Effect of Skin Camouflage Therapy on Conventional Thyroidectomy Scars: A Pilot Study from Singapore

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ABSTRACT

Introduction: Conventional thyroidectomy comprises the main bulk of thyroid surgeries despite the ongoing thrust toward minimally invasive approaches. In young patients, the cosmetic impact of a neck scar can affect the quality of life. The role of skin camouflage on thyroidectomy scars has not been evaluated. We evaluated the acceptance and satisfaction of skin camouflage therapy for conventional thyroidectomy.

Materials and methods: Over a 6-month period, 20 patients (M:F 2:18) and mean age 35 (24–44) years with conventional thyroidectomy scars underwent three sessions of the skin camouflage therapy by a trained skin camouflage therapist 4 weeks apart. The Dermatology Life Quality Index (DLQI) form was used to evaluate the usefulness of skin camouflage therapy on thyroidectomy scars. An independent reviewer administered the DLQI questionnaire before and after the skin camouflage therapy sessions.

Results: No reported side effects were noted in any patient. The overall DLQI scores pre and postapplication of skin camouflage showed improvement (mean 9.65 vs 10.9, respectively, SD 5.18 SE 1.15, p value <0.294) but did not reach statistical significance. Improvements were also noted in daily activities, leisure, work, choice of clothing, and personal relationships. Patients' self-confidence during interaction with people showed a statistically significant improvement (SD 0.887, SE 0.198, p value <0.012). In all, 75% ($n = 15$) respondents expressed a strong liking and satisfaction recommending its use for others and continued usage of skin camouflage at 1-year follow-up.

Conclusion: Majority of the patients were very satisfied with the cosmetic effect of skin camouflage and showed significant improvement in their self-confidence.

Keywords: Conventional thyroidectomy, Cosmesis, Neck scar, Skin camouflage.

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INTRODUCTION

In Asian patients, the cosmetic impact of a scar in a highly visible area of the neck can be significant. This can lead to functional and psychosocial impairment, with a poor quality of life.^{1,2} Conventional thyroidectomy even today forms the bulk of thyroid surgeries leading to a prominent neck scar. Attempts to avoid this has led to recent thrust in developing minimal access approaches such as minimally invasive video assisted thyroidectomy (MIVAT) and scarless (in the neck) endoscopic thyroidectomy (SET).³ These surgeries address a pressing concern of reducing or preventing a neck scar altogether.

Cosmetic camouflage is the skilled use of makeup to disguise skin lesions using special formulations that are durable, waterproof, opaque, and able to adhere to scar tissue. Most of the quality-of-life (QOL) studies for skin camouflage therapy have been described in pigmentary and vascular dermatological conditions, such as vitiligo, telangiectasia, and other facial skin imperfections.^{4–6} However, its role in conventional thyroidectomy scars has not yet been evaluated in the literature. There has been no specific clinical study on whether skin camouflage therapy can improve the QOL of these patients. We therefore performed a pilot study to evaluate the effect of skin camouflage therapy on young Asian patients undergoing conventional thyroidectomy.

MATERIALS AND METHODS

After ethics approval from our institutional review board, 20 patients over a 6-month period, with conventional thyroidectomy scars, underwent three sessions of the skin camouflage therapy by a trained skin camouflage therapist 3–4 weeks apart. Patients with recurrent goiters, previous neck surgery, and those who

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declined to have their neck scars photographed were excluded. The Dermatology Life Quality Index (DLQI) form was used to evaluate the usefulness of skin camouflage therapy on thyroidectomy scars. (Permission courtesy Prof Andrew Finlay, Dept of Dermatology, School of Medicine, Cardiff University, 3rd Floor, Glamorgan House, Heath Park, Cardiff, Wales, UK. CF14 4XN).⁷ The DLQI is a dermatology-specific QOL measure that has been widely validated in a range of skin conditions. It was developed in 1994 and is the first dermatology-specific QOL instrument. It is a simple 10-question validated questionnaire that has been used in over 40 different skin conditions in over 80 countries and is available in over 90 languages. Its use has been described in over 1,000 publications including many multinational studies and is the most frequently used instrument in studies of randomized controlled trials in dermatology.^{8–10}

After informed consent, each patient underwent three sessions of skin camouflage conducted by a trained skin camouflage

COVER CREAM K SERIES & FINE FINISHING POWDER

INGREDIENTS

Cover Cream

Ocetyldecanol, Caprylic/ Capric triglyceride, Copernicia cerifera (carnauba) wax, Cetyl palmitate, Kaolin, Euphorbia cerifera (candelilla) wax, Dimethicone, Mica, Tocopheryl acetate, Nylon 12, Laureyl lysine, Triethoxycaprylylsilane, Polymethyl methacrylate, Bismuth oxychloride, Allantoin, Magnesium carbonate. May contain CI77891, CI77492, CI77491, CI77499, CI77007.

