Treatment Impact on Quality of Life: Facial Defect Reconstruction after Skin Tumor Resection

Impacto do tratamento na qualidade de vida: Reconstrução de defeitos na face após ressecção tumoral de pele

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Abstract

Facial reconstruction following cutaneous tumor removal requires meticulous evaluation, focusing on both aesthetics and functionality. The loss of facial features directly impacts patients' identity, emphasizing the significance of reconstructive surgeries. Discrepancies in aesthetic standards between surgeons and patients highlight the need to assess the psychosocial impact in the postoperative period.

The present study evaluated the quality of life (QoL) after facial reconstruction using the 36-item Short Form Health Survey (SF-36) in 50 patients, predominantly male. The SF-36 is widely recognized in the assessment of several physical and emotional dimensions and revealed mean scores over 50 across all domains, indicating satisfactory postoperative QoL.

No statistically significant differences were observed between sexes in the SF-36 domains. However, patients with type-2 diabetes mellitus presented impairments in emotional and mental aspects. The findings underscore the importance of addressing such aspects in the perioperative period and suggesting targeted interventions to enhance these patients' QoL.

The present study reinforces the significance of facial reconstruction in improving QoL. Additionally, it emphasizes the need for a holistic approach addressing the physical, emotional, and mental aspects throughout the surgical and recovery process.

Keywords

- neoplasms
- plastic surgery procedures
- psychosocial impact
- quality of life
- surveys and questionnaires

Resumo

A reconstrução facial após a remoção de tumores cutâneos requer uma avaliação criteriosa, com foco tanto na estética quanto na funcionalidade. A perda de características faciais impacta diretamente a identidade dos pacientes, ressaltando a relevância das cirurgias reconstrutivas. Divergências nos padrões estéticos entre cirurgiões

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e pacientes destacam a importância de avaliar o impacto psicossocial no pósoperatório.

Este estudo avaliou a qualidade de vida (QV) após reconstrução facial utilizando o questionário 36-item Short Form Health Survey (SF-36) em 50 pacientes, majoritariamente homens. O SF-36, reconhecido por avaliar múltiplos aspectos físicos e emocionais, revelou pontuações médias superiores a 50 em todos os domínios, indicando QV satisfatória pós-cirurgia.

Não foram observadas diferenças estatisticamente significativas entre os sexos nos domínios do SF-36. Entretanto, pacientes com diabetes mellitus tipo 2 apresentaram comprometimento nos aspectos emocionais e mentais. Os resultados reforçam a necessidade de atenção a esses aspectos durante o período perioperatório, sugerindo intervenções específicas para melhorar a QV desses indivíduos.

O estudo reforça a relevância da reconstrução facial para a melhoria da QV. Além disso, também destaca a necessidade de uma abordagem holística, que contemple não apenas os aspectos físicos, mas também os emocionais e mentais ao longo de todo o processo cirúrgico e de recuperação.

Palavras-chave
- cirurgia plástica
- impacto psicossocial
- inquéritos e questionários
- neoplasias
- qualidade de vida

Introduction

The reconstruction of defects resulting from facial skin tumor excision requires a careful prior assessment of the patient and the defect itself. The ideal outcome is the best potential form and function with the lowest morbidity.

The loss of facial structure affects self-perception, and the subject's identity often requires restoration. Psychological well-being and social function in everyday life are the most significant parameters in the quality of life (QoL) of each person.[1]

As such, facial reconstruction surgeries play fundamental functional and social roles in the patient's life. However, the surgeon's perception of beauty standards may not be consistent with the patients' due to geographical and social contexts. Therefore, it is fundamental to assess the degree of postoperative satisfaction, including its demographic, physical, and psychological determinants. According to Alanko et al., a harmonious face is commonly associated with intelligence, better interpersonal relationships, and a higher social status.[2]

Several factors, both intrinsic and extrinsic to the patient, influence the reconstruction procedure. This study aimed to comprehensively evaluate this impact, considering the QoL and changes in facial physiognomy for a more complete analysis.

