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Medical Science

To Cite:
Lachowski F, Lachowska E, Bernecka P, Domańska N, Pruska A, Krasnodębska M, Ogrodowicz JOV, Łopotko A, Czerniewicz J, Pierzchała P, Muroń U, Jabłonowska P, Graczyk M, Jankau J. Factors of aesthetic satisfaction after surgical procedures on facial NMSCs - retrospective survey-based study. *Medical Science* 2025; 29: e40ms3527
doi: https://doi.org/10.54905/disssi.v29i156.e40ms3527

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Peer-Review History
Received: 09 October 2024
Reviewed & Revised: 12/October/2024 to 13/February/2025
Accepted: 17 February 2025
Published: 21 February 2025

Peer-review Method
External peer-review was done through double-blind method.

Medical Science
pISSN 2321–7359; eISSN 2321–7367

DISCOVERY
SCIENTIFIC SOCIETY

Factors of aesthetic satisfaction after surgical procedures on facial NMSCs - retrospective survey-based study

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ABSTRACT

Nonmelanoma skin cancers are the most common malignant tumors. Among them mainly numerous are basal cell carcinoma and squamous cell carcinoma. They are detected by physicians mostly at an early stage, and surgical excision is the main treatment method. Nowadays, when choosing a treatment technique, it pays great attention to the patient needs, appropriate communication, and care for their safety and comfort. In the case of facial skin cancers, the awareness of achieving a satisfactory aesthetic result becomes more important. In our retrospective study, we conducted telephone surveys from patients that undergo surgical NMSC treatment in our clinic, after meeting specific criteria, this group included 631 patients. The questionnaire included four questions related to aesthetic satisfaction. Respondents answered them on a scale of 1-10. The questions concerned overall aesthetic satisfaction, scar visibility, preserved facial symmetry, and willingness to recommend the clinic. In our study, we compared six criteria. Operator experience did not affect on patient satisfaction. Among the surgical methods, the highest satisfaction was related with performing primary closure and the lowest after using a split-thickness graft. Over time, we have noticed a trend of decreasing satisfaction. A higher number of hospitalizations translated into lower patient satisfaction. Using local anesthesia may result in greater patient satisfaction than general anesthesia. The size of the lesion is essential for the final aesthetic effect; most excellent satisfaction concerned small lesions below 10 mm, and the least satisfaction concerned large lesions measuring over 20 mm. Aesthetic satisfaction is currently developing in scientific publications and requires further research and observation.

Keywords: NMSC; aesthetic satisfaction; plastic surgery; survey; facial skin cancer

1. INTRODUCTION

Nonmelanoma skin cancers (NMSC) are the most common malignant tumors, constituting one-third of all recorded cancers, and are characterized by an increasing incidence annually (Kim et al., 2018; Muzic et al., 2017). Among them, the most numerous group is basal cell carcinoma (BCC), which is mainly located on the face and neck and accounts for about 80% of all skin cancers (Demirseren et al., 2014). BCC rarely metastasizes and has low mortality, but in advanced stages it can lead to extensive local tissue damage. Among NMSCs, the second most common cancer is squamous cell carcinoma, consisting of around 20% of skin cancers (Demirseren et al., 2014).

It is a more aggressive cancer, metastasizes more frequently and therefore has a poorer prognosis. The main risk factors from NMSC are sun exposure and ultraviolet B radiation (Demirseren et al., 2014). Majority of NMSCs arise from the epidermis, which makes it easier to detect them at an early stage and perform treatment limited to local therapy. Among the various available methods of NMSC treatment, they are divided into surgical and non-surgical techniques. Surgery is the most effective, the main methods include standard surgical excision, Mohs micrographic surgery, curettage and electrodesiccation (Bath-Hexall et al., 2007; Lansbury et al., 2010). In our article, we studied patients treated with simple surgical excision, which is considered as primarily treatment for most NMSCs (Bath-Hexall et al., 2007; Lansbury et al., 2010).

Thanks to numerous studies, we know today that patient-centered care reduces healthcare costs, improves patient satisfaction, and enhances clinical outcomes (Stewart et al., 2000; Bertakis and Azari, 2011). Patient satisfaction is an essential factor when choosing a treatment method, especially for primarily nonfatal conditions such as NMSC. It later impacts the quality of life, health status, and adherence to medical recommendations (Serup et al., 2006; Renzi et al., 2001; Renzi et al., 2002; Stelfox et al., 2005). When performing surgical procedures on the face, the surgeon should give special attention to the final visual outcome and the associated aesthetic satisfaction of the patient after the treatment. This study aimed to survey satisfaction with the achieved aesthetic outcomes among patients who underwent surgery for NMSC located on the face.

