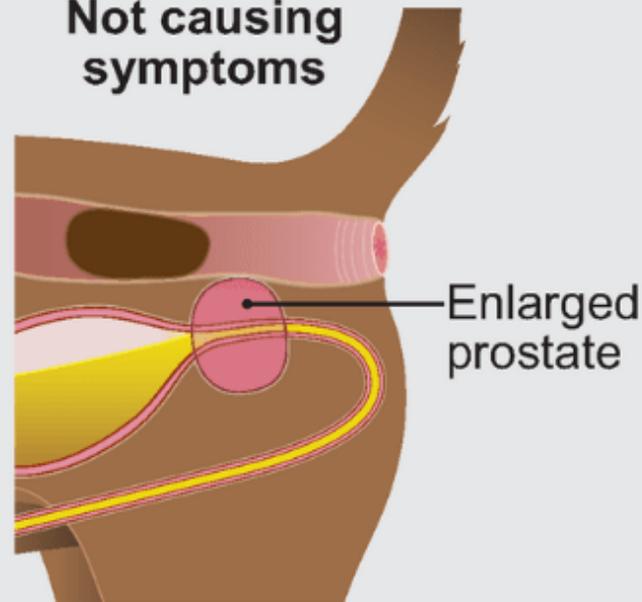


## Normal prostate

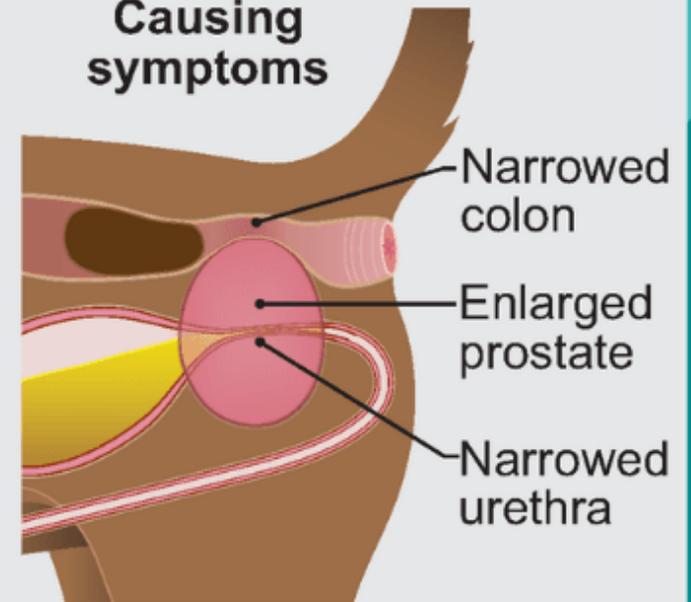


## Benign Prostatic Hyperplasia (BPH)

Not causing symptoms



Causing symptoms

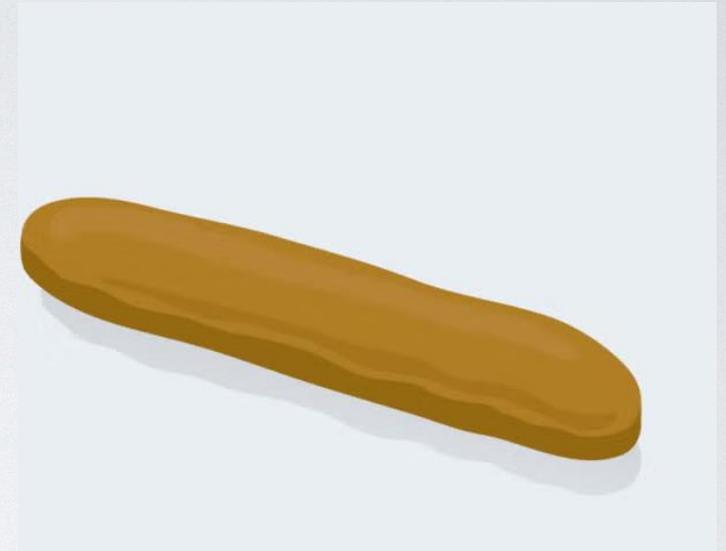


# SYMPTOMS



## Clinical Implications

- Often **asymptomatic**
- Bloody discharge from Urethra
- Blood in the urine
- Frequent urination
- Stranguria
- Dificult defecation
- Ribbon like stools



4 age ↑

# BENIGN PROSTAT HIPERPLASIA

BPH, the most common prostate disease in dogs, is defined as an age-related benign prostatic enlargement in uncastrated male dogs.



