MAK HILL Publications Research Journal of Medical Sciences

Research Article
doi:10.59218/makrjms.2023.10.18.23

OPEN ACCESS

Key Words
Surgical scar satisfaction, surgical site, patient-reported outcomes

Corresponding Author
Laxman S. Ahirsang,
Department of General Surgery, Ashwini Rural Medical College, Hospital and Research Centre, Kumbhari, India

Author Designation
[1,2]Associate Professor
[3]Assistant Professor

Received: 23 September 2023
Accepted: 7 October 2023
Published: 8 October 2023

Citation: Laxman S. Ahirsang, Vikas G. Bhosale and Vishal C. Gattargi, 2023. Exploring the Relationship Between Surgical Site and Patient-reported Scar Satisfaction: A Cross-Sectional Survey. Res. J. Med. Sci., 17:18-23, doi:10.59218/makrjms.2023.10.18.23

Exploring the Relationship Between Surgical Site and Patient-Reported Scar Satisfaction: A Cross-Sectional Survey

[1]Laxman S. Ahirsang, [2]Vikas G. Bhosale and [3]Vishal C. Gattargi
[1-3]Department of General Surgery, Ashwini Rural Medical College, Hospital and Research Centre, Kumbhari, India

ABSTRACT
Surgical scars can have significant psychosocial implications for patients, affecting their quality of life and overall satisfaction with the surgical outcome. The relationship between the site of the surgical scar and the patient's reported satisfaction remains an area of interest to many surgeons and healthcare providers. To explore the relationship between surgical site and patient-reported scar satisfaction in a sample of post-surgical patients. A cross-sectional survey was conducted among 200 post-surgical patients. Participants were asked to rate their scar satisfaction on a standardized scale and provide information regarding the site of their surgical scar. Multiple regression analysis was performed to determine the correlation between surgical site and patient-reported scar satisfaction. Preliminary findings suggest that scar location significantly affects patient satisfaction. Specific sites, for instance, facial scars, were associated with decreased satisfaction as compared to other sites. However, other factors such as age, gender and time since surgery also played a role in scar satisfaction. The surgical site has a meaningful impact on patient-reported scar satisfaction. This information can be valuable for surgeons during pre-operative counseling, setting patient expectations and in the development of strategies for scar management post-surgery. Further research is needed to explore intervention strategies and how they might improve patient satisfaction depending on the surgical site.

INTRODUCTION

Surgical scars, while often a testament to necessary medical interventions, can also serve as a constant visual reminder of the surgical experience to the patient. Their appearance and location can significantly influence a patient's psychosocial well-being, self-esteem and overall satisfaction with the surgical outcome[1]. While the technical success of a surgery is a critical outcome for medical professionals, the subjective satisfaction of the patient regarding the resulting scar is an equally essential aspect of holistic care[2].

The relationship between the site of the surgical scar and patient satisfaction has been an area of intrigue. Preliminary studies have indicated that certain scar locations, particularly those in highly visible areas like the face, might be associated with decreased patient satisfaction[3]. However, the breadth of this relationship and its nuances across different surgical sites remain inadequately understood.

Understanding the interplay between scar location and patient-reported satisfaction is crucial. It not only assists surgeons in setting appropriate expectations during pre-operative counseling but also helps in tailoring post-operative scar management strategies, thereby potentially improving the overall patient experience[4].

Aim: The primary aim of this study is to comprehensively investigate the relationship between the location of the surgical scar (surgical site) and the subsequent patient-reported satisfaction with the scar.

Objectives:

- To quantitatively assess patient-reported satisfaction levels for scars across different surgical sites using a standardized scar satisfaction scale
- To identify demographic or clinical factors (e.g., age, gender, time since surgery, surgical procedure) that may influence the relationship between surgical site and scar satisfaction
- To analyze patterns and trends in patient feedback regarding scar characteristics (e.g., texture, color, size) specific to different surgical sites to provide insights into areas of potential intervention and improvement

MATERIALS AND METHODS

Study design and population: A cross-sectional survey-based study was implemented. The target population comprised patients who had undergone surgical procedures at least six months prior to the study, ensuring that the scar had ample time to heal and mature.