The standardized 36-item Short Form Health Survey (SF-36) is a critical tool for QoL assessment. The volume of references available in bibliographic databases and the growing number of validation studies in different countries and cultural contexts demonstrate its scope in population surveys and studies evaluating public policies and the health status of patients.[3]

This tool aims to detect clinically and socially relevant differences in the health status of the general population and people affected by some diseases. It also identifies health changes over time as a reduced number of statistically efficient dimensions.

Objective

The current study aimed to evaluate the impact of treatment on the QoL of patients undergoing surgical skin tumor resection and facial reconstruction using the SF-36. This tool enables an objective outcome analysis, eliminating potential biases from the surgeon's perception.

Materials and Methods

This research study applied the SF-36 to patients who underwent facial defect reconstruction after skin tumor resection from January 2022 to December 2022 at the Integrated Plastic Surgery Services of Hospital Ipiranga (Serviços Integrados de Cirurgia Plástica do Hospital Ipiranga, SICPHI, in Portuguese). We conducted in-person interviews with 50 volunteer patients aged 28 to 100 (mean: $= 70.13 \pm 13.68$) years. Among them, 14 were female (28%) and 36 were male (72%) subjects. All patients signed the informed consent form (ICF) and received information on the objectives, the significance of the study, and the potential results. The Ethics in Research Committee of Hospital Ipiranga approved this study.

The inclusion criteria consisted of patients from both sexes, with no age limit, in the American Society of Anesthesiologists (ASA) II classification undergoing elective facial defect reconstruction surgeries with confirmed tumor-free margins at paraffin embedding slides. All surgeries occurred with a standardized local anesthetic solution (lidocaine 2% without vasoconstrictor, 20 mL + saline solution 0.9%, 60 mL + 1 epinephrine vial) at SICPHI. Postoperative outpatient follow-up occurred in 48 hours, 7

Table 1 Demographic characteristics

Sex		n	%
Male		14	28
Female		36	72
SAH			
Yes		33	66
No		15	30
Not informed		2	4
T2DM			
Yes		28	56
No		20	40
Not informed		2	4

Abbreviations: SAH, systemic arterial hypertension; T2DM, type-2 diabetes mellitus.

and 15 days, 1, 3, and 6 months, as well as 1 year after surgery.

We excluded subjects with cognitive impairment or who did not understand how to read and interpret the SF-36.

The SF-36 is a multidimensional QOL instrument developed in 1992 by Ware and Sherbourne and validated in Brazil by Ciconelli.[3] It consists of 36 items divided into 8 sections: functional capacity (10 items), physical aspects (4 items), pain (2 items), general health status (5 items), vitality (4 items), social aspects (2 items), emotional aspects (3 items), mental health (5 items), and 1 question for comparative assessment between current health conditions and those from 1 year ago. It assesses negative (illness or disease) and positive health aspects (well-being).

Each SF-36 question receives a score from 0 to 100, in which zero is the worst and 100 is the best health status. The analysis of each dimension occurs separately. Purposefully, no single value summarizes the entire assessment, translating into a better or worse general state of health. As such, the average score avoids the error of not identifying or underestimating the patient's health issues.

The statistical analysis was performed using the IBM SPSS Statistics for Windows (IBM Corp.) software, version 20.0. The descriptive analysis was presented as mean and SD values. The Kolmogorov-Smirnov test indicated a normal data distribution except for the general health perceptions and vitality variables, which presented a distribution similar to a Gaussian curve, allowing the use of parametric tests.

Multivariate analysis of variance (MANOVA) compared mean and standard deviation (SD) values between sexes and SF-36 domains. Pearson correlation coefficient was perfect ($r = 1$), strong ($r > 0.75$), moderate ($r > 0.5$), weak ($r < 0.5$), or nonexistent ($r = 0$). The significance level for the test was 5% ($p < 0.05$).