Fine Finishing Powder

Talc, Magnesium Myristate, CI 77492, CI 77491, CI 19140, CI 77499, CI 77007, Parfum, Benzyl Salicylate, Limonene, Coumarin, Linalool, Benzyl Benzoate.

Fig. 1: Skin camouflage product

therapist in the outpatient surgical clinic at intervals of 3–4 weeks. The product used has established use in various skin conditions to conceal facial and body imperfections. The details of this Skin Camouflage product is provided in Figure 1. The skin camouflage therapy involves application of a skin cover cream and fine finishing powder. The Cover Cream uses a very fine and superior moisturizing base to create an effective, easy-to-use, hypoallergenic camouflage cosmetic to conceal facial and body imperfections. The unique manufacturing process avoids strong heat treatment and ensures unmatched spread ability for smooth, non-chalky, and quick application. Along with the setting powder, the Cover Cream covers beautifully with even the freedom to swim. The Cover Cream can be applied thin or thick depending on need and provides superb coverage with a soft matte finish. It is available in 19 shades to suit almost all skin colors and imperfections. In our study, the color of the product used was matched to the skin tone of the patient using the available palette of 19 shades. Photographs of the surgical scars were taken at each session, pre- and postcamouflage. An independent reviewer administered the DLQI questionnaire before the session. A subsequent questionnaire was conducted by the reviewer after completion of the study at the last follow-up. The DLQI consists of 10 questions and is designed for use in patients older than 16 years. The questions are classified into subscales: symptoms and feelings (questions 1 and 2), daily activities (questions 3 and 4), leisure (questions 5 and 6), work and school (question 7), personal relationships (question 8 and 9), and treatment (question 10). The total DLQI score is calculated by adding the scores of the 10 questions with a maximum score of 30 and a minimum score of 0. The higher the score, the more the QOL is impaired. Grade I (0–1) indicates no effect, grade II (2–5) indicates a small effect, grade III (6–10) indicates a moderate effect, grade IV (11–20) indicates a very large effect, and grade V (21–30) indicates an extremely large effect. The pre and posttherapy DLQI scores were compared using the paired *t* test. Statistical analysis was performed using the SPSS 19.0 software.

Study Design

Visit 1

Eligible study subjects who were attending their routine postoperative follow-up in the clinic were to be approached by one of the two coinvestigators. They were informed of the study and given the information sheet to go through at their leisure in a designated room in the clinic. The coinvestigator addressed all queries that the subject may have and those who volunteered and signed the informed consent underwent a preskin camouflage

DLQI questionnaire conducted by an independent reviewer who was not part of the surgery team. The form was coded and stored in our database in the clinical research unit for comparison with the posttherapy questionnaire at the end of the study period.

Visit 2 (4 Weeks Later)

The skin camouflage therapy was conducted in a designated outpatient clinic room by a trained therapist. Photograph of the neck scar without patient identifiers was taken and stored in our database. Patients were taken through a skin match process to identify the correct skin color and coverage product suiting their skin. The results were photographed and stored in the database at the end of the skin camouflage therapy. Every recruited patient was taught how to use the product, and samples were provided to continue use at home on a regular basis over the next 4 weeks. They were advised to apply the skin camouflage therapy when they return for their final visit.

Visit 3 (4 Weeks Later)

A photograph of the neck scar was taken by the therapist to assess patient usage of the product. The skin therapist assessed their application. A postskin camouflage DLQI questionnaire assessment was conducted by the independent reviewer, and the results were stored in our database for analysis. The forms were coded to protect patient identity. The DLQI scores were computed, and statistical comparison was made using the paired *t* test. A telephonic interview was conducted at the end of 1 year to determine the continued usage rate of skin camouflage by patients, including their satisfaction and any reported adverse effects.

RESULTS

Twenty patients were recruited for this study over a 6-month period. The mean age was 35 (24–44 years/M:F 2:18). The cosmetic effect of the skin camouflage therapy in three patients with different skin textures pre and postcamouflage is shown in Figure 2. The overall DLQI scores pre and postapplication of skin camouflage showed improvement in overall QOL (mean 10.9 vs 9.65, respectively; SD 5.18, SE 1.15, *p* value < 0.294) but did not reach statistical significance. Similar improvements were noted in daily activities, leisure, work, and choice of clothing. A statistically significant improvement occurred in patients' personal relationships and self-confidence when meeting people (SD 0.887, SE 0.198, *p* value < 0.012). The results are summarized in Table 1. At the end of 1 year, 75% (*n* = 15) of the patients expressed a strong liking and satisfaction for skin camouflage, recommending its use to others. There were no reported side-effects in any patient. Figure 2 demonstrates the results of skin camouflage on three different patients.