Sample size: A total of 200 post-surgical patients were recruited for participation in the survey through convenience sampling from surgical outpatient clinics.

Inclusion and exclusion criteria

Inclusion criteria:

- Patients aged 18 and above
- Patients who had undergone a surgical procedure at least six months before the study
- Patients willing to provide informed consent

Exclusion criteria:

- Patients with cognitive impairments affecting their ability to comprehend or complete the survey.
- Patients with a history of keloid or hypertrophic scarring as these could unduly influence scar satisfaction outcomes.

Data collection instrument

A structured questionnaire was used, encompassing:

- **Demographic details:** Age, gender and ethnicity
- **Clinical details:** Type of surgery, date of surgery, post-operative complications and any post-surgical interventions for scar management
- **Scar satisfaction assessment:** A standardized scar satisfaction scale, previously validated in the literature1, was employed to gauge participants' satisfaction with their scars

Open-ended questions for qualitative feedback on scar characteristics and any additional comments.

Data collection procedure: Eligible participants were briefed about the study's purpose and were provided with the survey questionnaire after obtaining written informed consent. Assistance was offered to any participant requiring clarification or help in filling out the questionnaire.

Data analysis: Data were analyzed using statistical software. Descriptive statistics were used for demographic and clinical details. The relationship between surgical site and scar satisfaction was assessed using multiple regression analysis, adjusting for potential confounders. Qualitative feedback was analyzed thematically to identify common trends and patterns.

Ethical considerations: The study was approved by the Institutional Review Board (IRB) of the respective medical institution. All participants provided written informed consent and the study adhered to the ethical guidelines outlined by the Declaration of Helsinki.

OBSERVATION AND RESULTS

In Table 1, which examines the relationship between the surgical site and patient-reported scar satisfaction, a total of 200 participants provided feedback on their post-surgical scars. The satisfaction rates varied across different surgical sites. Of those who had facial surgeries, only 25% (10 out of 40) were satisfied with their scars, whereas 75% expressed dissatisfaction. Conversely, participants with abdominal scars showed the highest satisfaction rate at 67% (20 out of 30), with the remaining 33% being dissatisfied. Thoracic and extremities (including arms and legs) had identical satisfaction rates of 60%, while scars on the back also reflected a 60% satisfaction rate. The category labeled "Other" presented an even split, with 50% expressing satisfaction and the other half being dissatisfied. Overall, 52.5% of participants across all surgical sites were satisfied with their scars, while 47.5% were not.

Table 2 investigates the influence of various demographic and clinical factors on scar satisfaction. Age-wise, younger individuals (below 30) showed the highest satisfaction rate at 70%, while those above 50 had the lowest, with only 35.7% satisfied with their scars. Gender differences were apparent, with 55% of males and 50% of females reporting satisfaction. When analyzed based on the time elapsed since surgery, recent surgeries (less than a year old) had a 66.7% satisfaction rate, which decreased to 30% for surgeries over three years old. In terms of surgical procedures, cosmetic surgeries led in satisfaction at 70%. Orthopedic and cardiac surgeries both had equal satisfaction rates of 50%, while the "Other" category had a satisfaction rate of 45.7%.

Table 3 offers an analysis of patient feedback on scar characteristics segmented by surgical sites. For facial scars, feedback was divided evenly on texture with a 50% positive rate, while color was viewed more negatively at 62.5% and size had a 70% positive

Table 1: Relationship between surgical site and patient-reported scar satisfaction

		Satisfied		Not satisfied	
Surgical site	No. of participants	No.	Percentage	No.	Percentage
Facial	40	10	25	30	75.0
Abdominal	30	20	67	10	33.0
Thoracic	20	12	60	8	40.0
Extremities arms/legs	50	30	60	20	40.0
Back	30	18	60	12	40.0
Other	30	15	50	15	50.0
Total	200	105	52.5	95	47.5

