Original article

Role of Body Image, Personality Traits, and Affective Temperaments in Filler Complications in Aesthetic Medicine in a female population

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Abstract. *Background:* Psychiatric disorders are frequently reported in patients requesting aesthetic treatments and the presence of psychopathological conditions can worsen aesthetic outcomes as well as psychiatric symptoms. *Aim:* Evaluating the correlation between the development of filler complications and the presence of body image distortions or specific personality traits or certain affective temperaments. *Methods:* Correlational analysis was performed in 19 women, using the Body Uneasiness Test (BUT), the Personality Inventory for DSM-5 (PID-5), and the Temperament Evaluation of Memphis, Pisa, Paris, and San Diego auto-questionnaire version (TEMPS-A). *Results:* Patients with filler complications had higher scores in Depersonalization dimension of the BUT-A, "Cyclothymic and Hyperthymic" affective temperaments, and "Negative Affectivity" domain facet of the PID-5. Moreover, it emerged that the Depressive temperament correlates with Weight Phobia ($r = .581$; $p < 0.01$) and Body Image Concerns ($r = .467$; $p < 0.05$); the Irritable temperament correlates with the "Antagonism" domain ($r = .597$; $p < 0.01$), while the anxious temperament correlates with the "Compulsive Self-Monitoring" ($r = .508$; $p < 0.05$). The "Negative Affectivity" domain of the PID-5 positively correlates with the dimensions of the BUT: "Weight Phobia" ($r = .544$; $p < 0.05$), "Avoidance" ($r = .530$; $p < 0.05$), and "Compulsive Self-Monitoring" ($r = .509$; $p < 0.05$). *Conclusions:* Given the correlation between filler complications and these psychopathological characteristics, it is worth to administer a pre-treatment assessment to recognize them. This could improve the professional-patient relationship and reduce filler complications, avoiding the worsening of psychiatric symptoms and obtaining a better prognosis.

Key words: dermal filler, complications, temperaments, personality, body image

Introduction

In recent years, the demand for medical-aesthetic procedures has increased in Italy. In 2020, as reported by the Italian Association of Aesthetic Plastic Surgery (AICPE), a total of approximately 830,868 aesthetic procedures were performed, with a 5.7% increase in non-surgical procedures. Botulinum toxin and hyaluronic acid-based fillers hold the top spot among non-invasive practices, followed by facial peels, especially in the 35-50 age group[1]. The most commonly used fillers in aesthetic medicine are composed of cross-linked

hyaluronic acid and play a key role in correcting facial defects associated with aging, such as wrinkles, folds, and volume restoration, to give a more youthful and harmonious appearance[2].

However, these treatments do not guarantee the absence of potential complications. The incidence of filler complications is probably underestimated due to a lack of reports by physicians. A study conducted by Giacomuzzi et al. on 572 patients treated with fillers from 2016 to 2020 reveals that the most common complications are edema (49%), nodules (42%), and fibrosis (1%)[3]. Other potential complications include infections, erythema, pain, and numbness[4]. The most difficult complications to treat occur especially in patients who have previously undergone permanent fillers[5].

The current literature classifies complications based on the time of onset, dividing them into: immediate, early, and late[2]:

- Immediate complications (within 24 hours) could be bruising or hematoma, swelling, erythema, reactivation of herpes infection, bacterial infection, product accumulation nodules, pain, immediate Type I allergic reaction, paresthesia, Type I hypersensitivity, Tyndall effect, incorrect filler placement, vascular complications. These are usually the easiest to manage, except for vascular complications, which represent an absolute emergency and may involve significant therapeutic challenges.
- Early complications (within 4 weeks) could be nodules from misplacement or displacement of the filler, hematomas, reactivation of herpes infection, bacterial infection, Type IV hypersensitivity, Tyndall effect, misplacement of the filler, paresthesia.
- Late complications (after 4 weeks) could be non-inflammatory (see early complications) or inflammatory nodules, either single or multifocal (including granulomas), resulting from late bacterial infections, generally mediated by biofilm, infections from atypical mycobacteria, cyclical inflammatory edema, Tyndall effect.

