Teat Health

A key determinant for good milk quality

One of the key challenges for vets is to help farmers to keep cell counts low and to avoid costly cases of mastitis. Finding out which bacteria are involved and then tackling the cows that are infected is routine work, the real challenge is in helping to prevent udder infections in the first place.

Keeping teat skin healthy, with particular focus on teat ends, is vital and can be achieved through making minor changes to cluster configuration. It is well known that certain infectious teat conditions are associated with milking problems and increased incidence of mastitis.

Most common infectious causes of teat skin disease

The three most common infectious causes of teat skin disease are the viral conditions:

- Bovine Herpes Mammillitis
- Teat warts
- Pseudocowpox


Herpes Mammillitis

- **Herpes Mammillitis** is a nasty erosive infectious condition that can spread from the teat barrel to the udder.
- **Pseudocowpox** starts with small blisters, which heal from the centre to leave horse-shoe shaped scabs. These lesions rarely stray from teat skin.


Pseudocowpox

- **Warts** on teats are extremely common in our experience. There are up to six types of papilloma virus that affect cattle and the warts they cause all look slightly different.

  The slightly raised white plaques caused by bovine papilloma virus 5 are exceptionally common but rarely cause many problems

  In the UK the frond-like warts caused by papilloma virus 6 can cause serious issues. They can completely obliterate the teat structure.

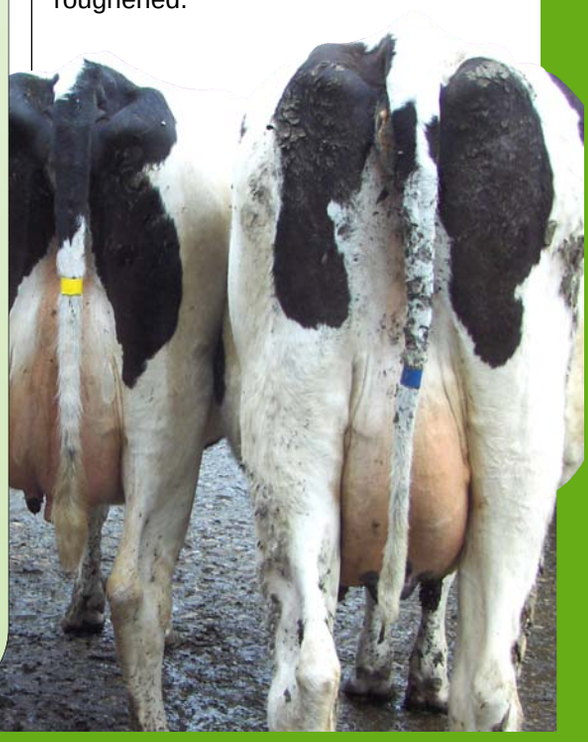
  Warts can often take longer than a year to regress and it is thought that they are acquired around 6 months before problems are observed. Infection requires damage to teat skin and some means of spread. Thistles, sunburn and flies have all been implicated.


Warts

Disease control

Once exposed to regular machine milking the commonest observable abnormality of the teat is a build of keratin around the tip of the teat.

This teat-end callosity is often referred to as ‘hyperkeratosis’ and many people believe that some degree of callosity is a normal response to machine milking. However recent studies have shown that while a low degree of callosity can actually be associated with less risk of intramammary infection, the infection risk rises as the teat end becomes severely calloused and roughened.

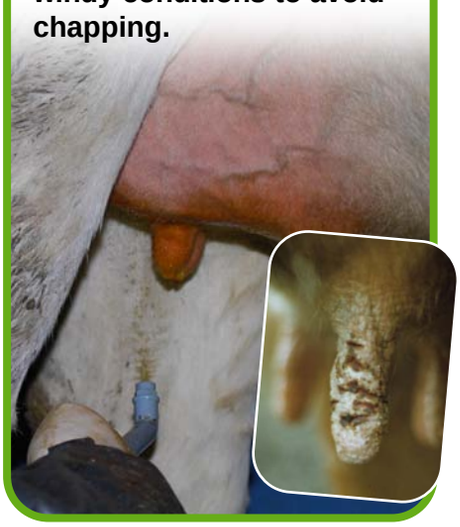


Heavily calloused teat end

The cracks and pits of a heavily calloused teat end provide a better environment for bacterial survival outside the cow and any multiplication of bacteria will occur in extremely close proximity to the teat orifice.

It is perhaps not without reason to suppose that a heavily calloused teat end may also behave differently once infection is forced up the teat orifice and into the udder. In other words, what can be seen outside the teat may imply changes within the teat that are also associated with an increased risk of new infection.

Ideally teat dip should be left to dry for a minute and blotted dry before cows are turned out into cold windy conditions to avoid chapping.



MILKING MACHINE FACTORS

Several machine factors have been associated with a greater degree of hyperkeratosis, all relating to the mechanical forces exerted on the teat during the regular collapse of the liner. The way in which the forces are applied to the teat, and their magnitude, are influenced by:

- the teat end vacuum during milking
- the pulsation vacuum
- the machine-on time
- the liner-shell combination
- the teat shape

Forces applied to teats during milking

Since 2006 there have been several researchers who have been using the latest scientific apparatus to measure the forces applied to a teat during milking. They have published on the ‘touch-point pressure’ of liners and the ‘compressive load’ applied across the teat. A consistent finding is that the forces applied to the teat tip are several times greater than those applied to the sides of the teat barrel.

This difference in force is intentional. When a liner closes around the teat during the ‘D’ phase of the pulsation cycle, the purpose is to squeeze the teat from the tip such that the waste fluids of tissue metabolism can pass back into the normal circulatory system of the udder. The increased pressure applied to the curved teat end is a result of the tension along the liner length that results from it being stretched within the shell assembly.

The degree of stretch and the way in which the liner delivers its force to the teat end depends on the teat shape and the characteristics of the liner and shell. Since there is little that can be done about the variety of teat end shapes within the herd, changes can be made in the degree of callosity or hyperkeratosis by using different liner and shell combinations.

FINAL WORD

For those farms that are struggling to manage cell counts or clinical mastitis, a full evaluation of the milking processes may reveal that too many cows have poor teat end scores. Milk quality can be affected well before severe ‘black spot’ type infections are observed.

In these situations it can certainly be worth exploring the options available and experimenting with different liner shell combinations to help improve teat end health.

Milk quality can be affected well before severe ‘black spot’ type infections are observed.

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