2. METHODS

Using the hospital database system, we selected respectively records of patients who received treatment for facial BCC or SCC at the plastic surgery clinic between 2017-2022. This study investigates six factors: operating surgeon, type of anesthesia, number of clinics visits due to skin cancer, type of surgical treatment used, and size of the lesion. We considered records that has completeness of all six criteria in their medical history. Final database counted 2152 patients selected for a telephone-based survey study. Out of 2152 patients, 631 completed the questionnaire. Data analysis was conducted by our team using IBM SPSS Statistics 29.0.

Questionnaire included four questions: Satisfaction of general aesthetic outcome, preserved symmetry, visibility of the scar and willingness to recommend clinic to friends or family. Patients responded on scale of 1 to 10 for first three questions, and on scale from 1 to 5 on the last one. We divided responses in three groups. Values from 1 to 6 as “not satisfied”, values from 7 to 9 as “satisfied”, value of 10 as “definitely satisfied”. For last question values from 1 to 4 as “not fully satisfied” and value of 5 as “fully satisfied”. For calculating the odds ratio (OR), we divided responses into binary values: Values from 1 to 6 as “no satisfaction”, and values from 7 to 10 as “satisfaction”.

Categorical variables were displayed as frequencies and percentages. In contrast, continuous variables, including ratings of aesthetic attributes, symmetry, scars, and patient recommendations for the clinic, were presented as mean and standard error (mean ± SE). Pearson Chi-square and Fisher exact tests were conducted to evaluate associations between different categorical variables, with significance determined at $\alpha \leq 0.05$. We received approval for this research by an ethics committee, Bioethics Committee for Scientist Research MUG in Poland.

3. RESULTS & DISCUSSION

We collected questionnaires from 631 patients who underwent NMSC treatment in our clinic. In our study, we evaluated six criteria-operator experience, number of hospitalizations, type of treatment used, time since the procedure, initial size of the lesion, and type of anesthesia. Responses on scales of 1-10 and 1-5 are in Table 1 in the form of averages. Qualitative results are in Table 2 and Table 3, and odds ratios are in (Table 4).

Table 1 Results for all four questions presented in the form of arithmetic averages.

Parameter			**Aesthetic**			**Symmetry**			**Scar**			**Recommendation**		
N = 631	**n**	**%n**	**Mean**	**SD**	**SME**	**Mean**	**SME**	**SD**	**Mean**	**SME**	**SD**	**Mean**	**SME**	**SD**
No. of hospitalizations														
1	449	71.2%	8.92	0.09	1.88	8.92	0.09	1.88	8.31	0.10	2.10	4.75	0.04	0.77
2	122	19.3%	8.64	0.18	1.95	8.66	0.18	2.01	8.22	0.19	2.09	4.73	0.07	0.80
3 or more	60	9.5%	8.48	0.29	2.24	8.20	0.29	2.25	7.97	0.29	2.26	4.87	0.06	0.50
Operator														
Resident	231	36.6%	8.92	0.12	1.81	8.92	0.11	1.69	8.23	0.14	2.07	4.75	0.05	0.76
Specialist	400	63.4%	8.77	0.10	2.00	8.75	0.10	2.02	8.28	0.11	2.14	4.76	0.04	0.76
Anaesthesia														
General	34	5.4%	8.26	0.37	2.14	8.12	0.40	2.36	7.59	0.37	2.16	4.71	0.13	0.76
Local	597	94.6%	8.85	0.08	1.92	8.85	0.08	1.87	8.30	0.09	2.10	4.76	0.03	0.76
Time from excision														
0 - 1 years	221	35.0%	9.00	0.11	1.70	8.94	0.11	1.63	8.40	0.13	1.87	4.85	0.04	0.55
2 - 3 years	200	31.7%	8.80	0.14	2.01	8.82	0.14	1.96	8.17	0.15	2.17	4.74	0.06	0.78
4 or more years	210	33.3%	8.66	0.14	2.08	8.67	0.15	2.11	8.19	0.16	2.29	4.69	0.06	0.91
Treatment														
Excision with primary closure	531	84.2%	8.88	0.08	1.93	8.89	0.08	1.86	8.37	0.09	2.01	4.75	0.03	0.78
Intermediate-thickness graft	37	5.9%	8.30	0.30	1.82	8.27	0.35	2.16	7.49	0.39	2.36	4.73	0.13	0.77
Full- thickness graft	63	10.0%	8.62	0.25	1.95	8.43	0.26	2.05	7.76	0.33	2.60	4.83	0.07	0.52
Size														
1 - 10 mm	324	51.3%	8.88	0.10	1.87	8.88	0.10	1.87	8.30	0.11	2.03	4.77	0.04	0.72
11 - 20 mm	225	35.7%	8.87	0.12	1.87	8.94	0.11	1.69	8.36	0.14	2.06	4.76	0.05	0.79
21 mm or more	82	13.0%	8.46	0.26	2.33	8.17	0.27	2.44	7.83	0.28	2.49	4.72	0.09	0.82

Table 2 Results for the question on aesthetic satisfaction and symmetry preserved scar visibility presented numerically and as a percentage.

