Teat Condition Scoring as a Management Tool for Monitoring Udder Health

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Abstract
When the end of the teat is smooth and undamaged, and the skin is soft and elastic, the teat can ensure its function, as a natural barrier against the intrusion of microorganisms that cause mastitis. Any type of stress applied to a teat, even for a very short period of time can cause the teat's inherent ability to withstand bacterial stress to decrease. Teat skin dryness may favour the development of teat-end hyperkeratosis, a condition that, in turn, increases the likelihood of new intra-mammary infections in dairy cows. This condition also causes pain and discomfort for the cows, thus leading to a decline in milk production. Monitoring the level of teat end hyperkeratosis using a four-point system as well as other types of teat lesions in a dairy herd, on a consistent basis, may be an extremely helpful management tool for determining whether or not the milking routine is appropriate and the risk of mastitis is controllable.

Keywords: dairy cows, hyperkeratosis, mastitis, teat condition, udder health.

1. Introduction

In order to reduce the risk of bacteria entering the udder, and subsequently to prevent the risk of mastitis, it is important to keep the teat-end structure and function in normal condition. When the end of the teat is smooth and undamaged, and the skin is soft and elastic, the teat can ensure its function, as a natural barrier against the intrusion of microorganisms that cause mastitis [1].
Any type of stress applied to a teat, even for a very short period of time can cause the teat's inherent ability to withstand bacterial stress to decrease. Infection with bacteria or viruses, trauma, or an excessive amount of suction from milking equipment may cause injury to the teat ends, the cleaning of the teats becomes more challenging, which in turn will increase the danger of germs entering the teat canal [1,2].
Teat end scoring is the procedure of assessing a cow's teat immediately after removing a milking unit. This procedure is the simplest approach to determine whether the milking process is detrimental to the cow and whether there is an increased risk of mastitis due to management practices. Thus, it may be a point of quality control for the milking system, milker routine, and cow handling [3].
Previous studies have shown that assessing the degree of teat end hyperkeratosis and other teat lesions in a dairy herd on a regular basis may serve as an extremely useful tool for measuring the effectiveness of both the milking equipment and the milking procedures [4-6].

2. Teat-end hyperkeratosis

Teat skin dryness may favour the development of teat-end hyperkeratosis, defined as the amount of protrusion of tissue from the teat canal. This condition, in turn, increases the likelihood of new intra-mammary infections in dairy cows and causes pain and discomfort for the animals, thus leading to a decline in milk production [6,7].

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Many classifications have been established, all of which seek to measure the same thing, respectively the degree of protrusion from the teat canal. One of the most commonly used systems for assessing the teat end condition is the simplified 4-point scoring system approved by Teat Club International [8-10].

A normal teat end is defined by the absence of a ring on the teat end, while a smooth teat end is defined by the presence of a smooth raised ring or slightly rough ring without any visible keratin fronds [9] (Figure 1).

A rough teat end is characterized by the presence of a raised roughened ring with isolated fronds of keratin extending 1-3 mm from the orifice. Some breakdowns in the integrity of the epithelial tissue may also be observed (Figure 1). A very rough teat end is defined by the presence of a rough ring, with visible fronds of keratin, exceeding 3-4 mm from the orifice, giving the rim a „flowered" appearance [9] (Figure 1).

Monitoring the level of teat end hyperkeratosis using a four-point system as well as other types of teat lesions in a dairy herd, on a consistent basis, may be an extremely helpful management tool for determining whether or not the milking routine is appropriate and the risk of mastitis is controllable [9].