Table 2 Mean score on each 36-Item Short Form Survey (SF-36) domain

SF-36 domains	Mean	Standard deviation
Functional capacity	67.10	±29.52
Limitation by physical aspects	65.00	±37.46
Pain	71.70	±29.90
General health status	57.40	±19.61
Vitality	64.00	±24.35
Social aspects	75.00	±29.23
Limitation by emotional aspects	38.25	±15.24
Mental health	74.64	±19.80

Results

►**Table 1** presents demographic characteristics. Of the 50 volunteer patients interviewed, 14 (28%) were females, and 36 (72%) were males. The mean age of the sample was of 70.13 ± 13.68 years. All volunteers could answer the questionnaire completely, and there were no withdrawals.

►**Table 2** shows the mean and SD values for each domain of the SF-36 questionnaire. Each domain has a final score from 0 to 100, in which zero corresponds to the worst and 100 to the best general health status.

►**Table 3** compares the mean values between sexes and comorbidities considering the SF-36 questionnaire domains. This comparison showed differences between subjects with and without type-2 diabetes mellitus (T2DM). However, statistical tests indicate that males and females presented similar QoL.

However, since the number of participants did not reach the minimum required for MANOVA, we investigated paired comparisons using the Bonferroni correction, as shown in ►**Table 4**. People with T2DM presented a higher level of limitations due to emotional aspects and lower mental health when compared to those without. Therefore, we can infer that the presence of T2DM correlated with higher health impairment, regarding emotional aspects and mental health.

Additionally, ►**Table 4** shows that men presented higher levels of vitality and mental health than women, indicating that they have more privilege in general health. Finally, women with T2DM presented lower levels of general health and mental health than healthy women and men, indicating that this group was the most affected among those studied here.

►**Table 5** presents the correlation among the SF-36 domains. The comparison between the functional capacity domain had statistical significance when correlated with physical aspects, pain, general health status, social aspects, and mental health, with a weak positive linear Pearson correlation. The same occurred for the physical aspects domain and functional capacity, vitality, emotional aspects, and mental health; pain and functional capacity, vitality,

Table 3 Sex comparison regarding the 36-Item Short Form Survey (SF-36) domains

	Wilk's λ	F	df	*p*	η^2
SAH	0.895	0.513	8;35	0.839	0.105
T2DM	**0.627**	**2.606**	**8;35**	**0.024**	**0.373**
Sex	0.830	0.894	8;35	0.532	0.170
SAH*T2DM	0.917	0.397	8;35	0.915	0.083
SAH*Sex	0.727	1.644	8;35	0.148	0.273
T2DM*Sex	0.753	1.437	8;35	0.216	0.247
SAH*T2DM*Sex	1.000	0.000	0.0;38.5	1.000	0.000

Abbreviations: SAH, systemic arterial hypertension; SAH*T2DM*Sex, SAH *T2DM *Sex; T2DM, type-2 diabetes mellitus.

Table 4 Univariate model results (ANOVA)

		I-J	*p*-value
	T2DM	T2DM – no T2DM	
	Limitation by emotional aspects	15.625	< 0.001
	Mental health	−14.514	< 0.001
	Sex	**Male – Female**	
	Vitality	21.489	0.007
	Mental health	17.976	0.003
	T2DM*Sex		
	General health status	Healthy females – Females with T2DM	
		32.083	0.012
	General health status	Healthy males – Females with T2DM	
		23.893	0.028
	Mental health	Healthy females – Females with T2DM	
		27.667	0.029
	Mental health	Healthy males – Females with T2DM	
		33.571	< 0.001

Abbreviations: ANOVA, analysis of variance; T2DM, type-2 diabetes mellitus.