Parameter	Aesthetic									Symmetry							
N = 631	**n**	**%n**	**Definitely satisfied**		**Satisfied**		**No satisfaction**		**p**	**n**	**%n**	**Definitely satisfied**	**Satisfied**		**No satisfaction**		**p**
No. of hospitalizations																	
1	449	71.2%	274	61.0%	131	29.2%	441	9.8 %	0.123	449	265	59.0%	144	32.1%	40	8.9%	0.019
2	122	19.3%	62	50.8%	42	34.4%	8	14.8%		122	66	54.1%	39	32.0%	7	13.9%	
3 or more	60	9.5 %	29	48.3%	22	36.7%	9	15.0%		60	24	40.0%	24	40.0%	2	20.0%	
Operator																	
Resident	231	36.6%	134	58.0%	76	32.9%	21	9.1 %	0.371	231	130	56.3%	81	35.1%	20	8.7%	0.317
Specialist	400	63.4%	231	57.8%	119	29.8%	50	12.5%		400	225	56.3%	126	31.5%	41	12.3	
Anaesthesia																	
General	34	5.4 %	14	41.2%	15	44.1%	5	14.7%	0.126	34	14	41.2%	13	38.2%	7	20.6%	0.089
Local	597	94.6%	351	58.8%	180	30.2%	66	11.1%		597	341	57,1%	194	32.56 %	62	10.4%	
Time from excision																	
0 – 1 years	221	35.0%	136	61.5%	65	29.4%	20	9.0 %	0.454	221	124	56.1%	78	35.3%	19	8.6%	0.414
2 – 3 years	200	31.7%	117	58.5%	60	30.0%	23	11.5%		200	117	58.5%	57	28.5%	26	13.0%	
4 or more years	210	33.3%	112	53.3%	70	33.3%	28	13.3%		210	114	54.3%	72	34.3%	4	11.4%	
Treatment																	
Excision with primary closure	531	84.2%	318	59.9%	157	29.6%	56	10.5%	0.050	531	338	58.0%	172	32.4%	51	9.6	0.101
Intermediate-thickness graft	37	5.9 %	13	35.1%	18	48.6%	6	16.2%		37	16	43.2%	14	37.8%	7	18.9%	
Full-thickness graft	63	10.0%	34	54.0%	20	31.7%	9	14.3%		63	31	49.2%	21	33.3%	11	17.5%	
Size																	
1 - 10 mm	324	51.3%	189	58.3%	102	31.5%	33	10.2%	0.489	324	193	59.6%	96	29.6%	35	10.8%	0.021
11 – 20 mm	225	35.7%	130	57.8%	71	31.6%	24	10.7%		225	124	55.1%	83	36.9%	18	8.0%	
21 mm or more	82	13.0%	46	56.1%	22	26.8%	4	17.1%		82	38	46.3%	28	34.1%	16	19.5%	

Table 3 Results for the question on scar visibility and willingness to recommend a clinic presented numerically and as a percentage

Parameter			Scar							Recommendation					
N = 631	**n**	**%n**	**Definitely satisfied**		**Satisfied**		**No satisfaction**		**p**	**n**	**Fully satisfied**		**Not fully satisfied**		**p**
No. of hospitalizations															
1	449	71.2%	181	40.3%	198	44.1%	70	15.6%	0.607	449	394	71.0%	55	72.4%	0.628
2	122	19.3%	44	36.1%	60	49.2%	18	14.8%		122	106	19.1%	16	21.1%	

3 or more	60	9.5%	19	31.7%	29	48.3%	12	20.0%		60	55	9.9%	5	6.6%	
Operator															
Resident	231	36.6%	92	39.8%	101	43.7%	38	16.5%	0.795	231	202	36.4%	29	38.2%	0.765
Specialist	400	63.4%	152	38.0%	186	46.5%	62	15.5%		400	353	63.6%	47	61.8%	
Anaesthesia															
General	34	5.4%	8	23.5%	16	47.1%	10	29.4%	0.042	34	29	5.2%	5	6.6%	0.624
Local	597	94.6%	236	39.5%	271	45.4%	90	15.1%		597	526	94.8%	71	93.4%	
Time from excision															
0 - 1 years	221	35.0%	82	37.1%	108	48.9%	31	14.0%	0.617	221	199	35.9%	22	28.9%	0.493
2 - 3 years	200	31.7%	76	38.0%	92	46.0%	32	16.0%		200	174	31.4%	26	34.2%	
4 or more years	210	33.3%	86	41.0%	87	41.4%	37	17.6%		210	182	32.8%	28	36.8%	
Treatment															
Excision with primary closure	531	84.2%	213	40.1%	241	45.4%	77	14.5%	0.036	531	468	84.3%	63	82.9%	0.713
Intermediate-thickness graft	37	5.9%	7	18.9%	22	59.5%	8	21.6%		37	31	5.6%	6	7.9%	
Full-thickness graft	63	10.0%	24	38.1%	24	38.1%	15	23.8%		63	56	10.1%	7	9.2%	
Size															
1 - 10 mm	324	51.3%	126	38.9%	147	45.4%	51	15.7%	0.748	324	283	51.0%	41	53.9%	0.718
11 - 20 mm	225	35.7%	88	39.1%	105	46.7%	32	14.2%		225	201	36.2%	24	31.6%	
21 mm or more	82	13.0%	30	36.6%	35	42.7%	17	20.7%		82	71	12.8%	11	14.5%	

Table 4 Results for all questions presented in the form of ODDs Ratios.