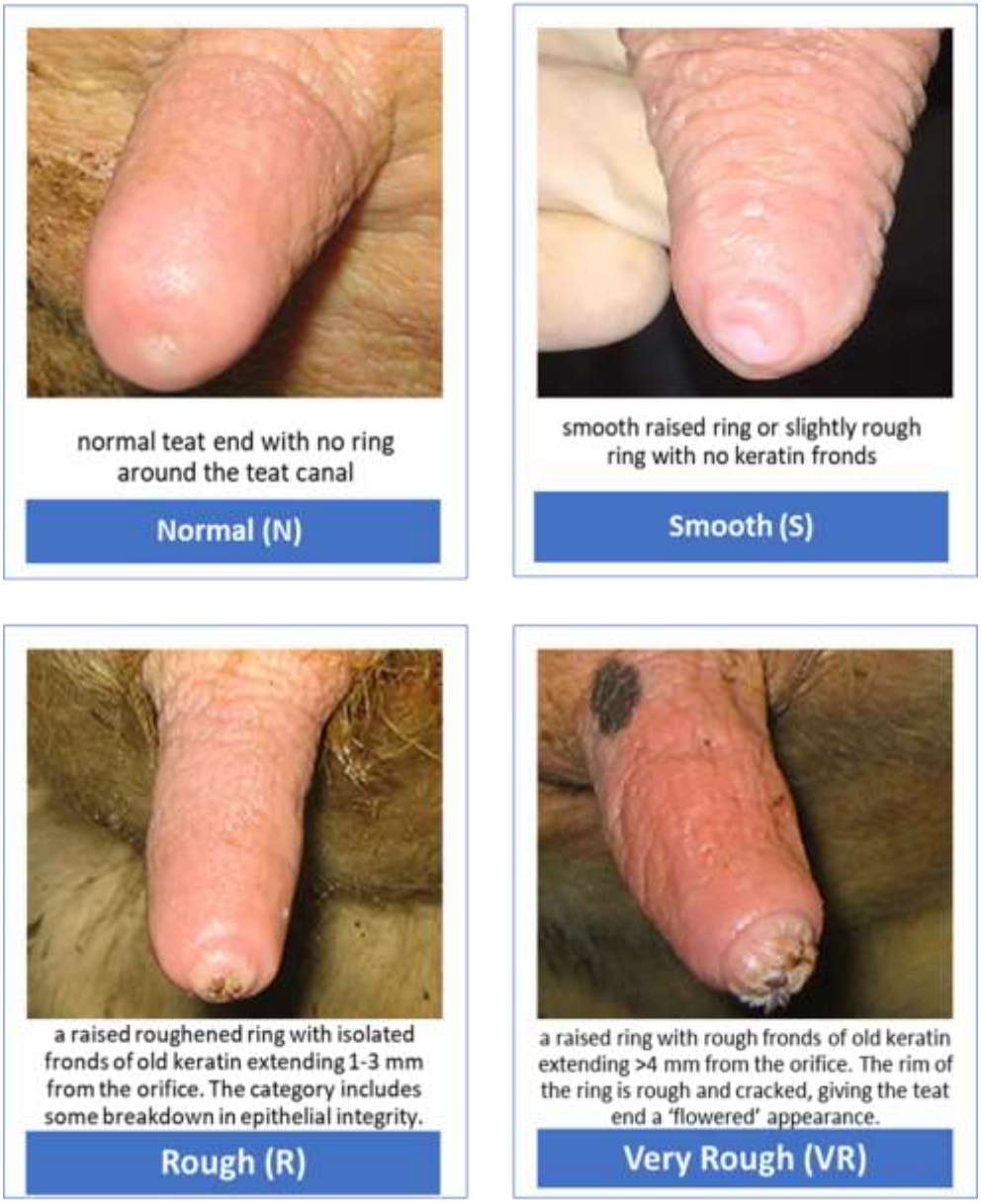

Figure 1. Illustration of classification of hyperkeratosis according to the simplified 4-point scoring system approved by Teat Club International

3. Goal scores in a dairy herd

In a herd, one of the main goal scores should be fewer than 5% for very rough teats, respectively less than 15% for rough teats (Figure 2). These categories increase the likelihood of a new intramammary infection emerging. Moreover, the teat end congestion should be assessed.

After milking, teats should be soft, supple, and rosy. Over-milking, high milking pressure, and insufficient massaging may lead to teat end congestion, which manifests as swelling and hardness of the teat end [11,12]. A recommended goal is to have less than 15% of the teats exhibiting teat barrel congestion

Apart from swelling and smoothness, in severe cases, the skin may become red in colour or cyanotic, with a purplish tint.

4. Conclusions

Implementing systematic and routine teat condition scoring as a management tool, similar to monitoring mobility and body condition will ensure that any problems that can affect milk quality and generate mastitis are discovered early and handled before they cause major economic losses.

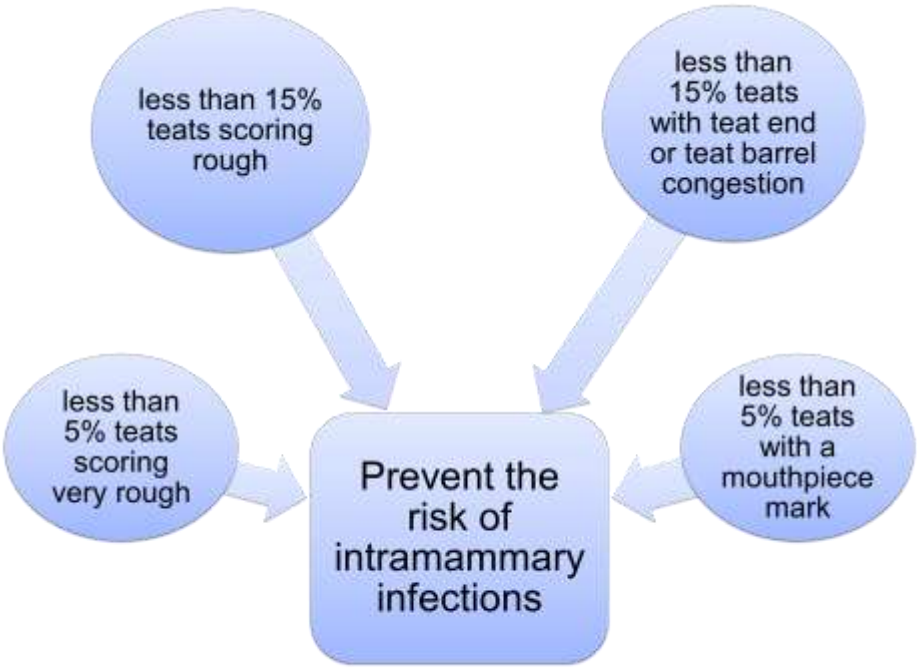

Figure 2. Thresholds for good mammary health

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