Patient Satisfaction, Aesthetic Naturalness, and Graft Survival Following Sapphire FUE Transplantation of the Beard, Moustache, Eyebrow, and Sideburn: A Retrospective Cohort Study

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Abstract

Background: Hair transplantation to non-scalp facial regions (beard, moustache, eyebrow, and sideburn) has grown as a distinct clinical indication, yet published outcome data covering multiple facial subregions within a single, technique-standardized cohort remain limited. Existing literature is concentrated on eyebrow transplantation, with beard, moustache, and sideburn outcomes reported mainly as adjuncts to scar-alopecia or scalp-focused series.

Methods: This retrospective cohort study reviewed patients who underwent single-region Sapphire follicular unit extraction (FUE) transplantation to the beard, moustache, eyebrow, or sideburn at Vera Clinic between March 2024 and February 2025, all performed by the same surgical team using a single donor site (occipital scalp). Eighty-seven patients were screened; 80 (92.0%) completed a standardized 12-month assessment comprising graft survival estimation, a region-specific patient satisfaction scale, and independent observer rating of naturalness and symmetry by a clinician not involved in the index procedure. No between-region inferential comparisons were performed; outcomes are reported descriptively within each region.

Results: Graft survival ranged from 90.6% (eyebrow) to 93.4% (beard) across regions, and observer-rated naturalness and symmetry followed a similar pattern, ranging from 81.8% (eyebrow) to 88.6% (beard). Mean patient satisfaction scores (5-point Likert), however, did not track this pattern: the eyebrow region combined the lowest survival and naturalness with the second-highest satisfaction score (4.4), while the sideburn region combined comparatively favourable survival and naturalness with the lowest satisfaction score (4.2). All recorded complications were mild and transient (11.4%–13.6% across regions), consisting predominantly of oedema, erythema, and self-limiting folliculitis.

Conclusions: Within this single-centre cohort, graft survival and observer-rated naturalness moved together across facial subregions, while patient-reported satisfaction did not consistently follow either measure, most notably in the eyebrow and sideburn regions. This dissociation suggests that objective and observer-rated outcomes alone are an incomplete proxy for patient-perceived success in facial hair transplantation, and that satisfaction warrants inclusion as a distinct, co-primary outcome in future work.

Introduction

Hair restoration surgery has extended well beyond the scalp. Follicular unit extraction (FUE) techniques originally developed for androgenetic alopecia are now routinely adapted to the beard, moustache, eyebrows, sideburns, and eyelashes, and this expansion has been described as one of the more significant developments in facial aesthetic surgery over the past decade [1]. Facial hair transplantation differs from scalp restoration in both technical demand and the standard by which success is judged: recipient sites are smaller, more visible, and framed by paired or symmetrical anatomical structures, so that angle, curl matching, and inter-regional symmetry carry weight that scalp restoration, with its larger and more forgiving recipient field, does not.

Within this broader field, the eyebrow has received the most sustained research attention. Retrospective cohorts using periauricular donor hair have reported high patient satisfaction at extended follow-up [2], long hair follicular unit excision (LHF) series have reported patient and surgeon satisfaction scores in the

4.3–4.7 range on 5-point Likert scales [3], while a related LHF series across multiple recipient sites emphasised the importance of matching native hair curliness [4], and systematic reviews have catalogued a range of surgical variants without converging on a single validated outcome instrument for the region [5]. Beard, moustache, and sideburn transplantation, by contrast, have been documented mainly within case series or as donor-and-recipient adjuncts to scar-alopecia reconstruction rather than as a primary outcome focus; a retrospective cohort of head-and-neck scar alopecia patients, for example, reported facial subregion involvement across scalp, beard, eyebrow, and moustache sites but did not report region-specific satisfaction or naturalness outcomes for each site [6].

This asymmetry in the literature leaves a gap for clinics that perform facial hair transplantation across the full range of subregions under a consistent surgical protocol: there is limited descriptive evidence on how graft survival, patient satisfaction, and observer-rated naturalness compare across the beard, moustache, eyebrow, and sideburn when technique, donor site, and follow-up interval are held constant within the same institution. Without this granularity, it is difficult to establish whether graft survival, the outcome most consistently reported across the existing literature, adequately represents what patients and clinicians judge to be a successful facial hair transplant outcome in each subregion.

The aim of this study was to describe graft survival, patient-reported satisfaction, and observer-rated naturalness and symmetry at 12 months following single-region Sapphire FUE transplantation to the beard, moustache, eyebrow, and sideburn within a single-centre retrospective cohort, and to examine descriptively whether these outcomes move together or diverge across regions.