Parameter	**Patients**		**Aesthetic**		**Symmetry**		**Scar**		**Recommendation**	
			ODDs ratio	**p**	**ODDs ratio**	**p**	**ODDs ratio**	**p**	**ODDs ratio**	**p**
N = 631	**n**	**%n**	**[95% CI]**		**[95% CI]**		**[95% CI]**		**[95% CI]**	
No. of hospitalizations										
1	449	71.2%	1.60 [0.96 - 2.68]	0.070	1.94 [1.16 - 3.24]	0.010	1.07 [0.67 - 1.71]	0.781	0.93 [0.55 - 1.6]	0.804
2	122	19.3%	0.67 [0.38 - 1.19]	0.173	0.70 [0.39 - 1.26]	0.237	1.11 [0.64 - 1.93]	0.713	0.89 [0.49 - 1.6]	0.686
3 or more	60	9.5%	0.69 [0.32 - 1.47]	0.334	0.44 [0.22 - 0.88]	0.018	0.73 [0.37 - 1.43]	0.355	1.56 [0.6 - 4.03]	0.353
Operator										
Resident	231	36.6%	1.43 [0.83 - 2.45]	0.192	1.47 [0.85 - 2.55]	0.164	0.93 [0.60 - 1.45]	0.753	0.93 [0.57 - 1.52]	0.765
Specialist	400	63.4%	0.70 [0.60 - 4.03]	0.353	0.68 [0.60 - 4.03]	0.353	1.07 [0.60 - 4.03]	0.353	1.08 [0.60 - 4.03]	0.353
Anaesthesia										
General	34	5.4%	0.72 [0.27 - 1.93]	0.512	0.45 [0.19 - 1.07]	0.064	0.43 [0.20 - 0.92]	0.026	0.78 [0.29 - 2.09]	0.624
Local	597	94.6%	1.39 [0.60 - 4.03]	0.353	2.24 [0.60 - 4.03]	0.353	2.35 [0.60 - 4.03]	0.353	1.28 [0.60 - 4.03]	0.353
Time from excision										
0 - 1 years	221	35.0%	1.43 [0.83 - 2.46]	0.199	1.48 [0.85 - 2.57]	0.167	1.24 [0.78 - 1.96]	0.358	1.37 [0.81 - 2.32]	0.236
2 - 3 years	200	31.7%	0.96 [0.57 -	0.893	0.74 [0.44 -	0.258	0.98 [0.62 -	0.943	0.88 [0.53 -	0.615

			1.64]		1.25]		1.56]		1.46]	
4 or more years	210	33.3%	0.74 [0.45 - 1.23]	0.243	0.93 [0.55 - 1.57]	0.779	0.82 [0.53 - 1.28]	0.390	0.84 [0.51 - 1.38]	0.482
Treatment										
Excision with primary closure	531	84.2%	1.50 [0.81 - 2.77]	0.196	2.07 [1.15 - 3.71]	0.014	1.76 [1.04 - 2.98]	0.033	1.11 [0.59 - 2.10]	0.749
Intermediate-thickness graft	37	5.9%	0.63 [0.26 - 1.58]	0.325	0.50 [0.21 - 1.18]	0.109	0.66 [0.29 - 1.50]	0.322	0.69 [0.28 - 1.71]	0.422
Full-thickness graft	63	10.0%	0.74 [0.35 - 1.56]	0.422	0.54 [0.27 - 1.09]	0.080	0.56 [0.30 - 1.05]	0.068	1.11 [0.48 - 2.52]	0.810
Size										
1 - 10 mm	324	51.3%	1.25 [0.76 - 2.04]	0.384	1.03 [0.62 - 1.70]	0.913	1.02 [0.66 - 1.56]	0.940	0.89 [0.55 - 1.44]	0.629
11 - 20 mm	225	35.7%	1.10 [0.65 - 1.85]	0.729	1.65 [0.94 - 2.90]	0.079	1.21 [0.77 - 1.91]	0.405	1.23 [0.74 - 2.06]	0.429
21 mm or more	82	13.0%	0.56 [0.30 - 1.06]	0.074	0.44 [0.24 - 0.82]	0.008	0.68 [0.38 - 1.22]	0.194	0.87 [0.44 - 1.72]	0.683

Surgeon experience

Patients from our study were operated by physicians from the plastic surgery clinic. The group of patients operated on by specialists numbered 400 (63.4%), while those operated on by residents numbered 231 (36.6%). Statistical analysis did not show any significant differences regarding to the operator experience according to the four asked questions.

