Examination of Teat End Lesions

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Examination of dairy cow teats
Why do we care??

• Damaged teats **have impaired defenses.**
  – Damaged smooth muscle impares closing
  – Teats with scar tissue have a loss of elasticity

• Damaged teats are **more difficult to clean.**
  – Residual bacteria and debris increases the risk for mastitis

• Damaged teats are **uncomfortable** for the cow.
  – May increase kicking and milker re-attachment rates
  – Pain impares milk let-down

Terms

• Hyperkeratosis
  – Thickening of the stratum corneum
  – Qualitative abnormality of keratin

• Parakeratosis
  – Mode of keratinization characterized by the retention of cellular nuclei.
  – Seen in inflammatory events indicating increased cell turnover

• Callous, or callosity
  – Toughened area of skin which has become relatively thick in response to repeated friction, pressure, or other irritation.
  – Hands and feet
Basic anatomy

Cow 8 Left Front: The “ring”
Cow 8: Left Front

Uniform Teat Canal with keratin "plug"

Active “thick” epidermis produces the keratin plug

A depression forms the “ring”

Cow 8: The “ring” is not hyperkeratosis or a callous...it’s normal anatomy

Teat orifice (opening)
Underlying skin is healthy.
No hyperkeratosis
No inflammation

A depression forms the “ring”
Cow 8: Diagnosis = normal

- This teat is healthy
- Don’t know if it’s shape predisposes it to injury or trauma.
Cow 5: Rear Right - Microscopic

Normal, healthy teat canal with keratin plug

Cow 5: Rear Right Orifice

Teat orifice (opening):

- Sloughed skin (keratin) debris
  - From teat canal?
- Underlying skin is healthy.
  - No hyperkeratosis
  - No Inflammation
- Protein (milk) residue
Cow 5: Is this abnormal?
Residual ketatin plug, milk protein and teat dip staining?

Cow 5  Diagnosis: Healthy
Despite residue, there are no significant microscopic lesions
Cow 6: Left Front

Teat orifice (opening) has lesions, but the teat canal looks OK.
Cow 6: Left front

Teat orifice (opening) normal sloughing keratin:

Skin is irregular (rough)

Bleeding

Cow 6: Left Front – More problems

Bleeding

Bacteria

Hyperkeratosis & Parakeratosis (immature cells)

Inflammation (Infection, neutrophils, pus)
Cow 6 Left Front Impression: Diseased
Microscopically there is bleeding, inflammation, hyperkeratosis, parakeratosis and bacteria.

Cow 6: Right rear – Slightly diseased

“Tag” of inflammation (infection)
Cow 13: Formatin of ridges = Increased surface area
Cow 13: Diseased

Bacteria
Hyperkeratosis & Parakeratosis (immature cells)
Milk residue & Bacterial colonization

How, or what, causes lesions?

• Trauma
  − Mechanical
    • Dry milking
      – Poor prep and initial let-down
      – Over-milking
    • Vacuum
    • Pulsator malfunction
    • Damaged inflations
  − Exposure to...
    • Chemicals in pre and post-dips
    • Weather
      – Cold (frostbite), dry, wind, & sunburn.
Summary

- Teat health is important for udder health and quality milk production.
- Scoring systems are available, but the significance of the scores remains debatable.