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New developments in breech modifications of sheep for the prevention of flystrike

NAWRD&S Forum presentation: Ellen Jongman





Overview

- ◆ History of mulesing
- ◆ Why do people still mules?
- ◆ Alternatives to mulesing
- ◆ Sheep Freeze Branding





History of mulesing

- ◆ Late 1800's Australian Merinos became a more 'wrinkly' sheep breed, with the introduction of the Vermont Merino
- ◆ *Lucilia cuprina* (the Australian sheep blowfly) was introduced in Australia in the early 1900's
- ◆ Flystrike became an increasing problem
- ◆ The original mules operation was developed by JHW Mules in 1929





Why are farmers still mulesing?

- ◆ Mulesing is currently performed on approximately 70% of Merino wool-producing sheep in Australia
- ◆ Risk of breech strike in non-mulesed Merinos is about 13 times more likely than in comparable mulesed Merinos*
- ◆ Time taken to crutch a non-mulesed sheep is about twice as long as crutching a mulesed sheep*
- ◆ Extra wool removed during a larger crutch in non-mulesed sheep was equivalent to a 2% reduction in wool (Mackinnon Project, 2012)

*Tyrell, 2013



Pain relief

Tri-Solfen

- ◆ Tri-Solfen is a topical spray applied after mulesing and contains lignocaine and bupivacaine (local anaesthetic).
- ◆ About 75% of mulesed sheep receive Tri-Solfen.

Meloxicam (Metacam or Buccalgesic)

- ◆ Injected or oral application, provides longer pain relief.

Efficacy better in combination than either singly provided



Alternatives to mulesing?

Not mulesing!

- ◆ Breed for bare breech
- ◆ Breed for less wrinkle
- ◆ Breed for worm resistance

- ◆ Twice yearly crutching
- ◆ Use of preventive insecticides (e.g. Click)

- ◆ Vaccination against flystrike?





Alternative breech modifications?

- ◆ Mulesing Clips
- ◆ Skintraction™ (needleless injection of sodium lauryl sulfate into the skin layer of the breech)
- ◆ Laser technology (human epilation lasers failed to permanently remove wool*)
- ◆ Sheep Freeze Branding (using liquid nitrogen)



*Colditz et al, 2015



Sheep Freeze Branding

Sheep freeze branding is a breech modification similar to mulesing, where excess skin at the breech of the sheep is removed in order to prevent flystrike.

Sheep freeze brand is performed through stapling the excess skin using an applicator and performing a cryogenic treatment for several seconds in the affected area, using liquid nitrogen.

The aim is to have the skin temperature below minus 25 degrees(measured by surface temp between minus 25 to minus 50) so that there is a permanent cellular degeneration from the application inducing a one off freeze-thaw cycle.



