



Psychoemotional Outcomes of Permanent Eyebrow Correction in Patients with Alopecia and After Chemotherapy

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Abstract

Chemotherapy and alopecia frequently result in eyebrow loss, a visible change that may affect not only appearance but also psychological well-being and social confidence. For many patients, the absence of eyebrows becomes a constant reminder of illness and may contribute to decreased self-esteem and discomfort in social interactions. Dermatological adverse effects of anticancer therapy are common and have been shown to influence quality of life, highlighting the importance of supportive measures aimed at both medical and psychosocial rehabilitation.

Permanent eyebrow correction through micropigmentation is a minimally invasive aesthetic procedure that can restore the visual appearance of eyebrows for a prolonged period. This paper reviews existing literature on dermatological toxicities of cancer therapy, psychosocial adaptation to visible skin changes, and the role of aesthetic interventions in improving quality of life. Although permanent eyebrow correction may represent a potential component of rehabilitation for patients with alopecia or post-chemotherapy hair loss, evidence specifically evaluating its psychoemotional impact remains limited, indicating the need for further research.

Keywords: Permanent Makeup, Chemotherapy, Alopecia, Self-Esteem, Quality of Life, Psychoemotional State, Eyebrow Micropigmentation, Dermatological Toxicity.

INTRODUCTION

Chemotherapy remains one of the principal methods of cancer treatment. Anticancer drugs target rapidly dividing cells-malignant ones, but also cells of the hair follicles. The outcome is predictable: hair loss occurs on the scalp, eyebrows, and eyelashes. Bonner and colleagues (2006) described dermatologic toxicities associated with the use of epidermal growth factor receptor inhibitors in combination with radiotherapy for head and neck cancer. Jacot et al. (2004) reported acneiform eruptions caused by EGFR inhibitors in patients with solid tumors. Lacouture (2006) provided a detailed analysis of the mechanisms of cutaneous toxicity induced by EGFR inhibitors.

Hackbarth and colleagues (2008) conducted a prospective study of chemotherapy-induced dermatologic toxicity in women with oncological diseases. The frequency of dermatologic side effects proved to be high, and these effects directly influenced patients' quality of life. Boone et al. (2008), through patient surveys, demonstrated that management of skin toxicity related to anti-EGFR therapy represents a significant challenge both for clinicians and for patients themselves.

Loss of eyebrows is not the most dangerous adverse effect of chemotherapy. Ky and colleagues (2013) discussed cardiomyopathies associated with anticancer therapy, while Sereno et al. (2008) analyzed cardiac toxicity of antineoplastic drugs. Against the background of such serious complications, eyebrow loss may appear minor. However, for the patient who looks in the mirror every day, it is not minor.

Zhang and colleagues (2019) conducted a literature review on psychosocial adaptation in patients with skin diseases. Visible changes in the skin and its appendages-hair, nails, and eyebrows-were found to influence self-esteem, social functioning, and quality of life much more strongly than might be expected. Skin changes are visible to others; they cannot be concealed by clothing. The face is always exposed, and absence of eyebrows is immediately noticeable. People may stare, ask questions, express pity, or avoid looking altogether, which may be even more distressing.

McDaniel and colleagues (2019) studied social determinants of cancer incidence and mortality worldwide. Social factors influence not only the risk of disease but also how individuals experience illness and its consequences. Loss of physical attractiveness and visible changes in appearance that mark a person as ill may negatively affect social adaptation.

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Metri and colleagues (2013) considered Ayurveda as an approach to managing side effects of chemo-radiotherapy in cancer patients, illustrating that both patients and clinicians seek any methods capable of alleviating treatment-related side effects and improving quality of life during and after therapy.

Drobin and colleagues (2020) investigated molecular profiling predictors of radiosensitivity in breast cancer and head-and-neck tumors. Personalized medicine is moving toward understanding individual risks and responses to therapy. Yet even with highly personalized treatment, adverse effects persist, and strategies to address them are needed.

Permanent eyebrow correction belongs to the field of aesthetic medicine and cosmetology. It does not treat cancer and does not restore hair follicles. It creates the appearance of eyebrows by implanting pigment into the skin. However, for a person who has lost eyebrows due to chemotherapy or alopecia, this procedure may represent a return to a normal appearance, a reduction in psychological discomfort, and an improvement in self-esteem.

At present, studies specifically evaluating psychoemotional outcomes of permanent eyebrow correction in patients after chemotherapy or with alopecia are almost absent. Research exists on dermatologic toxicity of chemotherapy and on psychosocial adaptation of patients with visible skin changes. It is well established that alterations in appearance affect quality of life. However, data on how permanent eyebrow makeup influences self-esteem and psychoemotional state in these patient groups remain limited.

The aim of this study is to analyze existing literature on dermatologic side effects of chemotherapy, psychosocial aspects of life in patients with visible changes in appearance, and on this basis to substantiate the potential significance of permanent eyebrow correction as a method of psychoemotional rehabilitation for patients experiencing eyebrow loss of various origins.