Type of surgical treatment

The choice of surgical treatment had a statistical impact on patient satisfaction. Surgeons performed simple excision with primary closure on 531 patients (84.2%), intermediate thickness skin grafts on 37 patients (5.9%), and full-thickness skin grafts on 63 patients (10.0%). Statistical analysis showed differences in aesthetic satisfaction and scar visibility. The highest satisfaction was recorded with the primary closure, with 59.9% for overall aesthetic effect, and 40.1% for scar visibility. Dissatisfaction with this method was also the lowest, at 10.5%, and 14.5%, respectively.

The lowest satisfaction was among patients treated with intermediate-thickness skin grafts, 35.1% for overall aesthetic effect, and 18.9% for scar visibility. Dissatisfaction with this method was 16.2%, and 21.6% respectively. The highest dissatisfaction was for scar satisfaction after full-thickness skin graft (23,8%). The chance of satisfaction after excision with primary closer compared to other surgical techniques was 2.1 times higher with facial symmetry and 1.8 times higher with scar visibility. Responses with results are in (Chart 1).

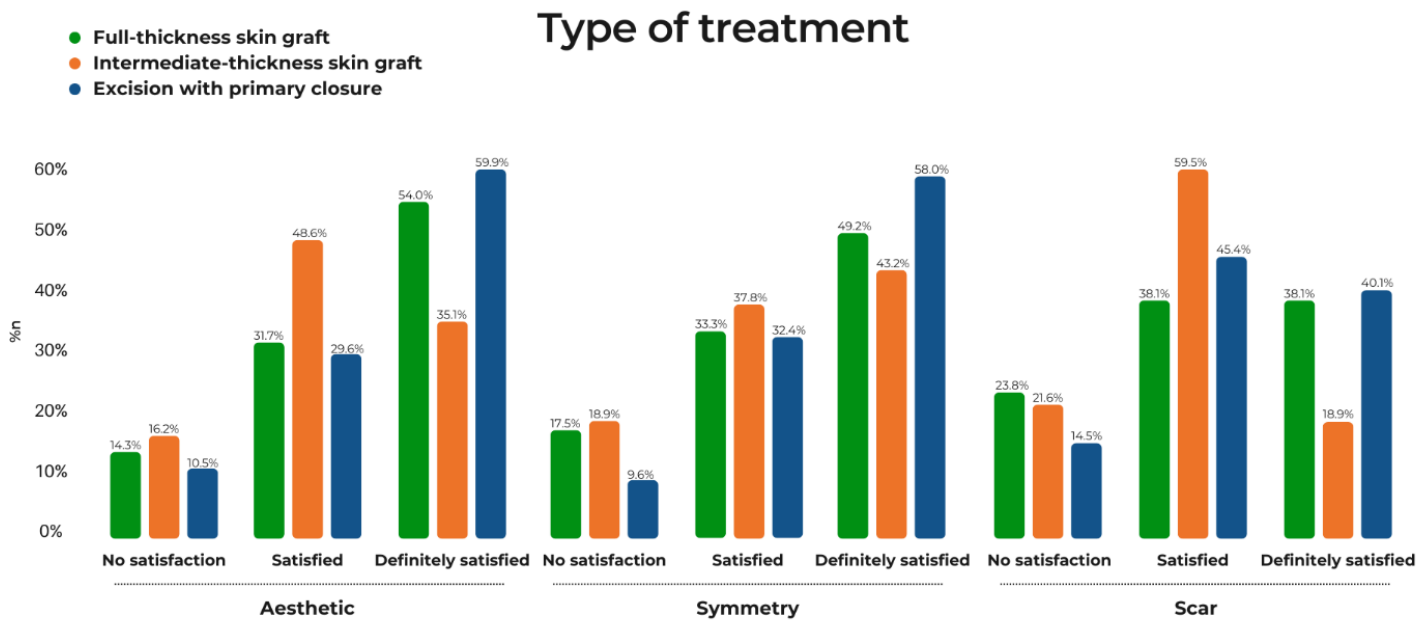

Chart1 Satisfaction scores depending on the type of treatment

Time since the procedure

Patients differed in the period from the date of procedure to the date of collecting the survey. The intervals were defined as 0-1 years (221 cases), 2-3 years (200 cases), and four or more years (210 cases). As time progressed after surgery, patient satisfaction decreased, although the analysis did not reveal significant differences.

Number of hospitalizations

Patients at the clinic underwent varying numbers of procedures due to recurrences, multiple lesions, or incomplete excisions. Based on the number of hospitalizations, we identified three groups: patients who had only one excision (449 cases), those who undergo operation twice (122 cases), and those who had at least three hospitalizations (60 cases). The least satisfied group consisted of patients who had at least three hospitalizations. As the number of hospitalizations increased, the level of satisfaction among patients decreased, and the level of dissatisfaction increased. Statistical analysis noted differences with satisfaction with preserved symmetry.

