

# The effects of over-pressure on teat end health

**Aaron K. Kochman**

Lauren AgriSystems | New Philadelphia, Ohio, USA

Published at the 2011 National Mastitis Council, 50th Annual Meeting, Arlington, VA.

---

## Abstract

Over-pressure (OP) is best described as the pressure above what is needed to stop milk flow, which is applied to the teat end during the C- and D-Phases of pulsation (Mein and Reinemann 2009). OP has been shown to affect teat end hyperkeratosis in as little as two weeks (Kochman and Little 2010). The objective of this study was to identify the relationship between over pressure and teat end health/milking performance. Results show that a change in the level of OP can have a dramatic effect on the distribution of teat scores. The role that OP plays in the outcome of teat end health needs to be considered when setting up milking machines and more specifically the relationship between vacuum settings and liner type and their effect on teat end health.

---

## Introduction

There are many variables that contribute to teat end health. The level of Over-pressure (OP) applied to the teat end should be considered as a major contributor. OP has been shown to affect teat end hyperkeratosis in as little as two weeks (Kochman and Little 2010). OP is best described as the pressure above what is needed to stop milk flow, which is applied to the teat end during the C- and D-Phases of pulsation (Mein and Reinemann 2009).

## Objective

The objective of this study was to identify the relationship between over pressure and teat end health/milking performance.

## Material and Methods

Teat score data taken from the National Teat Health Database was used in this study. Approximately 90,000 cows from 140 dairies are represented. All four teats were evaluated using a four point scale developed by TCI. In order for dairies to be included, certain parameters had to be met: records for milking equipment settings needed to be complete, liner type had to be identified, Touch Point (TP) data had to be existing for the liner, and each dairy was required to have teat scores on two different occasions using two different liner/vacuum combinations – both are included in the results. In instances where dairies had more than one qualifying teat score, the most recent was included.

## Analysis

The relationship between TP and OP is depicted in Figure 1. The formula was utilized to find the OP for each teat scoring session used in this study. By using this formula and factoring in the vacuum level for a dairy, a reliable OP was calculated.



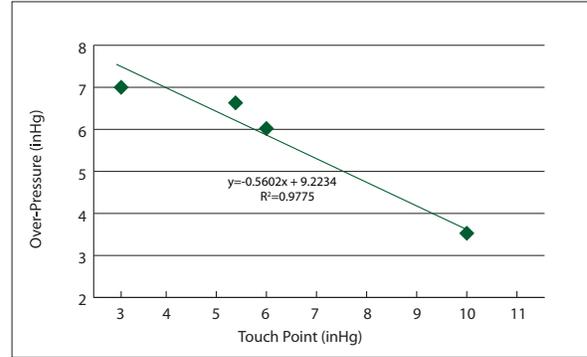
## Results

The effect OP has on teat end hyperkeratosis is clearly evident in Figure 2. With each increase in OP there is a decrease in the number of teats that are considered healthy (<2). The number of Rough (3's) and Very Rough (4's) teat ends account for close to half of the total population of teat scores at the highest OP value.

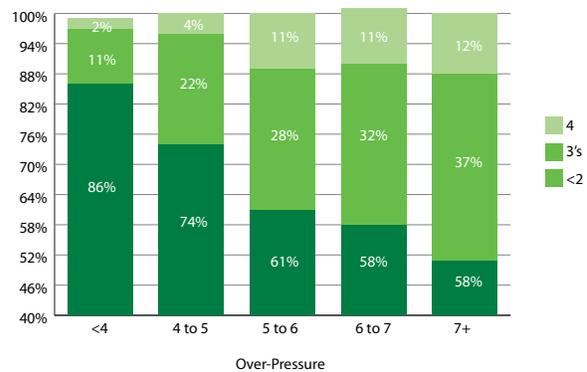
## Discussion

Most would consider a distribution of teat scores at 80-15-5 (percent of <2, 3, 4) to be a goal that every dairy should strive for. This is clearly achievable based on the data presented here, and these goals were achieved at the lowest OP level listed. The results show that a change in the level of OP can have a dramatic effect on the distribution of teat scores. The role that OP plays in the outcome of teat end health needs to be considered when setting up milking machines and more specifically the relationship between vacuum settings and liner type and their effect on teat end health. This information should also be applied when troubleshootinging herds with poor teat condition.

**Figure 2: The Relationship of TP to OP**



**Figure 2: Teat Scores in Relationship to OP**



## References

Kochman, A.K., and S. Little. 2010. The effect of over-pressure on teat-end condition. Proc. 49th Annual Meeting of the National Mastitis Council, pp 218-219.

Mein, G.A., and D.J. Reinemann. 2009. Liner Compression applied to teats during the 'rest phase' of each pulsation cycle: everything you always wanted to know. Proc. 48th Annual Meeting of the National Mastitis Council, pp 152-153.



2162 Reiser Ave SE  
New Philadelphia OH 44663