The most feared complications are the vascular ones, occurring because of accidental direct injection of the filler into a vessel, causing an embolization in surrounding territories or a compression of the vessel. They generally manifest as an initial blanching (corresponding to the ischemic area) and burning pain reported by the patient. After 12-24 hours to 2-3 days post-treatment, livedo reticularis may appear, a dermatological condition characterized by a violaceous or reddish-blue net pattern caused by a generalized reduction in blood flow. The evolution progresses with the formation of clear vesicles, eventually leading to true necrosis around 6-7 days later. Necrosis undergoes a healing process by secondary intention, lasting several weeks, which results in significant scarring.

Therapy includes the use of hyaluronidase to dissolve the vessels obstruction or compression. Following an infiltration of hyaluronidase, a vigorous massage is performed, and the patient remains under clinical observation due to the risk of mild allergic reactions up to anaphylactic shock. In the case of edema in the affected area, the patient is treated with corticosteroids and antihistamines and monitored until the complete resolution of the condition (Figure 1).

Nodules can be distinguished as inflammatory and non-inflammatory, resulting from product accumulation. The treatment consists in corticosteroids, antibiotics, and hyaluronidase. Anti-edema agents and NSAIDs can also be combined[2] (Figure 2).

Figure 1. Compromise of the supraorbital artery and/or vein. Courtesy of Dr. G. Trocchi.

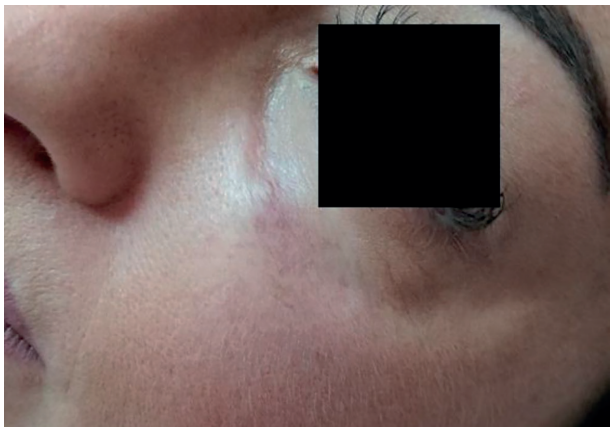

Figure 2. Late nodule in the tear trough.

Subjective, psychosocial, and emotional factors in the field of aesthetic medicine can play a decisive role in the request for corrective interventions[4], and sometimes these requests may be driven by an undiagnosed psychological disorder[6], such as anxiety, depression, or body dysmorphic disorder (BDD)[6,7]. Psychiatric disorders are not always considered a contraindication for aesthetic procedures, even though, given the high incidence of subsequent complications and patient dissatisfaction[8,9], the physician musts pay attention to the signs and symptoms of these disorders[10]. Some studies have also concluded that performing aesthetic procedures in psychiatric population does not generally improve BDD symptoms[11] and may exacerbate symptoms[12] or trigger other exaggerated body concerns[13].

Depression, anxiety and BDD are closely related not only to a distorted perception of one's body image, described by Paul Schilder in 1935 as "the image and appearance of the human body that we form in our minds, i.e., the way our body appears to us," 7 but also to affective temperament, which is a manifestation stemming from a genetic-constitutional substrate, stable throughout life and correlated to personality traits, playing a fundamental role in the predisposition to mood disorders and anxiety disorders[14,15].

BDD is a psychiatric disorder classified among obsessive-compulsive disorders, characterized by an excessive concern around physical appearance, marked by an intense focus on one or more aesthetic defects that are either not noticeable to others, or are only slightly visible. This perceptual distortion leads to intrusive thoughts and repetitive behaviors that are difficult to control, causing significant distress and affecting various aspects of daily life. Studies show that the prevalence of BDD in the general population ranges[16] from 1% to 3%, up to 5%-15% in individuals seeking aesthetic treatments or plastic surgery. Evidence suggests that patients with more severe symptoms of BDD tend to be less satisfied with the results of aesthetic surgery and present higher levels of psychological symptoms and lower self-esteem compared to those with less severe forms of the disorder[17].

