Improvement of disfiguring skin conditions by laser therapy
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GENERAL DISCUSSION
LASERS IN PAST AND PRESENT
Since their introduction in dermatology, lasers have become a welcome addition to the therapeutic armamentarium for disfiguring skin conditions. Although most skin conditions are not a health risk, the urge for treatment can be high. One of the reasons for an increasing demand for treatment is that patients nowadays ask for treatment options that can improve the medical aspects of a skin condition as well as the appearance that comes with it.

For scars, many different laser devices have been proposed. Ablative fractional lasers seem to be the best therapeutic option for acne scars, and the results of our review showed most evidence for the efficacy and safety of pulsed dye lasers in the treatment of hypertrophic scars. Recently, a non-ablative fractional laser has been proven effective for hypertrophic scars. Evidently, different types of scars ask for different types of laser therapy. In this thesis, we did not find enough evidence for the efficacy of ablative fractional laser in the treatment of various scar types. Also, it should be noted that significant side effects have occurred in patients treated with ablative fractional lasers. Scars have always been a therapeutic challenge. With the arrival of fractional lasers, an extra tool in this difficult to treat skin condition is available. Clearly, more research should be done to improve and expand the utilization of (ablative fractional) lasers in the treatment of these disfiguring skin conditions.

Although dermal tumours are benign, they may occur in high numbers and when they do, surgery is not an option. With the arrival of lasers, multiple tumours can be easily treated in very little time. When timed exposure settings are used in ablative lasers, patients are offered a simple and fast treatment with uniform results, regardless of the person that controls the laser. The histological findings in this thesis complement the clinical results of timed exposure ablative laser therapy, seen in our daily practice. However, results should first be confirmed in a clinical randomized controlled trial before it can be recommended as a treatment option.

There is still room for expansion and improvement of lasers in the treatment of disfiguring skin conditions. For the treatment of PWS however, sufficient evidence has been provided that lasers can now be regarded as the gold standard. The pulsed dye laser is used for improvement of port-wine stains according to the principle of selective photothermolysis. Since a considerable number of port-wine stains still does not respond to this treatment, parameters have been varied and other lasers have been proposed in the past decades. Until now, no laser has surpassed the pulsed dye laser in the treatment of port-wine stains, although the Nd:YAG laser is a good option for the treatment of hypertrophy in port-wine stains.

FUTURE CONSIDERATIONS
Unquestionably, lasers have found their way into the field of dermatological treatment. And although laser dermatology is a field with a rapidly growing number of laser devices with many possible indications and many claims, there are few proofs of efficacy and safety of these devices. For some skin conditions lasers have been the gold standard for decades now, for other skin conditions the necessity of randomized controlled trials is evident since these can support the efficacy of laser therapy.
Although lasers can be an expensive purchase, more and more hospitals and private institutions proceed to the acquisition of one or more laser systems. These expenses can be covered by the earnings of the cosmetic laser treatments, to which is an increasing demand. The pitfall of this demand is that the treatments are often performed by physician assistants or poorly educated physicians. When they proceed to the treatment of dermatological skin conditions, their lack of experience may result in higher numbers of side effects. In order to prevent this, more academic centres should incorporate laser dermatology into their educational program. With more educated dermatologists working with lasers, more experience will be gained. If this experience will lead to more research on laser therapy in dermatology, then ultimately, more success will be achieved in the treatment of disfiguring skin conditions. Hopefully, this thesis will contribute to the expansion of research on laser dermatology by clearing the road for future researchers.