The group with one hospitalization, reported the highest satisfaction - 59.0%, group with two treatments – 54.1%, while the group with at least three procedures reported the lowest satisfaction - 40.0%. The highest dissatisfaction was in the group that undergo three or more hospitalizations - 20.0%, medium with two of them - 13,9%, and the lowest was in the group with only one excision - 9.8%. For patients with only one hospitalization, the chance of satisfaction was 1,9 times higher compared to undergoing more treatments, and chance for satisfaction with three or more hospitalizations was 56% compared to other groups. The responses are in (Chart 2).

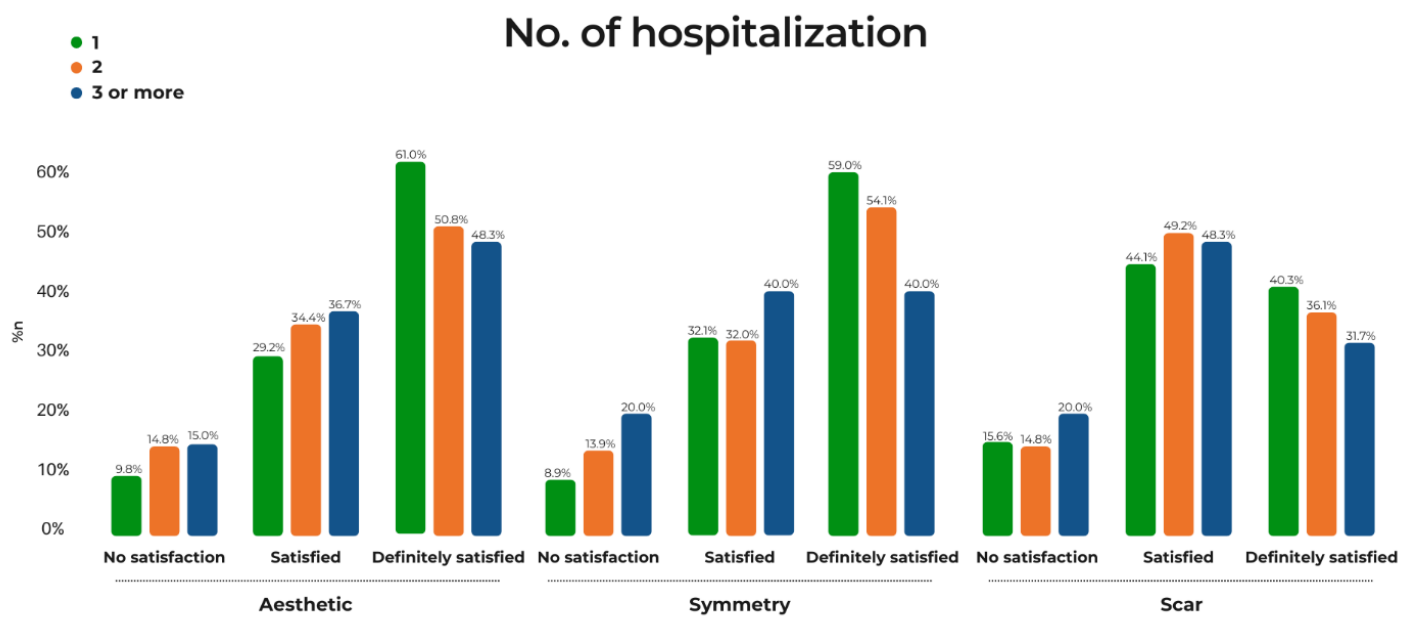

Chart 2 Satisfaction scores depending on number of hospitalizations

Type of anesthesia

Patients differed in terms of the anesthesia they received during surgical treatment. The first group consisted of patients who underwent the procedure under local anesthesia (597 cases), while the second group comprised patients treated under general anesthesia (34). Statistical analysis noted significant differences. Patients operated on under local anesthesia expressed much greater satisfaction compared to those operated on under general anesthesia. Complete satisfaction of scar was 39.5% after undergoing local anesthesia, compared to 23.5% after general anesthesia.