Given the evidence that aesthetic surgical procedures in patients with psychiatric disorders - particularly body dysmorphic disorder (BDD) - are associated with poorer outcomes and sometimes irreversible consequences, it is important to further investigate complication rates in this patient group following filler treatments, even within the field of aesthetic medicine. On the other hand, research has insufficiently studied the possible influence of temperamental and personality traits on the demand for aesthetic medicine treatments and in particular on the development of complications from fillers.

Aims of the study

In light of the demonstrated association between psychiatric disorders and complications in plastic surgery, it is plausible that a similar relationship could exist with complications in aesthetic medicine. The primary objective of this study, in fact, is to specifically evaluate the correlation between the development of complications from fillers and the presence of alterations in body image, specific personality traits, or certain affective temperaments.

Materials and Methods

The study was conducted at the Filler Complication Clinic of the Isola Tiberina Hospital – Gemelli Isola, in collaboration with the Psychiatry Unit of the University Hospital "G. Martino" of Messina. Nineteen female subjects over 18 years of age who

experienced complications following filler treatments were recruited. These subjects were informed about the study's objectives and asked to participate after signing an informed consent form. They were then subjected to detailed medical history and psychodiagnostic tests to assess body image disorders, affective temperament, and personality traits. Ethical approval for this study was obtained from the Lazio Ethical Committee "Comitato Etico Territoriale Lazio Area 3 (N. Prot. 6765)".

The psychodiagnostic evaluation included the administration of the following tools:

Body uneasiness test

The Body Uneasiness Test (BUT) is a self-administered survey that assesses one's body dissatisfaction. It consists of 71 multiple-choice items, divided into two sections: Section A contains 34 clinical items, while Section B includes 37 items related to different parts of the body. Section A is divided into five dimensions: Weight Phobia (WP), Body Image Concern (BIC), Avoidance (A), Compulsive Self-Control (CSM) and Depersonalization (D). Consistency was good with all subscales with a Cronbach's alpha greater than 0.8[18]. Only the clinical part (BUT-A) of the instrument was used in the study.

Temperament Evaluation of Memphis, Pisa, Paris, and San Diego auto-questionnaire version (TEMPS-A)

The Memphis, Pisa, Paris, and San Diego Temperament Assessment - Self-Questionnaire (TEMPS-A), in its short version, is a self-administered questionnaire that, in its abbreviated form, includes 39 items compared to 110 in the original extended version. The responses to all items are dichotomous ("yes" or "no"). This scale is divided into five subscales: cyclothymic (items 1-12), depressive (items 13-20), irritable (items 21-28), hyperthymic (items 29-36), and anxious (items 37-39).

Furthermore, the validation of the Italian version reaffirmed its effectiveness as a valid instrument for measuring affective temperament (Cronbach's coefficient = 0.86)[19].

Personality Inventory for DSM-5 (PID-5-BF)

The Personality Inventory for DSM-5 (PID-5) is a self-report questionnaire that assesses personality traits in individuals over the age of 18 years, consisting of 25 items in five domains: Negative Affectivity, Detachment, Antagonism, Disinhibition and Psychoticism. Each domain consists of five traits that analyze individual differences and psychopathological characteristics of the individual such as emotional instability, impulsivity, social withdrawal, hostility and unusual perceptions.Cronbach's alpha values were >.70 for all PID-5 facet scales and greater than .90 for all PID-5 domain scales[20].

The DSM-5 provides diagnostic criteria for six specific personality disorders: antisocial, avoidant, borderline, narcissistic, obsessive-compulsive, and schizotypal. Additionally, it includes the personality disorder with a specific trait, which applies when the disorder is present but does not meet the criteria for any of the other disorders[21].

Statistical analysis

The data were entered into a database, and the results were processed anonymously by the research team of the Psychiatry Unit of the "G. Martino" University Hospital of Messina to evaluate the correlation between psychiatric disorders and filler complications, according to the study's objectives. Means and standard deviations were analyzed, followed by correlations between the various variables examined. A correlational analysis (Spearman correlation) was performed in order to evaluate the association between the Role of Body Image, Personality Traits, and Affective Temperaments in Filler Complications in Aesthetic Medicine. A p value <.05 was considered statistically significant, and statistical analyses were performed with a Statistical Package for the Social Sciences – SPSS 25 software (SPSS Inc, Chicago, IL, USA).

