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Review

The effects of conservative treatments on burn scars: A systematic review



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ABSTRACT

A variety of conservative treatments for burn scars are available, but there is no clear consensus on the evidence. The purpose of this study was to summarize the available literature on the effects of conservative treatments of burn scars in adults. RCTs and CCTs were sought in three databases, reference lists of retrieved articles and relevant reviews. The Scottish Intercollegiate Guidelines Network scoring system was used to assess the quality of the selected studies. Information on the study characteristics, results and interventions was extracted. Twenty-two articles were included into the review and categorized in six topics: 5 on massage therapy, 4 on pressure therapy, 6 on silicone gel application, 3 on combined therapy of pressure and silicone, 3 on hydration and 1 on ultrasound. Pressure and silicone therapy are evidence-based conservative treatments of hypertrophic scar formation after a burn producing clinically relevant improvement of scar thickness, redness and pliability. Massage therapy could have a positive result on scar pliability, pain and pruritus, but with less supporting evidence. The use of moisturizers and lotions could have an effect on itching, but the findings are contradictory. Of all other non-invasive treatments such as splinting, casting, physical activity, exercise and mobilizations no RCTs or CCTs were found.

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1. Introduction

In the past severe burns were associated with considerable mortality rates [1]. Since the development of specialized burn centers and associated advances in treatment, more burn victims survive [1–3]. Due to long hospitalization and absence of daily physical activity and exercise, patients suffer from decreased muscle strength, reduced joint mobility and limited fitness level. Moreover, the formation of hypertrophic scars, even after minor burns, is a common complication and usually develops 6–8 weeks after re-epithelialization. These scars have a red to deep purple color and become more elevated, firm, hypersensitive, itchy, warm to touch, tend to contract and affect range of motion [4]. Subsequently, physiotherapy takes a crucial role in the acute treatment and rehabilitation process of burn patients and includes a variety of treatment methods such as exercise therapy, cardiopulmonary training, joint mobilization, positioning, splinting and topical scar management. However there is no consensus on the actual effect of the various treatment modalities and the evidence is not clear or even lacking. Therefore the purpose of this study was to summarize the available literature on the effects of conservative treatments of burn scars in adults.

2. Methods

2.1. Search strategy

Studies were sought in three databases PubMed, Embase and Web of Science. Full text articles on conservative treatments, such as pressure therapy, silicone gels, massage therapy, use of moisturizers, rehabilitation, physical activity, exercising, splinting, stretching and mobilization on burn scars in a population of adults were included. Inclusion criteria for the review involved a patient population of adults with burn scars and a conservative treatment intervention. The latest search data was January 12, 2015 (Table 1).

We also searched in PubMed on the terms ‘burn’ and ‘scar’ and ‘laser’, but this search led to a wide variety of different laser applications. Therefore, we did not to include laser therapy as treatment intervention in this review.

The reference lists of retrieved articles and relevant reviews were also examined for additional studies. The search was completed by two persons.

2.2. Inclusion and exclusion criteria after PICO

Two reviewers checked the titles of the studies found according to the search strategy described. Each relevant

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