## Benign Prostatic Hyperplasia (BPH) in Dogs

- BPH causes **diffuse prostatic enlargement**, often **dorsally**.
- Common but often **asymptomatic** in intact older males.
- Clinical signs: **tenesmus**, **constipation**, **hematuria**, **urethral discharge**, **hemospermia**.
- May lead to **prostatic cysts**, **infections**, or **abscesses**.
- **Diagnosis**: Based on **anamnesis**, **clinical signs**, **rectal exam**; lab values typically normal.
- **Prognosis**: Generally **good**.
- **Treatment**:
  - Goal: Reduce size, symptoms, and complications.
  - **Castration** is most effective.
  - **Medical therapy** available when castration is not preferred.

# PROSTATE CYSTS

## Prostatic Cysts in Dogs

- Cysts are **fluid-filled, walled lesions**, either **intra-** or **paraprostatic**.
- Often occur with **BPH** or other prostate conditions.
- Common in **older, medium/large breeds**, especially **Boxers**.
- Usually found **incidentally** on **ultrasound**.
- May cause symptoms if **large**: abdominal organ displacement or **urinary obstruction**.
- On **rectal exam**: soft, immobile, painless mass in caudal abdomen.

## Diagnosis & Treatment

- **Ultrasonography** is key unless cysts are very small.
- If causing obstruction: **surgery** ( $\pm$  castration) is indicated.
- **Treatment options**:
  - Aspiration or surgical drain
  - Omentalization
  - Cyst resection or marsupialization
  - Partial prostatectomy



(A)