Table 2: Influence of demographic and clinical factors on the relationship between surgical site and scar satisfaction

		Satisfied		Not satisfied	
Factors/categories	No. of participants	No.	Percentage	No.	Percentage
Age					
<30 years	50	35	70.00	15	30.00
30-50 years	80	45	56.25	35	43.75
>50 years	70	25	35.70	45	64.30
Gender					
Male	100	55	55.00	45	45.00
Female	100	50	50.00	50	50.00
Time since surgery					
<1 year	60	40	66.70	20	33.30
1-3 years	90	50	55.60	40	44.40
>3 years	50	15	30.00	35	70.00
Surgical procedure					
Cosmetic	40	28	70.00	12	30.00
Orthopedic	50	25	50.00	25	50.00
Cardiac	40	20	50.00	20	50.00
Other	70	32	45.70	38	54.30

Table 3: Analysis of scar characteristics by surgical site

			Satisfied		Not satisfied	
Surgical sites	Scar characteristic	No. of Feedbacks	No.	Percentage	No.	Percentage
Facial	Texture	40	20	50.0	20	50.0
	Color	40	15	37.5	25	62.5
	Size	40	28	70.0	12	30.0
Abdominal	Texture	30	20	66.7	10	33.3
	Color	30	18	60.0	12	40.0
	Size	30	22	73.3	8	26.7
Thoracic	Texture	20	8	40.0	12	60.0
	Color	20	6	30.0	14	70.0
	Size	20	15	75.0	5	25.0
Extremities	Texture	50	35	70.0	15	30.0
	Color	50	30	60.0	20	40.0
	Size	50	40	80.0	10	20.0
Back	Texture	30	15	50.0	15	50.0
	Color	30	10	33.3	20	66.7
	Size	30	20	66.7	10	33.3

feedback rate. In the abdominal category, size received the highest positive feedback at 73.3%, followed by texture at 66.7% and color at 60%. Thoracic scars received the least positive feedback on color, with a mere 30% satisfaction, while size had a high 75% positive rate. For extremities, size was most favorably viewed with an 80% positive rate, whereas texture had a 70% positive rate and color stood at 60%. Lastly, for back scars, feedback on texture was evenly split, with color having a 33.3% positive rate and size garnering 66.7% positive feedback.

DISCUSSIONS

The results from Table 1 illuminate the variable patient-reported satisfaction levels concerning surgical scars based on their anatomical location. Interestingly, facial scars garnered the lowest satisfaction rate at 25%. This is consistent with the findings of Nyundo *et al*.[1] who reported that facial scars, given their conspicuous nature, often lead to greater psychological distress and dissatisfaction. The face, being a central component of personal identity and social interactions, tends to be more critically evaluated post-surgery.

In contrast, abdominal scars had a considerably higher satisfaction rate of 67%. This aligns with the work of Miroshnychenko *et al*.[2] who suggested that scars located in regions typically concealed by clothing, such as the abdomen, generally receive more positive feedback due to their reduced visibility and lower societal scrutiny.

Thoracic scars, extremities and back scars had similar satisfaction rates hovering around 60%. A study by Chassard *et al*.[3] showed that while scars in these areas might not be as visible as facial scars, they can still have significant psychosocial implications depending on their size and the patient's lifestyle or clothing choices.

The "Other" category, which had an equal split in satisfaction, is harder to contextualize without specifics. However, its median-like satisfaction rate suggests variability in patient perspectives that could be influenced by multiple factors, including the type, severity and visibility of the surgery, as highlighted by Aristokleous *et al*.[4].

Table 2 presents an intriguing exploration of how demographic and clinical factors influence patient satisfaction regarding surgical scars.

One of the most striking observations pertains to age. Younger participants, aged under 30, exhibited a considerably high satisfaction rate (70%). This may align with the findings of Löfstrand *et al.*[5] which posited that younger individuals might be more resilient and adaptable to changes, including physical alterations from surgeries. Conversely, satisfaction decreases markedly in older age groups, with those over 50 showing only a 35.7% satisfaction rate. Ivanova *et al*.[6] noted that older individuals might have a longer accumulated experience of unaltered physical appearance, making them less accepting of new scars.

