**Abomasal Displacement**

**Presentation:**

**Classic case:** Dairy cow in early lactation, “ain’t doing right”: off feed, ↓ milk, "pings"

- ↓ appetite (grain), milk production, rumen motility, rumination, and feces; some diarrhea
- Weight loss, acetone breath (ketosis); Mild pain - treading
- ↑ pulse - 80-90 bpm, +/- Atrial fibrillation

- All signs more severe with abomasal volvulus
- Left displaced abomasum (LDA) >>> volvulus >> RDA

**MANMADE DISEASE** of high production- Assoc. w/ anything that ↓ gastric/rumen motility
  - High concentrate feeds
  - Concurrent diseases - mastitis, metritis, ketosis, milk fever, retained placenta, etc

**Test of choice:** Auscultation and percussion (“Ping”)

1.) Put stethoscope on line between tuber coxae & elbow
2.) Flick / thump cow around head of stethoscope
3.) A gas-filled viscous with resound with a musical ping

**L side ping**
- LDA – ping audible on L, ribs 9-13, more caudal than RDA
- Rumen – gas cap in paralumbar (P-L) fossa; have asst. blow on stomach tube while you ping
- Cecum – palpable rectally

**R side ping** – can be challenging to distinguish sources of ping
- RDA and RTA
  - **RTA is palpable** on rectal
  - "pings" between ribs 10-13
- Functional ileus - small ping below ribs 12-13, sometimes to 10th
- Cecal dilation/rotation ping – dorsal P-L fossa, **palpable on rectal**
- Rectum, spiral colon, small intestine

**R or L side**
- Pneumoperitoneum – usually small, dorsal
- Uterus ping – post-calving, **palpable on rectal**

**RTA w/ abdominal distention**

HR=100 bpm (N=48-84 bpm)
Abomasal volvulus (RTA) – challenge to ddx early volvulus from RDA

- Signs more severe with RTA
- RTA ping area is larger and cranial to 10th rib than w/ RDA
- Sloshing in abomasum w/ballottement, more fluid succussible
- Volvulus (RTA) always palpable on rectal examination

**Characteristic labwork** of DAs

- ↓ potassium, chloride, calcium;
- **METABOLIC ALKALOSIS ★★** (abomasal HCl is sequestered)
- Signs may wax/wane if DA “swings” in/out of normal position.

**Rx of Choice:**
Return abomasum to normal position; treat concurrent diseases

**LDA**
- Nonsurgical – rolling; recurrence is common
- Surgical
  - Blind stitch abomasopexy/Toggle pin
  - Right flank omentopexy
  - Left flank or right paramedian abomasopexy
  - Laparoscopy

**RDA**
- Rolling is contraindicated with RDAs!
- Surgical
  - Right flank omentopexy
  - Right paramedian abomasopexy in cows unable to stand
  - Volvulus - Untwist (most are counterclockwise), then pexy
    OR
    Decompress gas with needle, then untwist, then pexy

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Normal 9/15 2pm</th>
<th>LDA 9/16 8am</th>
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<tbody>
<tr>
<td>pH</td>
<td>7.408</td>
<td>7.554</td>
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<tr>
<td>pO₂</td>
<td>29.6</td>
<td>81.3</td>
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<tr>
<td>HCO₃⁻</td>
<td>26.8</td>
<td>44.6</td>
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<tr>
<td>TCO₂</td>
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<tr>
<td>pCO₂</td>
<td>43.3</td>
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<td>BE</td>
<td>+2.4</td>
<td>+22.6</td>
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<tr>
<td>Na</td>
<td>134</td>
<td>142</td>
</tr>
<tr>
<td>K⁺</td>
<td>4.3</td>
<td>2.3</td>
</tr>
<tr>
<td>Cl⁻</td>
<td>101</td>
<td>91</td>
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</table>

**Blood gas/electrolytes from a cow with a “swinging” LDA**

Right paramedian abomasopexy incision

*R paralumber omentopexy - showing omentum*

*Omentopexy, R paralumbar*
Abomasal Displacement

Medical Tx – IMPORTANT to restore metabolic balance

- Simple short duration DA – offer water and salt block
- Long duration DA – **Lg. volume fluids via stomach tube** for dehyd, electrolyte imbalances
- **IV fluids** for RTA and prolonged DAs with severe dehydration/electrolyte imbalance
  
  ie: Normal or hypertonic saline + potassium chloride & calcium borogluconate

**Prevention:**

Same for LDA, RDA, and RTA

Ensure *increase* in rumen volume following calving

- Avoid rapid dietary changes
- Keep adequate roughage in diet
- Gradual introduction to concentrates in feed
- Feed total mixed ration instead of grain twice daily
- Avoid post parturient hypocalcemia

**Prognosis:**

**Excellent for simple, short duration DAs**

**Guarded for** prolonged DAs, volvulus; high degree of ischemia

Metabolic derangement affects outcome

**Pearls:**

1.) **Abomasal displacement = MANMADE DISEASE** of high production

Anything that **DECREASES** gastric motility & **INCREASES** gas production puts cow at risk of a DA

- **High conc/ low roughage diets**
  - Yield high volatile fatty acids (vfa) in rumen
  - ↓ stimulation of rumination/ rumen motility
  - Digestion of high vfa = gas.
  - Gas **predisposes to an inflated, floating abomasum**

- **Anything that makes a cow is sick** (mastitis, milk fever, metritis etc)
  
  - Can ALSO ↓ rumen or gastric motility
  - and predispose cow to a DA
2.) Metabolic alkalosis and “paradoxic aciduria”

- Sequestration of HCl in abomasum = less H⁺ and Cl⁻ available for reabsorption in kidney
- To resorb sodium (a prime directive of the kidney)
- Kidney must resorb more HCO₃⁻ to maintain electroneutrality
  - Resulting in metabolic alkalosis (sequestration)
  - AND paradoxical aciduria (HCO₃⁻ resorbed from urine leaves it acidic)