DISCUSSION

The main worry of young Asian patients undergoing conventional thyroid surgery today, apart from voice change, is the cosmetic impact of a visible neck scar. This can significantly affect their QOL. An altered appearance of skin over places like the face and neck is problematic, as it impacts social interaction including feeling of rejection and employment prospects.^{11–13} Most scars do not cause direct physical impairment. However, there is a psychosocial and emotional impact. Disfigurement can influence one's self-confidence and personal relationships.^{14,15} The World Health Organization defines QOL as "an individual's perception of

Figs 2A to C: Cosmetic results pre- and post-skin camouflage

Table 1: Summary of pre- and posttherapy DLQI scores

	Pretherapy (mean $\pm$ SD)	Posttherapy (mean $\pm$ SD)	<i>p</i> value
Daily activities	3.34 $\pm$ 1.38	2.7 $\pm$ 1.531	0.103
Leisure	2.15 $\pm$ 1.05	1.55 $\pm$ 1.531	0.198
Work	0.55 $\pm$ 0.923	0.33 $\pm$ 0.945	0.449
Choice of clothing	1.5 $\pm$ 0.940	1.41 $\pm$ 1.099	0.634
Personal relationships/ self-confidence	1.85 $\pm$ 0.865	1.3 $\pm$ 0.875	0.012
Overall	10.9 $\pm$ 3.977	9.65 $\pm$ 4.689	0.294

their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns". A patient's QOL may be adversely affected due to personal dissatisfaction with appearance of the scar or response to the reaction of others.¹⁶ Individuals with discernible alterations are also more likely to experience stigmatization by staring, avoiding, and teasing.^{17–19} In their work, Brown et al. showed that scars interfered with patients' communication skills, personal relationships, work life, and leisure activities.²⁰ Other effects noted among patients with altered skin conditions and imperfections include social unease, difficulty in sexual relationships, psychological distress, suicidal ideation, reduced self-esteem, anxiety, and depression.^{21–25} Cosmetic camouflage is a technique that uses cosmetics to conceal disfigurements immediately and normalize the appearance of the skin.²⁶ The therapy uses specific products, including powders, cover creams, and liquids, which can rapidly disguise the skin alteration. Although perfect color matches can be difficult due to changing complexions, camouflage has been found to improve well-being, psychological experiences, and self-rated attractiveness.^{27–29} There are some studies that suggest cosmetic camouflage benefits patients with

skin conditions by increasing self-esteem and facial attractiveness, thereby enhancing one's perceived QOL.³⁰ The authors have made an attempt to extrapolate this to surgical scars.

There have been systematic reviews of the applicability of cosmetic camouflage in skin disorders, but similar evaluations for post-thyroidectomy neck scars are lacking. This pilot study in Asian patients exclusively evaluated the impact of a thyroidectomy neck scar, as no previous similar studies are available in the literature. The scar of conventional thyroid surgery is big compared to other dermatological imperfections and is described as either embarrassing or prone to raise questions. Our results show that skin camouflage therapy for thyroidectomy scars is safe and easy to use, with a majority of patients expressing satisfaction with the cosmetic effect and recommending its use for others. The small sample size of this pilot study could be a possible reason why there was only a trend in improvement in the QOL in most domains of the DLQI questionnaire without reaching statistical significance. Training skills for skin camouflage and teaching patients to apply the camouflage can be conducted by trained specialist nurses so that this therapy may be implemented cost-effectively on a larger scale in public hospitals on a long-term basis. A review of previous studies of cosmetic camouflage and QOL in skin conditions has shown a considerable impact in all domains of the DLQI with most studies showing statistical significance in self-confidence.³¹

The authors believe that this benefit from cosmetic camouflage is purely from neck scar concealment, as it repigments the appearance of the skin scar bringing it closer to that of normal skin. Future research can also include data on the morphology and characteristics of the scar using validated scar assessment tools. Repeated assessments at intervals over a longer time period may also determine the long-term feasibility of skin camouflage therapy. A greater awareness of the availability of skin camouflage therapy among patients and clinicians is needed, as nearly all the patients in our study were not aware of the availability of this option to conceal the neck scar. A larger multi-institutional study can provide more robust results before recommending its routine incorporation in public healthcare institutions in Singapore.

CONCLUSION

Majority of the patients were very satisfied with the cosmetic effect of skin camouflage on conventional thyroidectomy scars and showed significant improvement in their self-confidence.

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