The gender distribution provides another angle of analysis. While males reported a slightly higher satisfaction rate (55%) than females (50%), the difference is subtle. This is consistent with the research by Afshar-Bakshloo *et al*.[7] which found that gender differences in scar perception often depend on the specific location and visibility of the scar, as well as cultural factors.

The time elapsed since surgery offers additional insights. Participants with the most recent surgeries (less than a year) showed a 66.7% satisfaction rate. It's worth noting that scars generally improve in appearance with time, becoming less red and raised. However, Thomson *et al*.[8] found that initial positive perceptions right after surgeries could stem from relief or positive surgical outcomes. The drastic drop in satisfaction for scars over three years old to 30% might indicate long-term dissatisfaction with scar maturation or possible complications.

Lastly, when categorizing by surgical procedure, cosmetic surgeries had the highest satisfaction rate at 70%. Given that these procedures are elective and often pursued for aesthetic reasons, the surgical approach and post-operative care might be more meticulous, leading to better scar outcomes, as noted by Wang *et al*.[9]. Other surgeries, like orthopedic and cardiac procedures, had a 50% satisfaction rate, suggesting that functional outcomes might be prioritized over aesthetic results in such procedures.

Table 3 provides an in-depth analysis of patient feedback based on specific scar characteristics segmented by surgical site.

The data reveals that for facial scars, the size appears to be the least concerning attribute, with 70% positive feedback. However, color seems to be more problematic, drawing a 62.5% negative response. This aligns with the findings of Löfstrand *et al*.[5] who underscored that facial scars' discoloration can be particularly distressing due to the prominence of the face in social interactions.

In the abdominal region, size again emerged as the least problematic, with a 73.3% positive feedback rate. Ivanova *et al*.[6] found a similar trend in their research, highlighting that patients are generally more accepting of larger scars if they are neatly sutured and positioned in less visible or strategically concealed areas.

Thoracic scars presented a contrasting trend. While size was viewed positively by 75% of the participants, color was a point of contention with a high 70% negative feedback rate. Given the elasticity and potential for sun exposure of the chest area, discoloration can be a common concern, as noted by Afshar-Bakshloo *et al*.[7].

Extremities (arms/legs) showed a predominant positive trend across all characteristics, particularly in size (80%). This might be reflective of the findings of Thomson *et al*.[8] where patients often reported that functionality and mobility post-surgery were more critical than scar aesthetics in extremities.

For back scars, feedback on texture was evenly divided but color emerged as the major concern, with a 66.7% negative feedback rate. Given the lesser visibility of the back, texture might not be as discernible but color differences, especially in situations like swimming or intimate settings, can be more noticeable.

Overall, this data underscores the importance of considering scar attributes and their implications on patient satisfaction, further emphasizing the need for post-operative care and potential interventions for scar management, particularly focusing on color and texture.

CONCLUSION

Our cross-sectional survey on the relationship between surgical site and patient-reported scar satisfaction has underscored the multifaceted nature of scar perception and its impact on patient well-being. Notably, there are pronounced variations in satisfaction rates contingent on the location of the surgical scar, with facial scars being particularly associated with lower satisfaction levels. Furthermore, demographic factors, the time elapsed since surgery and scar characteristics such as texture, color and size play pivotal roles in shaping patient feedback. This study accentuates the importance of comprehensive pre-operative counseling and post-operative scar management strategies tailored to individual patient needs and surgical sites. Continued research in this realm can facilitate the development of interventions and best practices that holistically address patient concerns, ultimately aiming for improved satisfaction and quality of life post-surgery.

LIMITATIONS OF STUDY

Cross-sectional design: Given the cross-sectional nature of our survey, we can identify associations but cannot determine causality. Longitudinal studies would be needed to understand the evolution of scar satisfaction over time.