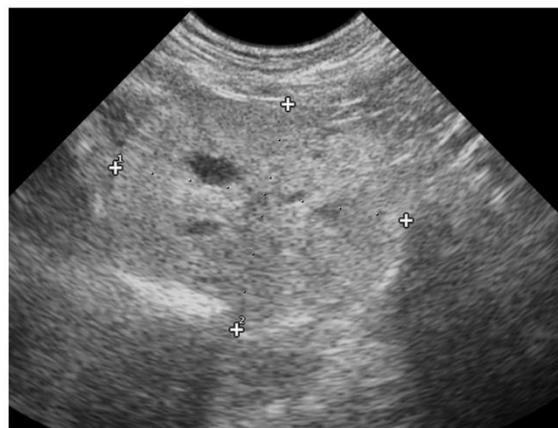
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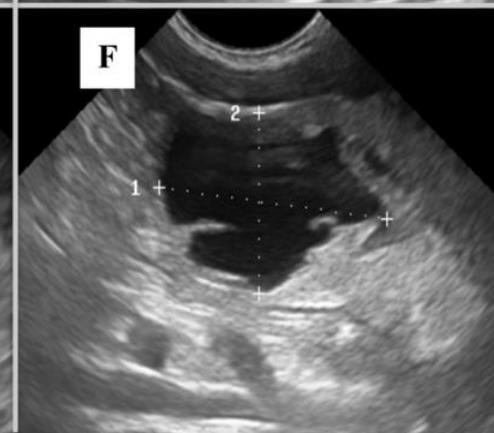
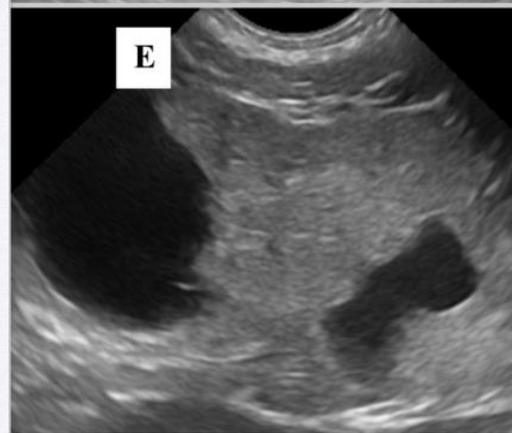
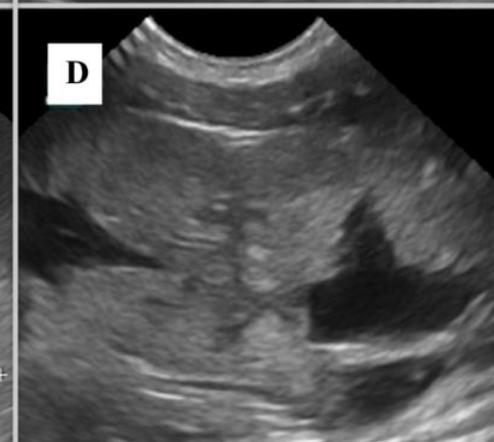
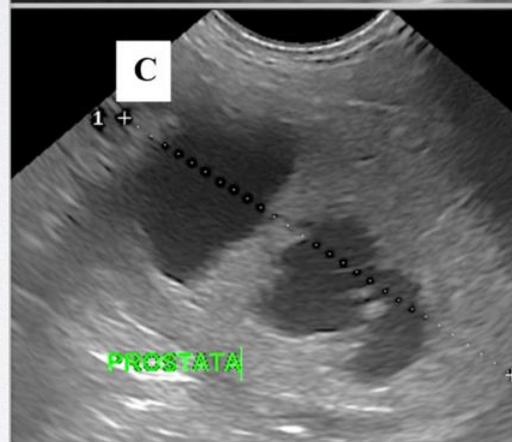
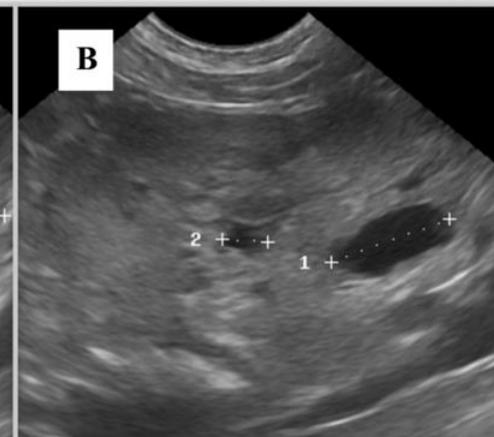
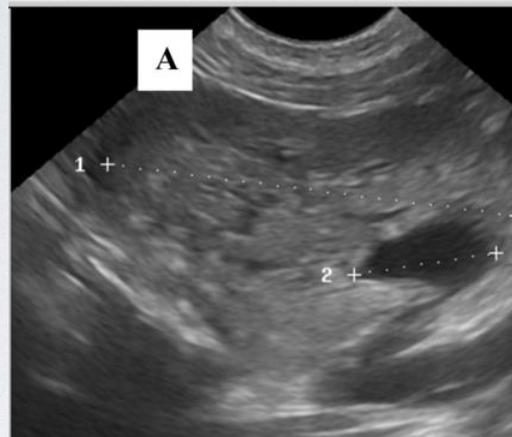
(C)



(D)



(E)





# SQUAMOUS METAPLASIA

## Squamous Metaplasia in Dogs

- Caused by **estrogen exposure** (e.g., Sertoli cell tumor or exogenous estrogen).
- Normal **prostatic epithelial cells** are replaced by **squamous epithelial cells** (large, flat, basophilic).
- Clinical signs are rare, but may include:
  - Hemorrhagic urethral discharge
  - Hyperestrogenism signs (e.g., skin changes)
- Hematologic changes:
  - Nonregenerative anemia
  - Thrombocytopenia
  - Granulocytosis or granulocytopenia

## Diagnosis & Treatment

- **Cytology:** Squamous cells and blood in prostatic fluid.
- **Biopsy:** Required for definitive diagnosis.
- **Treatment:** Remove estrogen source.
  - In **Sertoli cell tumors:** castration

# PROSTATIT

**Infection** of the prostate, often **bacterial** and age-related.

2nd most common prostatic disease after BPH.

