Congenital Canine Urinary Incontinence

**History of continuous incontinence since birth**

Evaluate anatomy of external genitalia

- **Abnormal**
  - Vaginal septum
  - Vaginal stricture
  - Vaginal aplasia
  - Vulvar agenesis
  - **Hypospadias**
  - Abnormal genitalia
  - Genitalia of both sexes

- **Normal**

Neurologic exam

- **Abnormal**
  - Abnormal perineal reflex
  - Abnormal perineal sensation
  - Abnormal tail movement
  - Ataxia/paresis of hindlimbs
  - Proprioceptive deficit of hindlimb
  - Lumbosacral pain

- **Normal**

Quantitative urine culture

- **Abnormal**
  - Bacteria/10^2–10^3 ml of urine
  - Cystocentesis
  - Catheterization
  - Voluntary voiding
  - Manual compression

- **Normal**

Urine Culture

- Identify bacterial isolate
- Antibiotic sensitivity test
- Antibacterial treatment

Lumbosacral localization

- Radiographs
- Computed tomography
- Magnetic resonance imaging
- Electromyography/nerve conduction velocity
- Cerebrospinal fluid exam

Karyotype

- **Abnormal**
  - XX male = female pseudohermaphrodite
  - XX true hermaphrodite = external genitalia of both sexes
  - OR normal female genitalia
  - An XX female with normal female genitalia may still be a true hermaphrodite.
  - To rule out hermaphroditism perform a GnRH stimulation test.

Most abnormalities of vaginal anatomy can be treated either by manual dilation under sedation, episiotomy, and surgical removal of septum, or vaginoplasty/vaginectomy. Minor (glandular) forms of hypospadias can be corrected surgically. For all other defects, perform OHE.

**GnRH** = gonadotropin-releasing hormone; **OHE** = ovariohysterectomy

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Gonadotropin-Releasing Hormone Agonist Stimulation Test

Collect a blood sample, then inject 50 µg of GnRH IV and collect a second sample 1 hour later; assay serum testosterone on both samples. Normal values for males are 0 ng/ml to 4 ng/ml in basal samples and 1 ng/ml to 4 ng/ml in the post-GnRH sample, while in bitches testosterone is generally very low (< 1 ng/ml), especially on the post-GnRH sample.