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Original article

# Availability of cosmetic treatment using novel cosmetics-based material on patients with craniofacial concavity

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### ABSTRACT

**Purpose:** Patients treated with maxillofacial prosthetics often experience emotional problems because of the remaining facial skin concavity such as a surgical scar. In such cases, cosmetic treatment can potentially correct their skin tone imperfections and deformities. This study aimed to evaluate the clinical availability of novel cosmetics-based material for craniofacial small concavity by initiating a cosmetic treatment in a preliminary case.

**Methods:** Eighteen patients with aesthetic problems such as craniofacial deformities, small defects, and concavities on their faces underwent cosmetic treatment that was performed by makeup practitioners. Data were collected from the patient's charts and a survey questionnaire. A visual analog scale was used to conduct a survey regarding the satisfaction levels of the patients following cosmetic treatment with a novel cosmetics-based material. The cosmetic treatment was performed for a concavity on the left midface of a 67-year-old woman with partial maxillectomy. The novel cosmetics-based material was manufactured from a semi-translucent oil base.

**Results:** The satisfaction level of the patient increased after undergoing the cosmetic treatment. Regarding clinical applications, the novel cosmetics-based material can help reduce their cosmetic disturbance and restore the small deformity.

**Conclusions:** These results suggest that the cosmetic treatment with the novel cosmetics-based material can be used as a subsidiary method for facial prostheses or an independent new method for correcting patients' small craniofacial concavity and for reducing visible deformity.

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## 1. Introduction

Surgical, congenital, or traumatic loss of craniofacial anatomy requires reconstruction using biological or synthetic substitutes. Despite the success of maxillofacial prosthetic treatments in achieving functional improvement, patients often experience emotional problems because of the remaining facial skin concavity, such as surgical scars. The patients may also have difficulty in accepting their deformed appearance, which would be a source of emotional and psychological stress [1–4]. Restoring self-esteem and encouraging patients to return to work and active life are challenging tasks for medical experts. Understanding the

psychological status of each patient is important for achieving best treatment outcomes. To improve the quality of life (QOL) of such patients, various surgical and prosthetic reconstructions have been performed.

Facial prostheses are prosthetic substitutes to the lost area to restore normal appearance. These can help reduce the cosmetic disturbance of patients with craniofacial deformities and defects. However, because patients may have various limitations in applying facial prostheses, other options that would suit individual demands are required. On the other hand, cosmetic treatment has been defined as “helping to reduce the emotional problems of patients with visible physical disturbance caused by cleft lip and palate, nevus pigmentosus, operative scar, etc.” The cosmetic treatment entails physicians employing pharmaceuticals and medical materials to produce healthy, beautiful looking skin. It is used to decrease the anxiety and tension associated with

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a patient's appearance such as skin color problems or skin concavity and to provide psychological support, thereby helping them live more normal lives [1,3]. Furthermore, it can immediately improve the facial appearance and provide a satisfying result. However, deep skin concavity cannot be adequately covered by a conventional foundation, and unnatural results are often observed because the scar asperity is much deeper than the conventional foundation applied. Therefore, we applied a novel cosmetics-based material derived from semi-translucent oil base for patients with deep scars or small concavities.

This study aimed to evaluate the satisfaction level and clinical availability of the cosmetic treatment using the novel cosmetics-based material for craniofacial deformity and small concavity in a preliminary case.

## 2. Materials and methods

The protocol for this clinical study was approved by the Ethics Committee of the Tohoku University Graduate School of Dentistry, Japan (Reference No. 20-33). This study was performed according to the Declaration of Helsinki, and all participants provided signed informed consent. The manuscript was drafted based on the STROBE statement.

The novel cosmetics-based material (Perfect Cover Foundation Flat Changer, Shiseido Co., Ltd., Tokyo, Japan) derived from semi-translucent high viscosity oil base, oil gellant and spherical powder etc. was used for the cosmetic treatment. Silica, Diisostearyl Malate, Hydrogenated Polyisobutene, Dimethicone, Dextrin Palmitate, Diphenylsiloxy Phenyl, Trimethicone, Pentaerythrityl Tetraabenate/Benzoate/Ethylhexanoate, and Tocopherol are included in the foundation as the ingredient formulation. These ingredients conforms to the cosmetic bio-derived ingredient standards (Japanese Ministry of Health and Welfare) and has a viscosity that can be thickly applied and is harmless for patients. Moreover, it is inconspicuous even if thickly applied because it does not make shadows depending on the novel base material scattered about transmitting light.

### 2.1. Participants

Eighteen patients (six men and 12 women; age, 18–77 years; mean age,  $55.0 \pm 19.1$  years) with aesthetic problems such as craniofacial deformity, small defect, and concavity on their faces were identified at the Tohoku University Hospital (Sendai, Japan). Each patient was screened for the following exclusion parameters: patients satisfied with their present condition and aesthetics. The cosmetic treatment was performed by makeup practitioners from Shiseido Co., Ltd. for all patients who provided informed consent. The procedure was as follows. (1) Counseling for their appearance. (2) Preparation of skin surface using lotion. (3) Collection for skin color of the affected area to the surrounding normal skin color using conventional foundation. (4) Application of the novel cosmetics-based material to make the skin surface flat using a dedicated spatula. (5) After-counseling and explain how to use. Data were collected from the patient's charts and a survey questionnaire. These procedures take about 30 min in total. Table 1 presents the profile of the study participants.

A 67-year-old woman who underwent partial maxillectomy had aesthetic problems such as a concavity on her left middle face (Fig. 1). Since the existence of the concavity, she was using an adhesive bandage to cover the affected area. First, a silicone facial prosthesis was applied; however, she did not want to use it. In addition, she found applying the prosthesis to the defective area difficult because the marginal design included the movable facial region (Fig. 2a–d), which resulted in a critical problem. Therefore, the cosmetic treatment using the novel cosmetics-based material was applied on the craniofacial concaved area.

### 2.2. Survey questionnaire on the satisfaction level

A survey regarding the satisfaction level of the patients was conducted using a visual analog scale (VAS) for evaluating the overall impact of the cosmetic treatment using the novel cosmetics-based material. Patients' responses were indicated on a 10 cm scale, wherein they have to place a cross at a point on the

**Table 1**

Profile of patients; distribution of visible craniofacial concavity and VAS scores; comparisons of recordings of before and after cosmetic treatments.

Therapeutic site, % (n)			VAS			
			Before cosmetic treatment	After cosmetic treatment		
Forehead,	Orbit,	5.5 (1)	47	92		
			67	79		
			72	82		
			38	51		
			45	87		
			Midface, (right:left)	50.0 (9) (2:7)	7	83
					11	42
					12	27
					25	44
					25	92
					38	90
			Chin,	16.7 (3)	41	82
49	76					
58	64					
18	32					
22	100					
30	83					
Neck,	5.5 (1)	9	98			

SD = Standard deviation.

Total number 18. Male, % (n) 33.3 (6). Age, mean  $\pm$  SD (range)  $55.0 \pm 19.1$  (18–77).

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