Typically affects **intact males >5 years**; rare in early-neutered dogs due to gland atrophy.

## Types & Symptoms

- **Acute prostatitis:** Recent onset, **severe inflammation**.
- **Chronic prostatitis:** Longer duration, **milder symptoms**.
- **Common signs:**
  - Vomiting
  - Caudal abdominal pain
  - Stiff gait or difficulty walking
  - Preputial discharge
  - Decreased libido/sexual reluctance

# PROSTATITIS



Presence of heterogeneous parenchyma and focal mineralization in a patient with chronic bacterial prostatitis.

## Diagnosis & Treatment of Prostatitis

- Definitive diagnosis:
  - Prostatic fluid culture and cytology via **ejaculation or massage**.
- Antibiotic therapy:
  - Continue for  $\geq 4$  weeks.
  - Repeat **fluid and urine cultures** before stopping treatment.
- Sterilization:
  - Helps reduce prostate size and prevent recurrence.
  - Not recommended during acute prostatitis.

*Escherichia coli* *Proteus* and *Pseudomonas* spp

eg, erythromycin, clindamycin, trimethoprim-sulfamethoxazole, or enrofloxacin) are most effective.

# PROSTATIC ABSCESS

## Prostate Abscesses in Dogs

- Can result from **infected cysts** or **chronic prostatitis**.
- Often linked to **urinary tract infections** and chronic bacterial prostatitis history.
- **Clinical signs:**
  - Fever
  - Mucopurulent or hemorrhagic urethral discharge

## Diagnosis

- Based on:
  - Radiography
  - Ultrasonography
  - Prostatic fluid culture
  - Anamnesis + clinical + lab findings

# PROSTATE ABCESS

## Prostatic Abscess: Treatment

- High mortality risk due to complications:
  - Endotoxemia, DIC, peritonitis, shock
- Emergency condition – requires:
  - IV fluids for stabilization (shock/dehydration)
  - Surgical or USG-guided drainage
- Castration + antibiotics alone is not effective

# PROSTATE NEOPLASIA

## Prostate Adenocarcinoma in Dogs

- **Rare:** Prevalence ~0.2–0.6%
- Occurs in both **neutered and intact** males
- **Highly metastatic** and **poor prognosis**

## Risk Factors & Signs

- Predisposed breeds:
  - Shetland Sheepdog, Scottish Terrier, Airedale Terrier, Doberman Pinscher
- **Neutering increases risk 2.38× (Bell et al.)**
- Clinical signs (often late-stage):
  - Dysuria, hematuria, tenesmus
  - Anorexia, weight loss



Mineralized prostate mass caudal to the urinary bladder. (Görsel [Vetfolia](#) sitesinden alınmıştır.)

# DIAGNOSTICS

## Prostate X-ray in Dogs

- Radiography helps assess size, shape, contour, and location of the prostate.
- Use lateral and ventrodorsal views of the caudal abdomen.

### Radiographic Reference Points

- Normal prostate:
  - $\leq 50\%$  of pelvic inlet width (on ventrodorsal view)
- Enlarged prostate ( $> 90\%$  of sacral-groin distance):
  - Suggests abscess, neoplasia, or cyst

## Prostate USG in Dogs

- Ultrasound is the most effective tool for evaluating the prostate.
- Helps visualize:
  - Cystic structures
  - Biopsy/aspiration guidance
  - Length, width, depth of the gland

### Ultrasonographic Patterns

- Healthy prostate: Homogeneous echodensity
- Hyperplasia/Abscess/Neoplasia:
  - Loss of homogeneity
  - Multifocal hyperechoic/hypoechoic areas
- Anechoic areas → Cysts
- Hypoechoic areas → Abscesses