Methods

Study Design and Setting

This was a retrospective cohort study conducted at Vera Clinic. Patients were drawn from an enrolment window of March 2024 through February 2025, with the 12-month outcome assessment for the final enrolled patient completed by February 2026. Data extraction, analysis, and manuscript preparation took place between March and August 2026.

Participants

Inclusion criteria were: age 18 years or older; a single-region Sapphire FUE transplant procedure to the beard, moustache, eyebrow, or sideburn performed within the enrolment window; grafts harvested from a single donor site (occipital scalp) by the same surgical team; completion of the 12-month assessment; and complete baseline and 12-month photographic documentation.

Exclusion criteria were: loss to follow-up before the 12-month assessment; and prior unsuccessful transplantation to the same region, which was tracked separately rather than excluded outright when present. Patients with a documented diagnosis of body dysmorphic disorder were excluded, as this condition is a recognised negative predictor of satisfaction following aesthetic procedures regardless of objective surgical outcome [7]. Female patients with a documented diagnosis of polycystic ovary syndrome accompanied by clinically significant hyperandrogenism were also excluded from the eyebrow cohort, as androgen-driven hirsutism is a recognised confounder of facial hair density and growth pattern [8]. Patients with a clinically significant abnormality identified on standard preoperative blood testing (for example, thyroid dysfunction, iron-deficiency anemia, or vitamin D deficiency) were also excluded, as these conditions are associated with alterations in hair growth and density independent of the transplant procedure itself. No patients meeting the body dysmorphic disorder, polycystic ovary syndrome, or blood panel exclusion criteria were identified during screening for this cohort; patients excluded for loss to follow-up are detailed in the Results.

Variables

The co-primary outcomes were: (i) region-specific patient satisfaction, measured on a study-specific 5-point Likert scale (1 = very dissatisfied to 5 = very satisfied) administered at the 12-month visit; and (ii) observer-rated naturalness and symmetry, scored by a clinician not involved in the index procedure using a 4-point categorical scale (poor / satisfactory / good / very good) applied to standardised frontal and oblique photographs. This satisfaction and naturalness instrument was developed in-house for this study; it has not undergone external psychometric validation, and this limitation is discussed below.

Secondary outcomes were: graft survival, estimated by paired baseline-to-12-month photographic density comparison at fixed anatomical landmarks; total graft count per procedure; and complication rate, defined as any adverse event recorded in the clinical chart between the procedure date and the 12-month visit.

Data Sources and Measurement

All outcome data were extracted from clinical charts, standardised photographic documentation, and the 12-month follow-up questionnaire administered as part of routine post-operative care. A single extractor performed data abstraction using a pre-specified extraction form; ambiguous entries were resolved by consensus with the treating surgical team.

Bias

Selection bias is possible because the analytic cohort excludes multi-region and lost-to-follow-up patients, both of which may differ systematically from the included population. Information bias in the naturalness rating was mitigated by using an observer not involved in the index procedure, though this observer was not blinded to the procedure region, which the paired photographic protocol could not fully conceal. No control or comparator group was included, so no causal claims about technique superiority are made.

Statistical Methods

Continuous variables are reported as mean ± standard deviation with observed range; categorical variables as n (%). Descriptive statistics were calculated separately for each anatomical region. No inferential between-region comparisons (e.g. hypothesis tests or confidence intervals for between-group differences) were performed, given the study's observational, region-specific design and the absence of a pre-specified comparative hypothesis. Missing data were handled by complete-case analysis; the count of patients lost to follow-up per region is reported in the Results.

Ethics

Patients were informed at the time of treatment that anonymised clinical data collected during standard follow-up visits could be used for research and quality-improvement purposes. All patient records were fully anonymised and de-identified prior to analysis. Given the retrospective, fully de-identified nature of the dataset and its collection under routine quality-improvement protocols, this analysis was conducted as an internal institutional registry review rather than a prospective research study; a waiver of formal prospective ethics committee approval was accordingly applied, consistent with the retrospective, de-identified design. The analysis nonetheless adhered to the principles of the Declaration of Helsinki regarding confidentiality and data protection for retrospective, de-identified data.

Results

Of 87 patients screened across the four regions, 80 (92.0%) completed the 12-month assessment and were included in the analytic cohort; 7 patients (8.0%) were lost to follow-up before the 12-month visit and

were excluded (Table 1). No patients in this cohort had a documented history of prior unsuccessful transplantation to the same region.

Table 1. Baseline characteristics and procedure details by facial region (analytic cohort, n = 80).

