

# Abomasal Displacement

Extended version

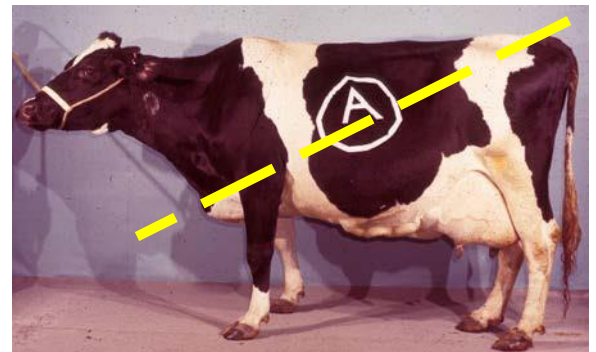
## Presentation:

**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



*Typical position of LDA pings*

### L side ping

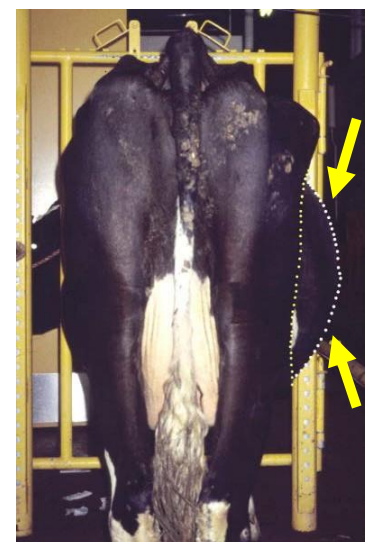
- LDA – ping audible on L, ribs 9-13, more caudal than RDA
- Rumen –gas cap in paralumbar (P-L) fossa; have asst. blow on stomach tube while you ping
- Cecum – palpable rectally

### 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 10<sup>th</sup>
- 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)*

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**Abomasal volvulus (RTA)** – challenge to ddx early volvulus from RDA

- **Signs more severe with RTA**
- RTA ping area is larger and cranial to 10<sup>th</sup> rib than w/ RDA
- Sloshing in abomasum w/ballotement, 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.

	9/15 2pm Normal	9/16 8am LDA
pH	7.408	7.554
pO <sub>2</sub>	29.6	81.3
HCO <sub>3</sub>	26.8	44.6
TCO <sub>2</sub>	28.0	46.1
pCO <sub>2</sub>	43.3	50.9
BE	+2.4	+22.6
Na	134	142
K <sup>+</sup>	4.3	2.3
Cl	101	91

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

## 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

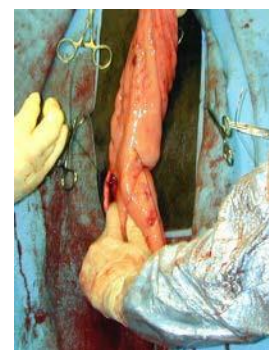
- **Rolling is contraindicated with RDAs!**
- Surgical
  - Right flank omentopexy
  - Right paramedian abomasopexy in cows unable to stand
  - Volvulus - Untwist (most are counterclockwise), then pexy  
OR  
Decompress gas with needle, then untwist, then pexy



*Right paramedian abomasopexy incision*



*R paralumbar omentopexy- showing omentum*



*Omentopexy, R paramedian*

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## 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  
le: 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



**VERY IMPORTANT** Post-op fluids to address dehydration & elyte imbalances after prolonged abomasal displacement

## 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



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## 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  $HCO_3^-$  to maintain electroneutrality
  - Resulting in metabolic alkalosis (sequestration)
  - AND paradoxical aciduria ( $HCO_3^-$  resorbed from urine leaves it acidic)

**Refs:** Pasquinis, Guide Bovine Clinics, 4<sup>th</sup> ed. pp 40-43, Smith, Lg AN Int Med, 3<sup>rd</sup> ed. pp756-60, Merck Vet Manual online - Left, Right Displaced Abomasum, Images courtesy, Dr. Lisle George, Dr. Jennifer Adams,

**My Notes:**