MATERIALS AND METHODS

A literature analysis was conducted focusing on dermatologic toxicities associated with anticancer therapy, psychosocial adaptation of patients with visible skin changes, and quality of life in oncology patients. The search was performed in the PubMed, Google Scholar, and Scopus databases using the following keywords: chemotherapy-induced alopecia, eyebrow loss, dermatological toxicity cancer therapy, quality of life cancer patients, psychosocial adaptation skin disease, permanent makeup, medical tattooing.

Inclusion criteria comprised studies published in English between 2000 and 2020 addressing dermatologic side effects of chemotherapy and targeted therapy, psychological aspects of life in patients with visible changes in appearance, and quality of life in oncology patients.

Exclusion criteria included publications without original data (such as letters to the editor and commentaries), animal studies, and publications in languages other than English.

DISCUSSION

Dermatologic adverse effects of anticancer therapy are common rather than exceptional. In a prospective study, Hackbarth and colleagues (2008) reported that dermatologic toxicity occurred in a substantial proportion of women receiving chemotherapy for oncological diseases. Notably, the frequency of these adverse effects was higher than expected, and, critically, they had a direct impact on patients' quality of life. These manifestations therefore represent not merely cosmetic defects but a genuine reduction in well-being.

Boone and colleagues (2008), through patient surveys, demonstrated that management of skin toxicity associated with anti-EGFR therapy presents a significant clinical challenge. Patients frequently report acneiform eruptions, xerosis, nail changes, and hair loss. Although physicians employ various strategies to control these symptoms, no universal solution has been identified. Jacot and colleagues (2004) described acneiform eruptions induced by EGFR inhibitors in detail, noting that they occur in the majority of treated patients and cause considerable discomfort.

Lacouture (2006) examined the molecular mechanisms of cutaneous toxicity associated with EGFR inhibitors. EGFR plays an important role in normal skin physiology, and its inhibition disrupts keratinocyte proliferation and differentiation, leading to various dermatologic manifestations. Understanding these mechanisms does not eliminate the problem; adverse effects persist, and patients must cope with them.

Hair loss, including loss of eyebrows and eyelashes, represents a visible alteration in appearance. Zhang and colleagues (2019), in a review of psychosocial adaptation in patients with skin diseases, found that visible changes affecting the skin and its appendages have a far greater impact on self-esteem, social functioning, and psychological state than invisible medical conditions. While internal diseases may remain unnoticed by others, absence of eyebrows is immediately apparent. The face is constantly visible, and such changes are difficult to conceal.

Eyebrows serve not only a protective function by preventing sweat from entering the eyes; they are also essential for facial expression, emotional communication, and facial recognition. A face without eyebrows may be perceived as unusual or expressionless. Patients after chemotherapy often report that they look in the mirror and do not recognize themselves. Daily attempts to draw eyebrows with pencils or shadows become efforts to restore a semblance of normal appearance. However, drawn eyebrows frequently appear unnatural and tend to fade during the day due to heat, physical activity, or contact.

McDaniel and colleagues (2019) investigated the social determinants of cancer incidence and mortality. Social context influences how individuals experience illness and its consequences. In cultures where physical appearance carries

particular importance, eyebrow loss may be experienced as especially distressing. Women often suffer more from visible changes in appearance than men, reflecting prevailing social norms, regardless of their fairness.

Patients undergoing chemotherapy face not only eyebrow loss. Bonner and colleagues (2006) described complex dermatologic toxicities associated with combined radiotherapy and chemotherapy for head and neck cancer. Facial skin may be affected by radiation, while chemotherapy contributes to hair loss. As a result, the patient's appearance visibly reflects illness, which is readily noticed by others, making social interactions uncomfortable.

Ky and colleagues (2013) discussed cardiomyopathies associated with anticancer therapy, while Sereno et al. (2008) analyzed cardiac toxicity of antineoplastic agents. Compared with the risk of heart failure, eyebrow loss might appear clinically insignificant. Psychologically, however, it may be more salient for patients. Cardiac dysfunction is not visible to others, whereas absence of eyebrows is immediately apparent.

Metri and colleagues (2013) explored Ayurveda as an approach to managing side effects of chemo-radiotherapy. This reflects the broader tendency of patients to seek any means of alleviating treatment-related adverse effects. Complementary medicine, alternative approaches, and aesthetic procedures are all employed in attempts to improve quality of life during and after treatment.

Permanent eyebrow correction is a micropigmentation procedure in which pigment is implanted into the upper layers of the dermis using a specialized needle. Depending on the technique, the procedure may create the visual effect of individual eyebrow hairs or provide uniform shading to define the eyebrow shape. It is minimally invasive, typically performed under topical anesthetic cream, and takes approximately one to two hours. Results usually last from one to three years, depending on skin type, lifestyle, and aftercare.