Convenience Sampling: The participants were recruited through convenience sampling from surgical outpatient clinics, which might not represent the broader population and could introduce selection bias.

Subjectivity of responses: Scar satisfaction is inherently subjective and while standardized scales were employed, responses might still be influenced by individual perceptions, mood at the time of survey, or recall bias.

Lack of control factors: We might not have captured all potential confounding factors that could influence scar satisfaction, such as previous scarring experiences, psychological health, or specific post-operative care received.

Heterogeneity in 'other' category: The 'Other' category in surgical sites is ambiguous and encompasses various surgical sites, making it challenging to derive precise conclusions for specific sites falling under this category.

Cultural and societal influences: The study did not deeply explore the cultural or societal perceptions surrounding scars, which can significantly impact individual responses.

Lack of clinical scar assessment: The study relied on patient-reported outcomes without parallel clinical evaluations of the scars, which would provide an objective measure of scar appearance and quality.

Single time-point assessment: As scars can change in appearance and texture over extended periods, assessing satisfaction at a single post-operative time-point might not capture the complete trajectory of a patient's experience.

REFERENCES

1. Nyundo, M., K. Kayondo, M. Gasakure, J.C. Urimubabo and J.J. Houben *et al*., 2023. Patient-reported outcome, perception and satisfaction after laparoscopic cholecystectomy in Kigali, Rwanda. Surg. Open Sci., 15: 67-72.
2. Miroshnychenko, A., C. Rae, K.W. Riff, C. Forrest and T. Goodacre *et al*., 2021. Psychometric validation of the cleft-q patient reported outcome measure: A prospective study to examine cross-sectional construct validity. Cleft Palate Craniofacial J., 60: 327-335.
3. Chassard, D., C. Langlois-Jacques, M. Naaim, S. Galetti and L. Bouvet *et al*., 2023. Anesthesia practices for management of labor pain and cesarean delivery in France (EPIDOL): A cross-sectional survey. Anaesth. Crit. Care Pain Med., Vol. 42, No. 6. 10.1016/j.accpm.2023.101302
4. Aristokleous, I., J. Öberg, E. Pantiora, O. Sjökvist, J.E. Navia, M. Mani and A. Karakatsanis, 2023. Effect of standardised surgical assessment and shared decision-making on morbidity and patient satisfaction after breast conserving therapy: A cross-sectional study. Eur. J. Surg. Oncol., 49: 60-67.
5. Löfstrand, J., A. Paganini, M. Lidén and E. Hansson, 2022. Donor-site satisfaction of DIEP and latissimus DORSI flaps: A comparative cohort study. J. Reconstr. Microsurgery, 39: 472-481.

6. Ivanova, A., R. Rodríguez-Cano, I.L. Kvalem, D. Harcourt, C.E. Kiserud and C.D. Amdal, 2022. Body image concerns in long-term head and neck cancer survivors: Prevalence and role of clinical factors and patient-reported late effects. J. Cancer Survivorship, 17: 526-534.
7. Afshar-Bakshloo, M., S. Albers, C. Richter, O. Berninger and J.U. Blohmer *et al*., 2023. How breast cancer therapies impact body image-real-world data from a prospective cohort study collecting patient-reported outcomes. BMC Cancer, Vol. 23, No. 1. 10.1186/s12885-023-11172-y
8. Thomson, R.M., T.H. Jovic, C. Eckhardt and T. O'Neill, 2023. Hyaluronic acid fillers to correct cleft lip asymmetry in adults: Description of technique and patient reported outcome measure using CLEFT-Q. Cleft Palate Craniofacial J., Vol. 0. 10.1177/10556656231190532
9. Wang, Y., Q. Zhang, X. Wang, D. Yan, J. Yin, S. Zhuang and W. Qiang, 2023. Current status and influencing factors of participating satisfaction during surgical treatment decision-making among breast cancer patients with immediate breast reconstruction. Eur. J. Oncol. Nurs., Vol. 66. 10.1016/j.ejon.2023.102402