Region	Screened, n	Analyzed, n (%)	Female, n (%)	Age range, y (mean ± SD)	Graft count range	Mean graft count ± SD
Beard	38	35 (92.1)	0 (0.0)	22–48 (31 ± 6)	600–2200	1350 ± 380
Moustache	16	15 (93.8)	0 (0.0)	24–45 (33 ± 5)	180–520	320 ± 75
Eyebrow	24	22 (91.7)	14 (63.6)	20–52 (34 ± 8)	220–600	380 ± 65
Sideburn	9	8 (88.9)	0 (0.0)	25–46 (32 ± 6)	110–350	210 ± 55
Total	87	80 (92.0)	14 (17.5)	20–52	110–2200	-

Beard, moustache, and sideburn cohorts consisted entirely of male patients, consistent with the demand pattern for these procedures, while female patients comprised the majority of the eyebrow cohort (63.6%; Table 1). Graft counts followed the expected pattern by region, with beard procedures requiring the widest range, consistent with the variation between partial density-filling and fuller-coverage cases reported elsewhere for this region [1].

Graft survival and observer-rated naturalness followed a consistent pattern across regions: both were highest in the beard group and lowest in the eyebrow group, with all four regions falling within a comparatively narrow band (survival above 90%; naturalness 81.8%–88.6%; Table 2). Mean patient satisfaction scores, by contrast, did not follow this pattern: the eyebrow region combined the lowest survival and naturalness with the second-highest satisfaction score (4.4), while the sideburn region combined comparatively favourable survival and naturalness with the lowest satisfaction score in the cohort (4.2), indicating that patient satisfaction did not move in step with the two observer-based measures.

Table 2. Twelve-month outcomes by facial region.

Region	Graft survival, % (range; mean ± SD)	Satisfaction score /5 (range; mean ± SD)	Naturalness/symmetry rated good–very good, %	Complication rate, % (all mild/transient)
Beard	85–99 (93.4 ± 4.1)	3–5 (4.5 ± 0.6)	88.6	11.4
Moustache	82–99 (91.8 ± 4.7)	3–5 (4.3 ± 0.7)	86.7	13.3
Eyebrow	80–99 (90.6 ± 5.2)	3–5 (4.4 ± 0.6)	81.8	13.6
Sideburn	83–99 (92.7 ± 4.4)	3–5 (4.2 ± 0.7)	87.5	12.5

All recorded complications were mild and self-limiting. The most frequently recorded events across regions were transient oedema, transient erythema, mild post-operative crusting at the recipient site, and self-limiting folliculitis; no case required surgical revision for a complication-related indication during the follow-up window.

Discussion

The principal finding of this cohort is that graft survival and observer-rated naturalness moved together across the four facial subregions, both lowest in the eyebrow and highest in the beard, while patient-reported satisfaction did not consistently follow either measure. The eyebrow region illustrates this most clearly: despite recording the lowest survival and the lowest naturalness rating, it recorded the second-highest satisfaction score in the cohort. The sideburn region shows the inverse pattern, combining

comparatively favourable survival and naturalness with the lowest satisfaction score. Read together, these results suggest that graft survival and observer-rated naturalness, although the outcomes most commonly reported in the facial hair transplantation literature, do not by themselves predict how satisfied the patient is with the result.

The relatively high satisfaction score recorded here for the eyebrow region despite its lower survival and naturalness ratings is broadly consistent with the existing eyebrow literature, where studies using varied donor sites and techniques have reported high patient satisfaction (scores in the 4.3–4.9 range) [2,3] even when objective or observer-rated measures are comparatively modest, with curl and angle matching emphasised as separate determinants of perceived success rather than survival percentage alone [3,4]. The comparatively lower naturalness proportion for the eyebrow region in the present cohort may reflect the technical demands specific to this region, fine angle control and bilateral symmetry across two independently assessed structures, which do not apply in the same way to a single, less symmetry-dependent recipient field such as the beard.

A plausible interpretation is that patient-reported satisfaction reflects a partially distinct dimension of outcome from survival and naturalness: the latter two are anchored to physically observable properties of the graft and its placement, whereas satisfaction is additionally shaped by pre-operative expectations, perceived value relative to cost and recovery burden, and psychological factors unrelated to the physical result. If this interpretation holds, studies that report survival or observer-rated naturalness as the sole or primary outcome for facial regions may be incompletely characterising what the patient actually experiences as a successful result, regardless of how favourable the physical outcome appears.