# DIAGNOSTICS

## Prostate Secretion Evaluation

- Ejaculate evaluation is a key diagnostic method for prostate disease.
- The prostate contributes >90% of ejaculate volume:
  - Ideal for pH, cytology, and microbial culture

## Interpretation & Culture

- Quantify and identify bacterial strains accurately
- Culture for gram-positive bacteria even at low concentrations
  -  Threshold: <100,000/ml

## Prostate Massage

- Valuable technique for cytology and bacteriology sampling
- Especially useful when ejaculate cannot be obtained
- Massage and washing may retrieve more neoplastic cells than ejaculation, especially if prostate neoplasia is suspected
- Compare samples before and after massage for diagnostic accuracy

# DIAGNOSTIC APPROACH

## Prostate Fine Needle Aspiration (FNA)

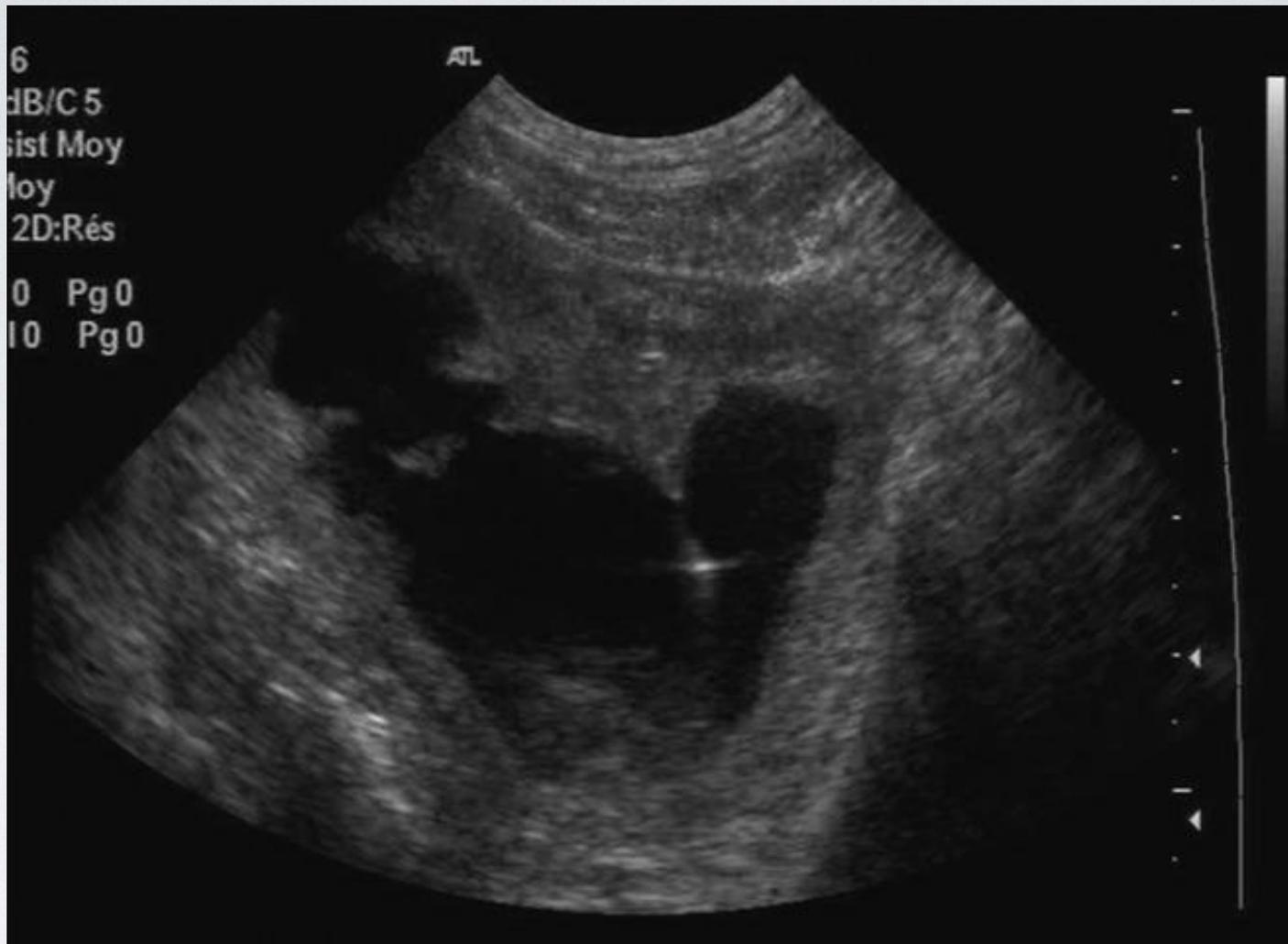
- Used to collect **fluid/tissue** for:
  - Cytology
  - Microbial culture
  - Cyst drainage
- Contraindication:
  - Avoid in **prostate abscesses** (risk of spreading infection)
- Technique:
  - Performed **under ultrasound guidance**
  - Dog is **sedated** in lateral or dorsal recumbency

