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Maggot Debridement as a Treatment for Diabetic Foot Ulcers

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https://www.google.com/search?q=maggot+debridement+therapy&rlz=1C1JZA_P_enUS799US800&source=lnms&tbm=isch&sa=X&ved=0ahUKewjosea64LThAhUDVa0KH30ACEQ_AUIDigB&biw=1280&bih=578#imgrc=EleKQDdHwMx

Question

Do adults with diabetic ulcers, who receive maggot debridement compared to those who received conventional treatment, heal faster?



<https://app.luminpdf.com/viewer/MrdM71Qqd72BzwnSk>

Background

- A diabetic foot ulcer is an “open sore or wound that occurs in patients with diabetes and is commonly located on the bottom of the foot”
- A diabetic foot ulcer (DFU) is a risk factor for all patients with diabetes type 1 and type 2
- The process of wound healing occurs in stages, which is first characterized by classically activated macrophages (caM), but later in the process of healing, there is a presence of alternatively activated macrophages (aaM), which implies a delay in wound healing in DFU’s
- According to the Center for Disease Control (CDC), “the average medical expenditure for a person with diagnosed diabetes is about \$16,750 per year, of which about \$9,600 is due to diabetes. The medical expenditures of people with diabetes are approximately 2.3 times higher than expected costs if they did not have diabetes. The total estimated cost of diagnosed diabetes in 2017 was \$327 billion”
- Approximately 30.3 million adults, aged 18 and older, Americans have diabetes, which is 9.4% of the population. This statistic does not include those who are undiagnosed, which is 7.2 million people (American Diabetes Association, 2015). Of these 30.3 million people, approximately 10% of them will develop a diabetic foot ulcer at some point in their life, and all of them are at risk for developing one. Of that 10% who develop a foot ulcer, 14% to 24% will require an amputation of the foot (Global Diabetes Community, 2019).

Study	Description	Results
VenUS II: a randomised controlled trial of larval therapy in the management of leg ulcers	Level II, randomized control study was created to “compare the clinical effectiveness and cost-effectiveness of larval therapy with a standard debridement technique (hydrogel)” (para. 1, 2009). It was published in the year 2009. Although this article is older than the five-year restriction and did not specify directly to diabetic foot ulcers, approval was given to use an article that is older and speaks on leg ulcers.	The results of comparing maggot debridement and hydrogel (standard technique) in leg ulcers was “there was no evidence of a difference in time to healing” (para. 7, 2009). However, “people treated with larval therapy reported significantly more pain in the previous 24 hours when asked at the removal of the first debridement treatment compared with patients in the hydrogel.” It was also shown that the use of hydrogel and maggot debridement therapy (MDT) “are likely to have similar costs and effects in treatment of sloughy leg ulcers” (Malekian et al, 2019).
Efficacy of Maggot Therapy on <i>Staphylococcus aureus</i> and <i>Pseudomonas aeruginosa</i> in Diabetic Foot Ulcers	Level II, randomized control study, created to “evaluate the antimicrobial effects of medicinal maggots of <i>Lucilia sericata</i> on <i>Staphylococcus aureus</i> and <i>Pseudomonas aeruginosa</i> on diabetic foot ulcers (DFUs)” (para. 1, 2019). This research article was published in 2019, which places it within the time restraint of five years.	Using the McNemar test, <i>S aureus</i> among cases of the treatment group was significant after the first application of MT at 2 days and after the second application at 4 days” (para. 5, 2019). It was also found that the removal of <i>P aeruginosa</i> “reduction rate was significant in comparison with the control group.” However, the results didn’t particularly pertain to the comparison of MT and conventional treatment methods, the results showed that maggot therapy has a crucial element to the prevention and/or the treatment of infections, as well as being safe for the general population. (Dumville et al, 2009).
Maggot debridement therapy with <i>Lucilia cuprina</i> ; a comparison with conventional debridement in diabetic foot ulcers	Level II randomized case-controlled study was a study done to determine the affects a blowfly, that has never been used before, had on diabetic foot ulcers when using maggot debridement therapy compared to being treated with conventional treatment methods.	The study concluded that there was not a significant difference in the outcome between MDT methods and conventional debridement methods. However, there was a major difference between the length of stays in patients who used MDT (Sherman, 2003).
Maggot Therapy for Treating Diabetic Foot Ulcers Unresponsive to Conventional Therapy	Level II randomized case-controlled study, aimed to determine which was the most effective for treating diabetic foot ulcers: maggot debridement therapy, conventional treatment, or conventional treatment and then maggot debridement therapy.	Within four weeks, maggot debrided foot ulcers were completely healed. By week five, conventionally treated foot ulcers still had 33% of their surface covered with necrotic tissue. Maggot debridement therapy was associated with much faster debridement/wound healing times compared to those treated with conventional methods (Paul et al, 2009).

Results

- Overall, the data was inconclusive on whether or not there was faster healing times associated with MDT in comparison to those treated with conventional methods.
- Two of the studies saw an increased healing time when using MDT.
- The other two studies concluded that conventional treatment and maggot debridement therapy had similar healing times.



Application

- As for healthcare and nurses, faster healing times mean being more efficient.
- With this information, Nurses are able to give patients proper, appropriate treatment.
- This information will save not only the patient thousands of dollars in healthcare bills but the hospitals as well.