Table 1. Descriptive statistical analyses of the psychometric instruments.

BUT -A	**M.**	**S.D**
Weight Phobia	1,71	1,10
Concerns About Body Image	1,47	1,09
Avoidance Behaviors	0,72	0,76
Compulsive Control of Body Image	1,45	1,00
Depersonalization	2,84	2,89
TEMPS-A		
Cyclothymic	4,16	3,042
Depressive	2,37	2,114
Irritable	1,11	1,524
Hyperthymic	4,53	2,144
Anxious	1,53	1,073
PID-5		
Negative Affectivity	**1,23**	0,623
Detachment	0,78	0,346
Antagonism	0,38	0,405
Disinhibition	0,72	0,459
Psychoticism	0,51	0,454

Results

The 19 subjects involved in the study were all female, most had a bachelor's degree (68.4%) and were working (47.4%). From the descriptive analysis expressed through Means and Standard Deviations, it emerged that patients with filler complications had higher scores in the Depersonalization dimension of the BUT- A, the "Cyclothymic and Hyperthymic" affective temperaments, and the "Negative Affectivity" domain facet of the PID-5 (Table 1). Subsequently, a non-parametric analysis was conducted to evaluate possible direct or indirect effects between the variables examined. From the correlational analysis it emerged that the Depressive temperament correlates with Weight Phobia ($r = .581$; $p < 0.01$) and Body Image Concerns ($r = .467$; $p < 0.05$); the Irritable temperament correlates with the "Antagonism" domain ($r = .597$; $p < 0.01$), while the anxious temperament correlates with the "Compulsive Self-Monitoring" ($r = .508$; $p < 0.05$). Moreover, the "Negative Affectivity" domain of the PID-5 positively correlates with the dimensions of the BUT: "Weight Phobia" ($r = .544$; $p < 0.05$), "Avoidance" ($r = .530$; $p < 0.05$), and "Compulsive Self-Monitoring" ($r = .509$; $p < 0.05$) (Table 2).

Discussion

The results of this study reveal several important findings regarding the psychological characteristics of patients who experience complications from fillers. Most of patients showed higher scores in the depersonalization dimension, which reflects a persistent or recurring feeling of disconnection from their own body or mental processes, as though observing their life from the outside. This sense of depersonalization might indicate a deeper emotional and psychological disconnection that could influence their perception of physical alterations, contributing to complications in aesthetic procedures. On the other hand, although very few studies in the literature have investigated depersonalization in medical or surgical treatments with aesthetic purposes, one study has reported a decrease in the depersonalization subscale of the BUT in patients with gender dysphoria who underwent F-to-M transition with chest wall reconstruction. This finding may suggest a defensive psychic detachment occurring in patients who do not identify with their body image, regardless of whether the treatment has a beneficial effect on depersonalization[22].

Additionally, cyclothymic and hyperthymic temperaments were prevalent among the patients. The cyclothymic temperament is characterized by mood fluctuations, ranging from elevated or irritable moods to depressive states, unstable productivity, disinhibited relationships, poor consideration of consequences, and fluctuating self-esteem [23,24]. On the other hand, the hyperthymic temperament is associated with exuberant and energetic traits, high self-esteem, expansiveness, boundless energy, and a strong propensity for risk-taking. Both temperaments suggest underlying emotional instability that could exacerbate reactions to aesthetic treatments and be on the base of the development of complications. However, it is not currently possible to make a comparison with the state of the art.

When examining personality traits, the most prominent feature observed in the study was negative

Table 2. Spearman correlations between the variables examined (BUT-A, TEMPS-A and PID-5).