## Prostatic Biopsy

- **Histological biopsy** is the gold standard for diagnosing prostate diseases
- Indications:
  - **Unclear diagnosis**
  - **No response to treatment**
  - **Need for rapid diagnosis**

## Complications

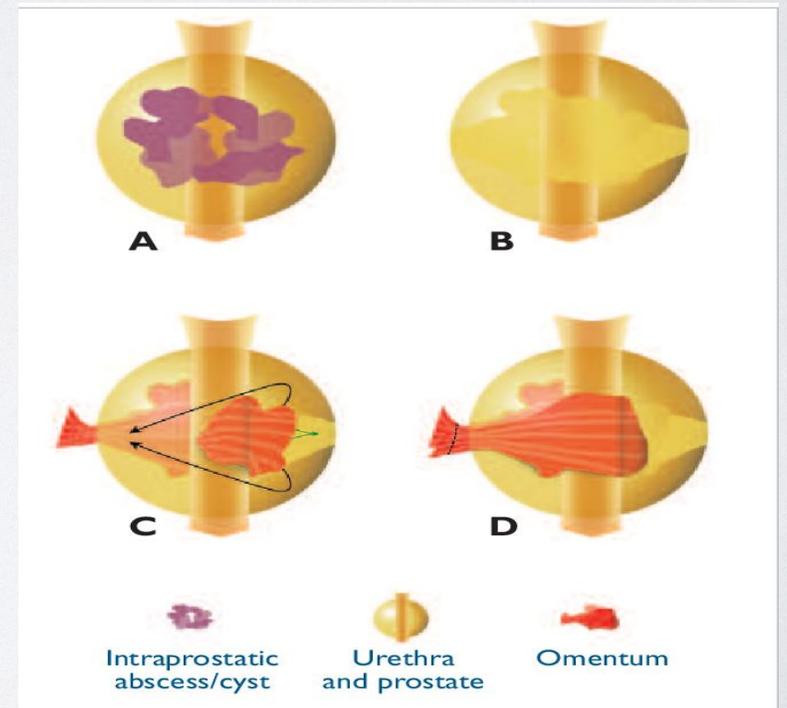
- Common:
  - **Hematuria** due to urethral trauma
- Serious:
  - **Bacterial spread** into abscesses
  - **Peritonitis** from neoplastic cell dissemination



Prostate abscess, thick-walled large cavity and thin aspiration needle, hyperechoic.

# TREATMENT

- Castration?
  - GnRH superagonist? 5alpha reductase inhibitor
  - NSAID (at least 3 days) + Proton Pump Inhibitor
  - Antibiotic (erythromycin, clindamycin, trimethoprim-sulfamethoxazole, or enrofloxacin)
- Castration + Total prostate resection and omentelization



- Prostatic disease is an age-related paraphysiological disease in male dogs, negatively affecting the quality of life of both the patient and the owner, and its clinical diagnosis is often ignored and relapsed due to symptomatic treatment.
- For this reason, male dogs aged 4 years and older should be evaluated regularly in biochemical, hematological and physical examinations and should be under the control of a veterinarian.