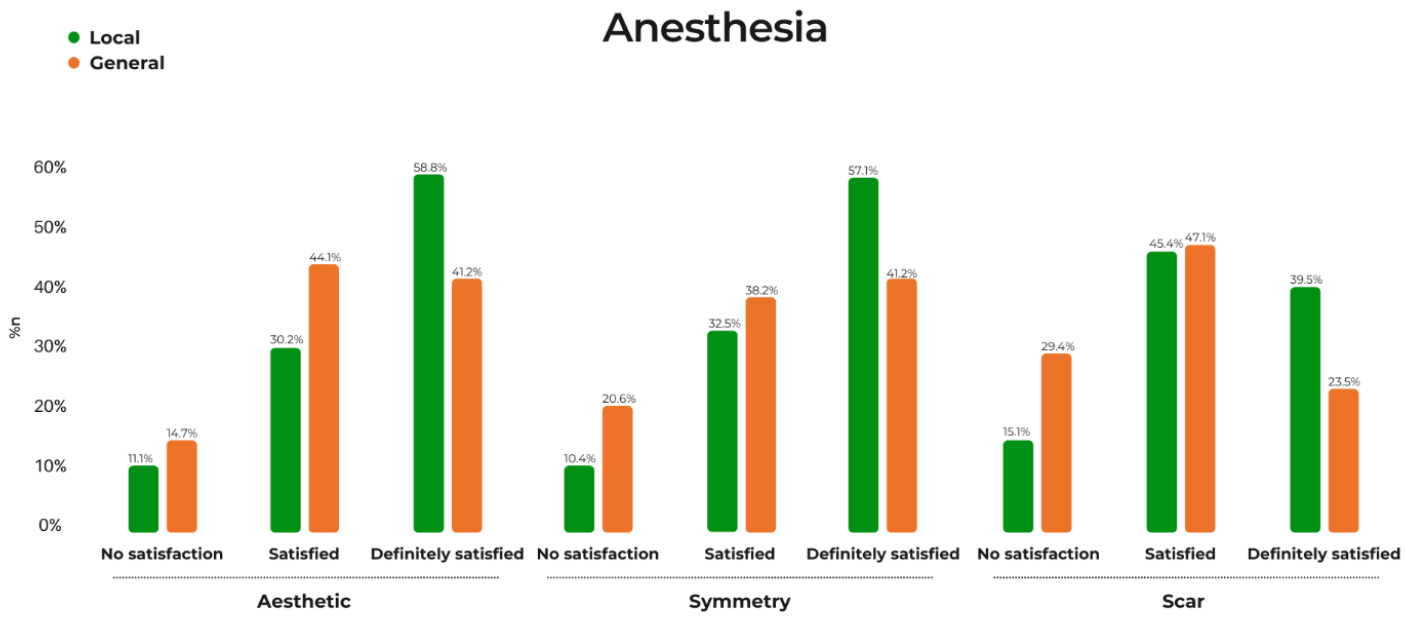

Chart 3 Satisfaction scores depending on the type of anesthesia

Dissatisfaction was 15.1% and 29.4% respectively. Complete satisfaction with achieved post-operative face symmetry was reported by 57.1% of patients in the first group, compared to 41.2% of patients in the second group. Dissatisfaction was reported by 10.4% and 20.6% of patients, respectively. Chance for satisfaction after general anesthesia was 57% lower compared to group undergo local anesthesia. The responses are in (Chart 3).

Size of the lesion

Patients differed in the size of the removed cancer lesion, which was determined based on histopathological examination and considering the longest dimension. Based on the results, three groups were created: lesions sized 1-10mm (324 cases), 11-20mm (225 cases), and 21mm and above (82 cases). Patients were least satisfied with last group. Statistical difference concerned symmetry, with 59.6% reported satisfaction for first group, 55.1 for second group, and 46.3 for third group. Dissatisfaction outcomes were 10.8%, 8.0%, and 19.5% respectively. The chance of being satisfied with facial symmetry was 56% lower for group of the most prominent lesions than smaller ones.

Comparison to other studies

In our study, we have examined several criteria to determine their impact on aesthetic satisfaction among patients after undergoing NMSC excision. Operator experience did not influence satisfaction following treatment. We did not find any scientific articles comparing aesthetic satisfaction based on the knowledge of the physician performing the procedure of skin cancer excision. Due to the lack of comparative literature, this factor requires further analysis by scientists. In surgical treatment, depending on the location, characteristics of the lesion, or preferences of the operator or patient, procedures can vary significantly. The predominant method among our patients was primary closure following excision.

In our study, intermediate-thickness skin grafting resulted in poorer aesthetic satisfaction than full-thickness skin grafting, with patients showing greater satisfaction with the latter. Other researchers have indicated that using distant reconstruction techniques with skin grafts can lead to lower satisfaction scores Vaidya et al., (2019), Mueller et al., (2010), whereas local flaps generally yield higher satisfaction scores than skin grafts (Marchac et al., 1982). However, there are also studies where the type of reconstruction did not significantly influence postoperative satisfaction (Gulati et al., 2023). Comparing our epidemiological findings, in our study, 84.2% of patients underwent primary closure, 5.9% received intermediate-thickness skin grafts, and 10.0% received full-thickness skin grafts.

In Mueller et al., (2010) research, 21.8% of patients required distant reconstruction techniques, including 11.9% with full-thickness skin grafts and 2.0% with split-thickness grafts. In other studies, primary closure remains the most frequently performed reconstructive technique (Veldhuizen et al., 2021). As time passes, patients may have varying requirements or expectations regarding their appearance following the completion of treatment. In our study, we observed a decreasing trend in aesthetic satisfaction as the time has passed since the procedure, although it was not statistically significant and requires further observation.

