

Improving facial appearance

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Valorization

Scars can be itchy, painful, or aesthetically unpleasing, but they can also have a disastrous effect on one's self-confidence. Fortunately, numerous therapies have been developed to minimize the aforementioned negative effects of scars. Age, sex, and cultural environment are important factors in the assessment of the severity of scars and in the choice for choosing the appropriate scar therapy.

In a time where, in the Western world, there is a lot of attention for (the preservation of) a youthful appearance, the number of different scar treatments is increasing. This is reflected by a predicted global annual growth percentage of the scar treatment market of 8.2% between 2018 and 2026.¹ Although therapeutic options for problematic scars are increasing, there is little scientific support for many of them. In this thesis, more insight was given into the healing and treatment of problematic scars, with an emphasis on facial scars. This chapter is aimed to discuss the value of the scientific results that can be obtained by this thesis.

In Chapter 2, the mean duration of hypertrophic scar maturation was examined. This chapter suggested hypertrophic scar maturation to occur considerably more gradually than previously believed. This leads to the assumption that a more conservative approach with respect to surgical scar revision is justified. If this approach is followed, in general, less surgical complications could occur and consequently morbidity could decrease.

When skin cancer is diagnosed, therapy can rarely be non-surgical. Chapter 3 discusses the effects of surgical facial reconstruction after the excision of non-melanoma skin cancer with respect to the aesthetic outcome as perceived by patients. Facial reconstructive surgery can be challenging mostly because of the anatomic complexity of the face, as it contains nine facial units and twenty-six facial subunits.² One of the pitfalls of facial reconstructive surgery is that a facial reconstruction following a skin defect can cross multiple facial (sub) units, resulting in poorer aesthetic results. However, the study in Chapter 3 displayed that patients' perceived aesthetic appreciation of their face didn't significantly decrease after surgical reconstruction following facial skin cancer in a small study population. With the annually rising incidence of basal cell carcinoma and as a result the increasing need for facial reconstructions are put in mind, these results can be promising.

This thesis was mainly focused on the treatment of scars, with emphasis on the treatment of facial scars and deformities by means of a custom fabricated facial pressure mask (Chapter 4, 5, 6 and 7). However, little is known about this demanding therapy with respect to the

clinical evidence. A literature review in Chapter 4 summarizes the sparse clinical evidence of facial pressure mask therapy and describes the necessity for further clinical research with controlled study populations. In this way, the cost-effectiveness could be investigated as well as an evidence-based guideline for the use of facial pressure masks in the treatment of facial scars and deformities could be developed. Chapter 5 provides insight into the process of the manual fabrication of a facial pressure mask. Although the manual fabrication technique takes significantly longer to complete when compared to formation of a mask by 3D-printing, a manual fabricated facial pressure mask as described in Chapter 5 is a more sustainable therapy when compared to 3D-printing, because of the regular modifications that are done to the mask during therapy. However, it requires a skilled orthotist/prosthetist that has to undergo a steep learning curve.

Chapter 6 provides assessment of the clinical effects of facial pressure mask therapy in patients with severe facial scars and deformities after facial flap surgery. The retrospective study shows significant reconstruction site improvement measured by means of POSAS scores. Although facial flap surgery usually provides decent aesthetic results, it is valuable that there is a promising non-surgical therapy for this small group of patients that didn't have pleasing results after facial flap surgery. This therapy can result in noticeable reconstruction site improvement, without the need for recurrent surgery. In this way, post-op morbidity can be decreased. As earlier mentioned, a facial pressure mask is a sustainable device because it can undergo slight adjustments during therapy. Chapter 7 displays the aesthetic results of this therapy as judged by patients are also sustainable in the course of 5 years after therapy was completed. In this chapter, patients who completed pressure mask therapy assessed their facial appearance in general and in social situations, their satisfaction with the decision to undergo face mask therapy, and their satisfaction with the end result of therapy. The results also show pressure mask therapy to give aesthetically more pleasing results when patients adhered to a longer daily therapy duration (12 to 16 hours, when compared to 4 to 8 hours).

The clinical effects of a relatively new combination of two known drugs; triamcinolone acetonide and verapamil, on hypertrophic scars and keloids was studied in Chapter 8. This therapy regime displayed significant improvement in scar appearance in both doctor and patients' view. Triamcinolone acetonide monotherapy belongs to the 'gold standard' in intralesional therapy as it has proven to be effective in improving problematic scars. However, adverse effects were observed in over 50% in some studies. The addition of verapamil, a calcium channel blocker that also has scar tissue enhancing properties and causes less adverse effects, has delivered preliminary success in the treatment of keloids and hypertrophic scars. Chapter 8 showed encouraging results in the combined therapy of triamcinolone and verapamil in pathologic scars, as significant scar improvement was

observed by both patients and physicians with little adverse effects. We thereby believe the assumed synergistic response of combination therapy of triamcinolone and verapamil to offer a useful new modality in the treatment of keloid and hypertrophic scars. However, more clinical research is needed in order for combination therapy to be able to replace triamcinolone monotherapy as the gold standard.

Concluding, we believe pursuing the best possible facial scar treatment to be crucial. People with conspicuous facial scars are more likely to have depression-related symptoms, to have work-related problems, and are likely to experience negative effects on overall emotional well-being.^{3,4} We hope to have provided insightful information about the healing, effects, and therapy of problematic (facial) scars and we hope we provided a foundation for further clinical research by means of this thesis.

REFERENCES

1. Transparency Market Research. <https://www.marketwatch.com/press-release/scar-treatment-market-to-become-worth-us-295921-mn-by-2026-says-tmr-2018-07-16> (accessed on 15 August 2019)
2. Fattahi TT. An overview of facial aesthetic units. *J Oral Maxillofac Surg.* 2003;61(10): 1207-11.
3. Brown BC, McKenna SP, Siddhi K, McGrouther DA and Bayat A. The hidden cost of skin scars: quality of life after skin scarring. *Journal of plastic, reconstructive & aesthetic surgery:* 2008;61(9): 1049-58.
4. Roh YS, Chung HS, Kwon B and Kim G. Association between depression, patient scar assessment and burn-specific health in hospitalized burn patients. *Burns* 2012;(4)38: 506-12.

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