For patients with alopecia, in whom eyebrow regrowth may never occur, permanent correction can serve as a long-term solution. For patients after chemotherapy, the situation is less predictable. Eyebrows may regrow after treatment, may fail to regrow, or may return partially, unevenly, or with altered pigmentation. The timing of regrowth is uncertain and may range from several months to a year or longer. Some patients prefer not to wait, and permanent correction offers an immediate aesthetic result.

The psychological impact of eyebrow restoration may be substantial. Patients may look in the mirror and see themselves resembling their pre-illness appearance. Daily efforts to draw eyebrows are no longer required, and concerns about makeup fading at inappropriate moments are reduced. Properly performed micropigmentation can produce natural-looking, symmetrical eyebrows that remain stable under various conditions.

Zhang and colleagues (2019) emphasized in their review that psychosocial adaptation of patients with visible changes in appearance requires a comprehensive approach. Medical treatment of the primary disease alone is insufficient; psychological support is also necessary, as well as aesthetic interventions that help restore appearance. Permanent eyebrow correction may represent one such intervention.

However, at present, there are virtually no studies that quantitatively evaluate the psychoemotional effects of permanent eyebrow makeup in patients after chemotherapy or in those with alopecia. Most publications on permanent makeup appear in cosmetology journals rather than medical journals. Methodological rigor is often limited, control groups are frequently absent, and outcome assessment is largely subjective.

Drobin and colleagues (2020) investigated molecular profiling predictors of radiosensitivity. Modern oncology is moving toward personalized therapy and a deeper understanding of individual risks. Yet a personalized approach is needed not only in the selection of anticancer drugs but also in rehabilitation, management of treatment-related side effects, and restoration of quality of life after therapy.

For some patients, eyebrow loss represents a profound disruption that undermines self-esteem and social functioning; for others, it is an inconvenience that can be tolerated. No universal approach exists. Nevertheless, the option of restoring eyebrows through permanent correction should be available to those for whom it is meaningful.

The limitations of this analysis are evident. No specific studies on permanent eyebrow correction in oncology patients or individuals with alopecia were identified in the available literature. The present analysis relies on extrapolation from data on dermatologic toxicity of chemotherapy, psychosocial adaptation in patients with visible skin changes, and general principles regarding the impact of visible appearance-related defects on self-esteem. Direct evidence of the effectiveness of this method in improving psychoemotional outcomes in the target patient groups is lacking.

Prospective studies with validated questionnaires - that's what's missing right now. You need measurements before the procedure, measurements after, long enough follow-up to see if effects last. Control groups of patients who lost their eyebrows but didn't get permanent makeup - otherwise you're just guessing about causality. Technique standardization matters too because right now everyone does it differently, patient selection criteria vary wildly, nobody agrees on how to measure outcomes properly.

Risks aren't theoretical for post-chemo patients. Their immune systems took a beating. Skin heals slower, reacts unpredictably, infections happen easier. Micropigmentation breaks the skin barrier - needles going in, pigment staying there. That's an infection waiting to happen if protocols

aren't tight. You need clear safety rules, you need to know which patients can handle this and which can't, you need to watch for complications actively not just hope everything goes fine.

Allergic reactions to pigments happen. Keloids form in some people. Patient hates the result and now it's semi-permanent on their face. Someone who already went through hell with cancer treatment doesn't need more problems from an aesthetic procedure. Risk-benefit has to be calculated individually every single time, not as a blanket recommendation.

CONCLUSION

Literature review shows dermatologic side effects from cancer treatment hit often and hit hard on quality of life. Eyebrow loss included. Visible changes mess with how people adapt socially, how they see themselves, how they function around others. Losing eyebrows isn't just "oh I look different" - it's walking around with a visible marker that screams "I'm sick" to everyone who looks at you.

Permanent eyebrow micropigmentation could theoretically help with psychoemotional recovery for people who lost eyebrows from chemo or alopecia. Makes eyebrows look normal again, kills the daily ritual of drawing them on with makeup, might boost how people feel about themselves. That's the theory anyway.

Reality check - we don't actually have solid evidence this works for improving mental and emotional outcomes in these specific patient groups. Nobody's done proper studies measuring self-esteem and quality of life before and after permanent eyebrow correction in chemo patients or alopecia patients. The research just isn't there.

What's needed? Prospective controlled trials with validated questionnaires that actually measure psychological outcomes properly. Standardized techniques so everyone's doing the procedure the same way. Clear criteria for who should get it and who shouldn't. Safety protocols that account for compromised immune systems and fragile skin post-chemo. Tracking complications systematically instead of crossing fingers and hoping nothing goes wrong.

If future research proves this actually works and is safe, then permanent eyebrow correction becomes a legitimate option for aesthetic rehab. For patients who lost eyebrows and want them back, who want to look normal again, who think this might help them feel better about themselves - it could be worth considering. But right now we're operating on assumptions, not evidence.

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