In contrast, Vaidya et al., (2019) reported the opposite finding, where satisfaction with facial appearance and appraisal of scars significantly improved over time. In the process of treating facial skin cancer, patients undergo varying numbers of hospitalizations, each of which may involve additional stress and affect the overall assessment of the treatment process. In our study, decreasing trend in aesthetic satisfaction with an increase in the number of hospitalizations. We did not find publications explicitly analyzing the relationship between the number of hospitalizations and aesthetic satisfaction. However, Gulati et al., (2023) suggest that patients requiring revisions may experience decreased satisfaction, but whether the treatment is single-stage or multistage does not have a statistically significant influence.

Patients undergo surgery under either local or general anesthesia based on specific criteria. The choice of anesthesia and sedation technique impacts patient comfort, well-being, and the potential for complications associated with each type. In our study, patients were significantly more satisfied with treatments performed under local anesthesia, which concerned 94.6% of procedures. General anesthesia is typically performed by physicians for larger or more complex lesions under challenging areas requiring more extensive reconstructive techniques, which may correspond to lower satisfaction rates with general anesthesia. In another study Ofaiche et al., (2016), surgery was performed by physicians under local or locoregional anesthesia in 88.9% of cases.

Patients require different techniques for wound closure depending on the size of the lesion following the excision of skin cancer. In our study, the lowest satisfaction was observed among patients with the most extensive lesions (11-20mm), while the highest satisfaction was related with smaller lesions. Among respondents, 87% of lesions were no larger than 2cm. In Ciuciulete et al., (2022)

study, the number of tumors under 2cm accounted for 60.2% of cases for SCC and 81% for BCC. However, literature findings vary. There are studies that describe an inversely proportional relationship between the dimension of cancer lesion and aesthetic satisfaction after the excision (Vaidya et al., 2019).

In contrast, other articles suggest that tumor size has no statistically significant effect on aesthetic outcomes (Ciuciulete et al., 2022; Lee et al., 2021; Gerritsen et al., 2009). The lowest satisfaction with most significant lesions likely results from the creation of larger defects after excision, which often necessitates more challenging wound closure techniques and results in more visible scars of more excellent dimensions. Among all four questions asked in our study, the visibility of the scar was the most problematic for patients. In Gerritsen et al., (2009) study, 66% of patients reported scarring as a significant issue.

4. CONCLUSIONS

The topic of aesthetic satisfaction following cosmetic procedures is not very popular but is gaining increasing interest. To our knowledge, our study is the first of its kind in our country. With the growing importance of patient-centered care, patient satisfaction across various dimensions cannot be overlooked by the surgeons. In the case of facial cosmetic procedures, the patient appearance is a key factor in assessing treatment quality. Our study assesses the impact of six selected factors on aesthetic satisfaction after excision of facial cancer. This research shows that operator experience does not impact the aesthetic satisfaction of the patient.

The surgical method providing the highest aesthetic satisfaction is primary closure, while the lowest satisfaction is related with intermediate-thickness skin grafts. Comparing satisfaction over time, the longer the time from the surgical excision, aesthetic satisfaction decreases. The number of hospitalizations is significant in determining patient satisfaction, with more procedures correlating with lower satisfaction. Local anesthesia is associated with higher aesthetic satisfaction than general anesthesia. The size of the skin cancer lesion influences patient satisfaction, with the lowest satisfaction observed for lesions sized over 20mm.

Limitations

The study was conducted retrospectively via telephone survey, which posed challenges in reaching all patients and sometimes led to difficulties understanding the questions, particularly among elderly individuals. Conducting in-person surveys could provide more comfortable conditions for patients to give thoughtful and well-analyzed responses.

Authors Contribution

Filip Lachowski: Collecting data, writing an article
Ewa Lachowska: Writing an article, investigation
Piotr Pierzchała, Urszula Muroń: Writing an article, review and editing
Paulina Bernecka, Natalia Domańska, Agnieszka Pruska: Collecting data
Maria Krasnodębska, Julia Ogrodowczyk vel Ogrodowicz, Aleksandra Łopotko, Judyta Czerniewicz: Conducting surveys with patients
Patrycja Jabłonowska: Methodology conducting statistic counting, visualization
Magdalena Graczyk: Conceptualization, check, formal analysis
Jerzy Jankau: Formal analysis, supervising work of the article, project administration

Acknowledgment

We thank the participant who were all contributed with their answers for telephone-based surveys.

Ethical approval

The study was approved by the Bioethics Committee for Scientist Research MUG Poland, the number is KB/63/2023. The ethical guidelines for Human Subjects are followed in the study.

Informed consent

Oral informed consent was obtained from all individual participants included in the study. All details about the research in the electronic paper was available for all participants.

Funding
This study has not received any external funding.

Conflict of interest
The authors declare that there is no conflict of interests.

Data and materials availability
All data sets collected during this study are available upon reasonable request from the corresponding author.

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