

## **Safe low-temperature argon plasma to decrease bacterial load on chronic wounds**

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### Purpose:

Infectious skin diseases caused by bacteria are one of the main reasons for hospitalization of dermatological patients and therefore costly. Most of them are chronic ulcers of the lower leg, often colonised by multiresistant bacteria. Standard antibiotic treatment is often limited by the development of resistency of germs against antibiotics or by allergic reactions.

Low-temperature Argon plasma proved to be highly effective in vitro against different, even multiresistant bacteria and yeasts. Because of the properties of a physical therapy, resistency of germs or allergic reactions due to plasma are not feasible.

### Materials and Methods:

We treated more than 150 patients with chronic infected and colonized wounds using low-temperature Argon plasma.

Next to standard wound care the patients received an Argon Plasma treatment on randomized wound(s). Before and after plasma treatment, standard bacterial swabs or smears of nitrocellulosis filters were taken from treated and non-Argon-treated areas.

Additionally, wound measurements and digital photography were performed to measure the effect on wound healing. Side effects were noted according to a standardized WHO score.

### Results:

Until now, no side effects occurred and the treatment is well tolerated. Smears of nitrocellulosis filters revealed a higher accuracy and displaced the swab technique. In an interim analysis using nitrocellulosis filters we found a highly significant 31 higher germ reduction in treated areas compared to the areas not treated with Argon plasma. This decrease is found in all kinds of germs, even multiresistant ones.

### Conclusions:

In our experience the low temperature Argon plasma technology offers a novel approach to treat infected chronic wounds without expecting the usual side effects of both development of resistant germs and allergic reactions.