Spearman's correlations															
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
	Weight Phobia (1)	1														
	Body Image Concerns (2)	,710**	1													
	Avoidance (3)	,695**	,698**	1												
	Compulsive Self-Monitoring (4)	,877**	,814**	,600**	1											
	Depersonalization (5)	,630**	,676**	,515*	,590**	1										
	Cyclothymic (6)	,347	,400	,246	,369	**,469***	1									
	Depressive (7)	**,581****	**,467***	,425	,437	,431	,512*	1								
	Irritable (8)	,179	-,205	-,169	-,015	-,106	,042	,196	1							
	Hyperthymic (9)	,110	,288	,089	,209	,246	,423	-,063	-,061	1						
	Anxious (10)	,343	,262	,248	**,508***	,162	,561*	,082	,118	,161	1					
	Negative Affectivity (11)	**,544***	,454	**,530***	**,509***	,228	,303	,446	,055	-,038	,448	1				
	Detachment (12)	,377	,367	,311	,290	,251	,122	-,187	,091	,141	,123	,251	1			
	Antagonism (13)	,138	-,030	-,011	,093	-,023	,036	,055	**,597****	-,194	,248	,126	,147	1		
	Disinhibition (14)	,124	,248	,015	,073	-,011	,288	,298	,156	-,090	,215	,263	,261	,128	1	
	Psychoticism (15)	,004	,031	-,037	-,031	-,128	,365	-,014	,387	,115	,541*	,366	,293	,134	,670**	1

* Correlation is significant at the 0.05 level (2-tailed); at the 0.01 level (2-tailed). ** Correlation is significant.

affectivity, characterized by a tendency to experience intense and frequent feelings of discomfort, anxiety, sadness, and despair[25]. This trait is closely tied to the challenges faced by patients when coping with aesthetic procedures and could contribute to their complications.

Furthermore, significant correlations emerged between the depressive temperament (marked by persistent sadness, low energy, hypersomnia, low self-esteem, and a pessimistic outlook) and concerns regarding body image and weight phobia. The anxious temperament, which involves emotional hypersensitivity, excessive shyness, somatic manifestations of anxiety, and constant vigilance, correlated with psychoticism (presence of unconventional thoughts and behaviors, perceived as eccentric or strange by the broader culture). Scientific literature demonstrates that patients with body dysmorphic disorder (BDD) and comorbid anxiety or depressive disorders exhibit more severe dysmorphic symptoms. This finding supports the possibility that BDD patients with personality traits characterized by negative affectivity or an anxious or depressive temperament may be more prone to developing complications from fillers due to a poorer ability to adapt to the treatment[26].

Another significant finding was the association between negative affectivity and weight phobia, avoidance behaviors, and compulsive control over body image. These factors seem to reflect common coping mechanisms seen in patients with anxiety disorders, where avoidance and obsessive behaviors arise as protective responses to feared situations or self-perception issues.

Finally, the irritable temperament, typical of individuals with dysphoric restlessness, dissatisfaction, tendency to ruminate, verbal aggression, hypercritical tendencies, and difficulty with interpersonal relationships, correlated with the Antagonism domain. This domain reflects behaviors that conflict with others, a lack of awareness of others' needs and feelings, and a tendency to exploit others for personal goals.

Conclusions

The results suggest that patients who experience complications from fillers are more likely to have excessive concerns about their body image, such as a fear of gaining weight and avoidance behaviors. Additionally, these patients tend to exhibit emotional instability and self-esteem fluctuations, which are characteristic of certain affective temperaments like cyclothymic and hyperthymic. Personality traits associated with negative affectivity, such as frequent and intense experiences of discomfort, anxiety, sadness, and despair, were also prevalent.

In the field of aesthetic medicine, psychosocial, and emotional factors can significantly influence the demand for corrective procedures. Sometimes, these requests stem from an undiagnosed psychological disorder. Given the correlation between complications and these psychological characteristics, it would be beneficial to administer the validated questionnaires used in this study as part of the pre-treatment assessment. This would help identify any signs of psychological distress, enabling more effective intervention, improving prognosis, and reducing the likelihood of complications, dissatisfaction, and worsening psychiatric symptoms. Early identification of these psychological issues can also help prevent legal problems and ensure more positive treatment outcomes.

Limitations

This study has some limitations: the sample consists of only women, which limits the generalizability of the results to male or nonbinary individuals who may also experience complications from cosmetic medicine procedures. Also, the study used self-reported measures, which may introduce a response bias such as social desirability. However, the study should consider other potential influencing variables, such as prior psychological conditions, or expectations toward aesthetic procedures. Finally, the sample size and recruitment method may limit the representativeness of the results, suggesting the need for larger and more diverse studies to confirm the results.

Conflict of Interest: No authors have any conflicts of interest to declare.

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