Table 5 Correlation among the 36-Item Short Form Survey (SF-36) domains

	1	2	3	4	5	6	7	8	9
1	–								
2	−0.457*	–							
3	−0.270	0.498*	–						
4	−0.278	0.538*	0.306*	–					
5	−0.183	0.614*	0.333*	0.501*	–				
6	−0.171	0.644*	0.451*	0.595*	0.655*	–			
7	−0.138	0.620*	0.537*	0.539*	0.486*	0.494*	–		
8	−0.173	0.574*	0.534*	0.543*	0.503*	0.586*	0.543*	–	
9	−0.264	0.505*	0.220	0.541*	0.628*	0.598*	0.460*	0.508*	–

Notes: Pearson correlation (r), with 1 being perfect; > 0.75, strong; > 0.5, moderate; < 0.5, weak; and 0, non-existent. With *p*-values < 0.05 being significative. 1: Functional capacity; 2: limitation by physical aspects; 3: pain; 4: general health status; 5: vitality; 6: social aspects; 7: limitation by emotional aspects; 8: mental health; 9. current health status compared to 1-year ago; * not significant.

social aspects, and mental health; general health status and functional capacity, vitality, social aspects, and mental health; vitality and physical aspects, pain, general health status, social aspects, and emotional aspects; social aspects and functional capacity, pain, general health status, vitality, and mental health; emotional aspects and physical aspects; and mental health domain and functional capacity, physical aspects, pain, general health status, vitality, and social aspects.

The pain and emotional domains and the social and emotional domains presented statistically significant differences and weak negative or inverse linear Pearson correlation.

Discussion

Patient satisfaction with their facial appearance is a critical outcome criterion for assessing the effectiveness of the reconstructive procedure. Although previously considered a "soft indicator," patient satisfaction evaluation has become an integral part of healthcare quality management. Patients' self-perception of satisfaction with their postoperative facial appearance must be a fundamental criterion for success.[4,5]

For instance, QoL can relate to the idea of health, professional achievement, happiness, self-esteem, and self-acceptance. In search of a better definition, medicine no longer considers disease as symptom control or reduced mortality, but as psychology and aesthetics, often aiming at acceptance of one's image.[6]

In plastic surgery, an unexpected outcome frequently results in irrevocable regrets. Therefore, surgeons must assess expectations and know how to distinguish the reasons leading a patient to their office since erroneous interpretations can lead to distress on both sides and even legal disputes.[7]

This study revealed that, on average, participants who underwent surgical skin tumor resection and facial reconstruction scored higher than 50 in all SF-36 quality-of-life questionnaire domains. These results indicate that their postoperative QoL is not below the expected average. Furthermore, male participants demonstrated slightly higher performance than females in functional capacity, pain, social, and emotional aspects, but without statistically significant differences ($p > 0.05$).

This study has some limitations. As a retrospective cross-sectional study, it could not establish causal relationships, only associations between variables. Another limitation is the small sample size ($n = 50$), potentially compromising the generalization of the results to larger populations. In addition, the difference in the proportion of male and female participants may have influenced the comparative analysis.

Therefore, future studies with more robust designs, larger samples, and greater variable control are required to corroborate the findings presented here and explore details of the identified associations. Additional investigations can also contribute to deepening knowledge about the factors impacting the QoL of patients undergoing surgical resections and facial reconstructions, expanding the scope of clinical and scientific implications.

Conclusion

Our findings showed no statistically significant differences in SF-36 questionnaire domains comparing men and women undergoing surgical skin tumor resection and facial reconstruction. Additionally, subjects with T2DM presented higher health impairment, particularly regarding limitations in emotional aspects and mental health, than people without the disease. These findings highlight the significance of considering the emotional and mental health of patients with T2DM in the perioperative context, indicating the need for specific interventions to improve their QoL after surgery.

Authors' Contributions

MMR: data collection; analysis, and/or interpretation of data; statistical analysis; conceptualization; study conception and design; project management; investigation; methodology; performance of surgeries and/or experiments; writing – original draft, writing – review & editing; supervision; validation; visualization. SMK: final manuscript approval; supervision. JOGdF: final manuscript approval.

Research Ethics Committee Protocol

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Clinical Trials

None.

Conflict of Interests

The authors have no conflict of interests to declare.

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