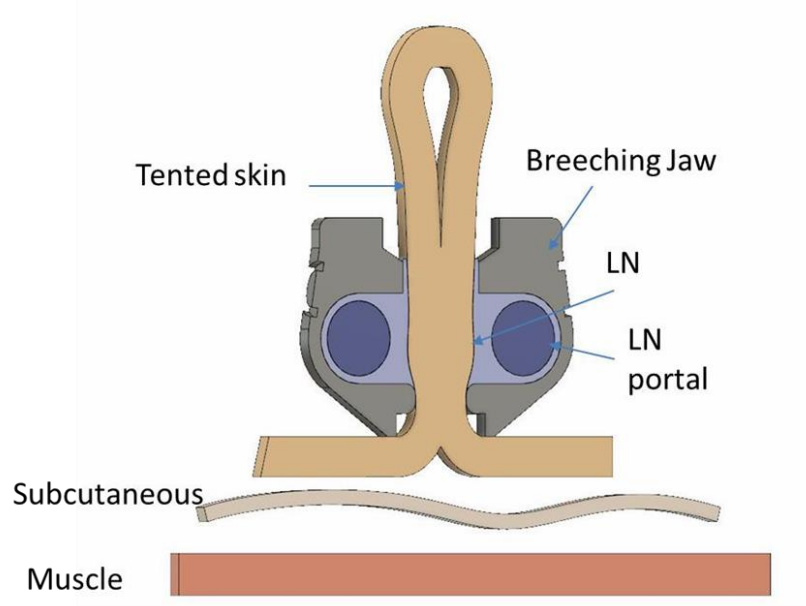
Sheep freeze brand handpiece



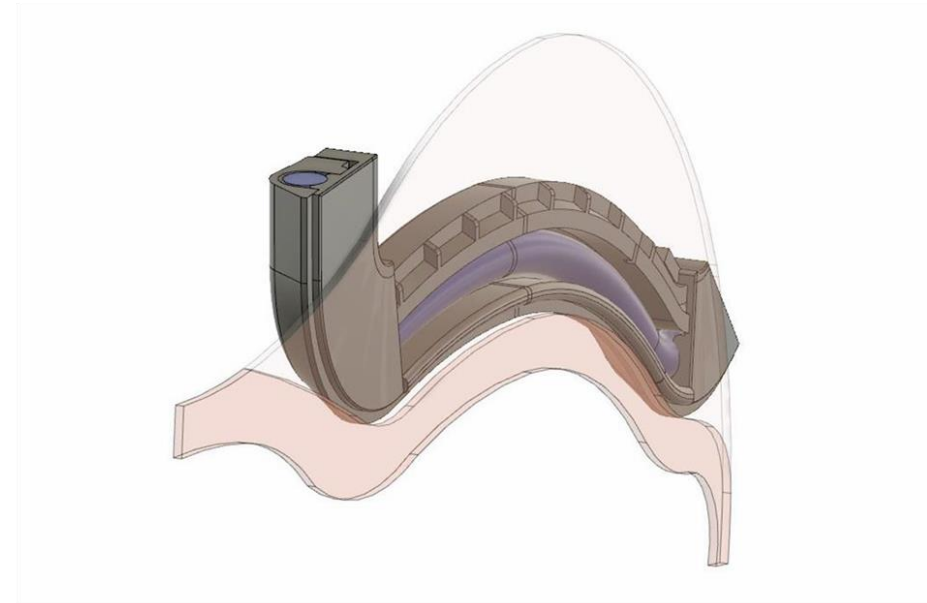
Pictures provided by AgVetInnovations



Sheep Freeze Branding process



Cross section of Breaching Process jaws and tented skin



Perspective view of BP jaw against tented skin

Pictures provided by AgVetInnovations



Mulesing vs Sheep Freeze branding

- ◆ How painful is the application?
- ◆ How is the healing process?
- ◆ How effective is the resulting breech modification?





Sheep Freeze Branding field trial

AIM

To compare the response after the application of liquid nitrogen to the breech (freeze branding) to surgical mulesing in lambs that are simultaneously castrated and/or tail docked, including the use of pain relief that is registered for use under commercial conditions for these procedures.

This study concentrates on the behavioural responses indicative of pain, wound inflammation/healing and early growth rates.



Four treatments:

- 1) Tail-docking (hot iron) (+ ring castration of male lambs) with meloxicam injection
- 2) As controls + liquid N₂ application
- 3) As controls + surgical mulesing
- 4) Tail-docking (+ castration of male lambs) + surgical mulesing with Tri-Solfen application

30 animals per treatment, both males and females.

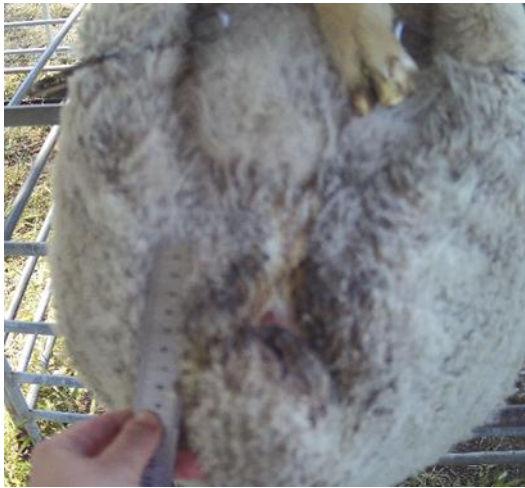


Observations

- ◆ Time to 'mother up' after procedure
- ◆ Behaviour observations every 15 minutes for 6h on day 1
- ◆ Behaviour observations every 15 minutes for 2h on day 2 & 3
- ◆ Weights, wound assessment and infrared thermography on days 5, 12, 20 & 35

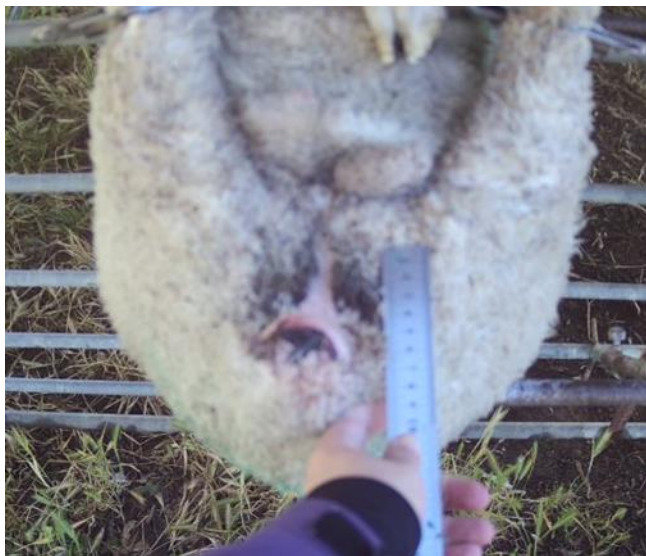


After 5 days, Freeze Brand vs Mulesing





After 12 days, Freeze Brand vs Mulesing





After 5 weeks, Freeze Brand vs Mulesing





Preliminary conclusions

- ◆ These are only limited preliminary results!!!
- ◆ Freeze branding appears to be more painful than tail docking and castration alone and similar compared to mulesing **on the day of application**
- ◆ Since there is no open wound, pain and healing **on the following days** may be better for freeze branding
- ◆ Further assessment of the bare breech area in adult ewes should be performed
- ◆ More detailed measurements (including physiology) on the days following application should be taken in a more controlled study