This study has several limitations. The satisfaction and naturalness instrument used here was developed in-house for this cohort and has not undergone external psychometric validation, so scores should be interpreted as descriptive rather than benchmarked against a standardised measure. The naturalness rating, while performed by an observer not involved in the index procedure, was not fully blinded to the procedure region, which the photographic protocol could not conceal. No comparator or control group was included, no between-region inferential statistics were performed, and the sample size in the sideburn group in particular ($n = 8$) is small, limiting the precision of the reported estimates for that region. The exclusion of patients who underwent multi-region procedures in the same session, while methodologically useful for isolating single-region outcomes, may not represent the full range of patients seeking facial hair transplantation in routine practice. Finally, the single time-point assessment at 12 months does not capture longer-term maintenance requirements or shedding-regrowth dynamics beyond this window. These limitations should be weighed against the study's contribution: to our knowledge, this is among the few reports to describe graft survival, satisfaction, and naturalness across four distinct facial subregions within a single technique-standardised cohort, a level of granularity that the existing literature, concentrated on the eyebrow or on scar-alopecia adjuncts, does not otherwise provide [1,6].

Taken together, these findings support treating patient-reported satisfaction as a co-primary outcome measure distinct from graft survival and observer-rated naturalness in facial hair transplantation research, rather than assuming that objective and observer-based measures adequately proxy for patient-perceived success. Future work with externally validated instruments, blinded assessment, and larger region-specific samples would help establish whether the dissociation between patient-reported satisfaction and the objective/observer-rated measures observed here in the eyebrow and sideburn regions generalises across settings and techniques.

Conclusions

In this single-centre retrospective cohort, graft survival and observer-rated naturalness followed a consistent pattern across the beard, moustache, eyebrow, and sideburn, both highest in the beard and lowest in the eyebrow, while patient-reported satisfaction did not move in parallel with either measure,

most notably in the eyebrow and sideburn regions. These findings suggest that graft survival and observer-rated naturalness alone are incomplete indicators of patient-perceived success in facial hair transplantation, and that patient-reported satisfaction merits routine inclusion as a distinct outcome measure in future outcome reporting for this procedure group.

Ethics Approval

This analysis was conducted as an internal institutional registry review of fully anonymised, retrospective clinical data collected under routine quality-improvement protocols. Prospective ethics committee approval under the Declaration of Helsinki was accordingly not applicable; the analysis nonetheless adhered to the Declaration's principles regarding confidentiality and data protection for retrospective, de-identified data.

Informed Consent

Patients were informed at the time of treatment that anonymised clinical data collected during standard follow-up could be used for research and quality-improvement purposes. Given the retrospective, fully de-identified nature of the dataset, individual re-consent for this specific analysis was not sought.

Conflict of Interest

This study was conducted by Vera Clinic Academy. Vera Clinic provided patient records, surgical facilities, and follow-up infrastructure. Vera Clinic Academy declares no other competing interests. Data analysis and manuscript preparation were conducted independently of the marketing, sales, and commercial decision-making functions of the clinic.

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Data Availability

De-identified data supporting the findings of this study are available from Vera Clinic Academy upon reasonable request, subject to institutional data protection review.

References

1. Epstein J. Facial hair restoration: hair transplantation to eyebrows, beard, sideburns, and eyelashes. Facial Plast Surg Clin North Am. 2013;21(3):457–467.
2. Cheng H, Qi J, Zhu F, Sun Z, Jiang N, Zhang J. Periauricular hair transplantation enhances the cosmetic results of eyebrow transplantation: a retrospective study in Chinese recipients. J Plast Reconstr Aesthet Surg. 2024;98:309–317.
3. Park JH, Kim NR, Manonukul K. Eyebrow transplantation using long hair follicular unit excision technique. Plast Reconstr Surg Glob Open. 2021;9(5):e3598. doi:10.1097/GOX.0000000000003598.
4. Park JH, You SH, Kim NR, Ho YH. Long hair follicular unit excision: personal experience. Int J Dermatol. 2021;60(10):1288–1295. doi:10.1111/ijd.15648.
5. Klingbeil KD, Fertig R. Eyebrow and eyelash hair transplantation: a systematic review. J Clin Aesthet Dermatol. 2018;11(6):21–30.

6. Noori A, Rabiee M, Mehrabani D, Namazi MR. Head and neck restoration in scar alopecia: hair transplantation in scalp, eyebrows, beard and mustache. World J Plast Surg. 2021;10(3):90. doi:10.29252/wjps.10.3.90.
7. Kaleeny JD, Janis JE. Body dysmorphic disorder in aesthetic and reconstructive plastic surgery: a systematic review and meta-analysis. Healthcare. 2024;12(13):1333. doi:10.3390/healthcare12131333.
8. Spritzer PM, Marchesan LB, Santos BR, Fighera TM. Hirsutism, normal androgens and diagnosis of PCOS. Diagnostics. 2022;12(8):1922. doi:10.3390/diagnostics12081922.