A Gelding…or Not?

Presentation, Evaluation and Treatment

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Presentation

- Four year-old QH male
- Owner bought one year ago as a gelding
- The horse exhibits stallion-like behavior
Differentials

- Causes for persistent stallion-like behavior
  - Learned behavior
  - Bilateral cryptorchid
  - Hemi-castrated cryptorchid
  - Incomplete gelding
- Diagnostic Challenge
Physical Examination

- External Palpation
  - Abdominal or high in inguinal ring
  - Epididymis
- Rectal Palpation
  - Abdominal testicle
  - Vaginal ring
- Ultrasound
Hormone Assays

- Leydig cells are functional
- Testosterone
  - Basal testosterone >100 pg/ml
  - hCG stimulation 2-3 fold increase at 60 minutes
- Estrone sulphate
  - >400 pg/ml
Evaluation

- Palpation
  - Inconclusive
- Hormone assay
  - Elevated testosterone
- Presence of testicular tissue
  - Bilateral cryptorchid?
  - Hemi-castrated cryptorchid?
  - Incomplete gelding?
Cryptorchid

- Failure of normal testicular descent
- Inguinal or abdominal
- Unilateral or bilateral
- Left or right sided
Testicular Development & Descent

- Differentiation
  - Mesorchium
  - Gubernaculum
- Vaginal Process
  - Peritoneal invagination in inguinal region
  - Vaginal ring

McKinnon and Voss, Equine Reproduction
Testicular Development & Descent

- Inguinal Passage
  - Day 150 inguinal canal dilates
  - Epididymal tail enters vaginal ring
  - Testicle shrinkage after 270 days
  - Expulsion of testicle

McKinnon and Voss, Equine Reproduction
Inguinal Retention

- Temporary
  - Ponies
  - Generally descend by three years of age

- Permanent
  - Not always palpable
  - Passed through internal but not superficial inguinal ring
Abdominal Retention

- Partial
  - Epididymis is within canal
  - Testis remains in the abdomen
  - Epididymal tail may be mistaken for a small testicle

Wolfe and Moll, Large Animal Urogenital Surgery
Abdominal Retention

- Complete
  - Testis and epididymis within abdomen
  - Usually near the inguinal ring
Etiology & Pathogenesis

- Heritable
- Inadequate gonadotropin stimulation
- Defective testis
- Defective gubernaculum
- Insufficient abdominal pressure
Cryptorchid Castration

- Inguinal
  - Open tunic
  - Traction on epididymis

Wolfe and Moll, Large Animal Urogenital Surgery
Abdominal Testicle

- Tail of the epididymis
- Vaginal tunic
- Superficial ring
- Inguinal canal
- Internal ring
- Vaginal process

Wolfe and Moll, Large Animal Urogenital Surgery
Cryptorchid Castration

- Parainguinal

Wolfe and Moll, Large Animal Urogenital Surgery
Cryptorchid Castration

- Paramedian
  - Bilateral or unknown history
- Flank
  - Abdominal retention
Laparoscopic Cryptorchidectomy

- Dorsal Recumbency
  - One approach
  - Inguinal examination
  - Horse is unconscious
- Standing
  - Reduces need for general anesthesia
  - Which side?
Laparoscopic Cryptorchidectomy

Pre-Operative Management
- CBC
- Tetanus toxoid
- Antibiotic
- Anti-inflammatory
- No food for 18 hours
Basic Instruments

Trocar  Cannula  Camera
Basic Instruments

- Monitor
- Camera CU
- Insufflator
- Light Source
Laparoscopic Portals
Dorsal Recumbency

Fischer, AT: Diagnostic and Surgical Laparoscopy of the Horse
Inserting Trocar
Trendelenberg Position

Trendelenberg Position
Basic Instruments

- Atraumatic Grasping Forceps
- Traumatic Grasping Forceps
- Endoscissors
Normally Descended Testicle

Inguinal Ring

Ductus

Mesorchium
Abdominally Retained Testicle

Inguinal Ring

Epididymis

Testicle
Identify Testicle
Previously Castrated

Epididymis

Testicle
Abdominal Retention

- Partial
  - Epididymis is within canal
  - Testis remains in the abdomen
  - Epididymal tail may be mistaken for a small testicle
Hemostasis

Electrocautery

Ligating Loop

Endoclip Applicator
Application of Ligating Loop
Inguinal Ring
Transecting Mesorchium and Ductus
Cut End of Mesorchium and Ductus
Removal of Testicle
Closure

- Umbilical portal
  - 2 layer
    - Body wall and subcuticular
  - Absorbable

- Accessory portals
  - 1 layer
    - Subcuticular
  - Absorbable
Post-Operative Management

- Anti-inflammatories
- Return to training in one week
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- Cox, JE: Developmental abnormalities of the male reproductive tract, in McKinnon and Voss, Equine Reproduction.
- Fischer, AT: Laparoscopic cryptorchidectomy in the dorsally recumbent horse, in Fischer, Diagnostic and Surgical Laparoscopy of the Horse.