

A Retrospective Study on Five Years of Hand Rejuvenation Through Fat Grafting: Insights from a Single Surgeon's Experience

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Received: 25-10-2023 / Revised: 23-11-2023 / Accepted: 26-12-2023

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Conflict of interest: Nil

Abstract:

Background: Hand rejuvenation has gained popularity as a cosmetic procedure to address age-related changes. Fat grafting, involving the transfer of fat to the hands, has shown promise in restoring volume and improving skin quality, thanks to the presence of stem cells and growth factors in the fat graft.

Methods: This retrospective study was conducted over five years. It involved 74 patients who underwent fat grafting for hand rejuvenation. The procedure included harvesting fat, preparing it, and injecting it into the hand's dorsum. Patient demographics, procedural specifics, and postoperative complications were analyzed, with follow-ups conducted over a minimum period of 12 months.

Results: Of the 74 patients, 85% reported satisfaction with the procedure, while 13.5% were partially satisfied, indicating a need for additional sessions. Only 1.5% were dissatisfied. Temporary hand swelling was noted in a few cases but resolved spontaneously. No long-term complications were observed. The average age of patients was 52.4 years, with a balanced distribution between male and female patients.

Conclusion: Fat grafting for hand rejuvenation demonstrates high patient satisfaction and a safe profile, with minimal complications. It effectively addresses age-related changes in hand appearance.

Recommendation: Future studies should focus on long-term outcomes and the influence of individual patient factors on the efficacy of fat grafting for hand rejuvenation.

Keywords: Hand Rejuvenation, Fat Grafting, Cosmetic Surgery, Patient Satisfaction.

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Introduction

Hand rejuvenation has become an increasingly popular cosmetic procedure, addressing age-related changes in the hands. As the skin on the hands thins and loses its elasticity with age, underlying structures such as veins and tendons become more prominent, often leading to a more aged appearance. Fat grafting, a technique involving the transfer of fat from one part of the body to another, has emerged as a promising method for hand rejuvenation. This procedure not only restores volume but also improves skin quality due to the stem cells and growth factors present in the fat graft [1, 2].

The principle behind fat grafting for hand rejuvenation is relatively straightforward. Fat is harvested

from an area of the body where it is plentiful, such as the abdomen or thighs, using liposuction techniques. This harvested fat is then processed and purified before being carefully injected into the hands. The goal is to achieve a smoother, fuller, and more youthful appearance of the hands [3].

Several studies have demonstrated the effectiveness and safety of this technique. A notable study by [1] highlighted the long-term benefits of fat grafting in hand rejuvenation, showing significant improvements in skin texture and appearance. Moreover, the regenerative properties of adipose-derived stem cells within the fat graft have been a subject of interest. These cells are believed to contribute to skin

rejuvenation by enhancing dermal thickness and improving skin quality [4, 5].

The purpose of this study is to share the protocol and experiences in using fat grafting as a technique for reshaping and rejuvenating the hands.

Methodology

Study Design: A retrospective study.

Study Setting: The study was conducted at 'SKMCH' over a 5-year period, from '2018 to 2022'.

Participants: The participant pool consisted of individuals who received fat grafting in the specified area within the study timeframe.

Inclusion and Exclusion Criteria: Participants included those who underwent the specified procedure. Exclusion criteria, while not detailed, likely involved patients with surgical contraindications or incomplete follow-up data.

Bias: To reduce bias, a thorough review of all relevant cases within the set period was conducted.

Variables: Key variables analyzed were patient age and gender, duration of the procedure, procedural specifics, and any postoperative complications.

Data Collection: Data collection encompassed demographic information, details of the surgical procedure, and postoperative results. Follow-ups were scheduled at specific intervals post-treatment.

Procedure

The fat grafting procedure involved several steps:

1. **Anesthetic Application:** A solution containing naropine, adrenaline, and sodium chloride was used for local anesthesia.
2. **Harvesting Fat:** After allowing time for the adrenaline's effect, fat was extracted using a 3.0 mm cannula, aiming for at least 30 cm³.
3. **Preparation of Fat:** The harvested fat underwent a decanting process for 10 minutes to eliminate impurities.

4. **Injection of Fat:** Between 10 to 30 cm³ of the prepared fat was injected into the hand's dorsum using a 1.4 mm cannula, carefully placed above the dorsal deep fascia.

Statistical Analysis: The collected data were analyzed to evaluate the procedure's efficacy and safety, focusing on descriptive statistics of patient demographics, procedural details, and complication rates.

Ethical Consideration: The study was conducted in accordance with ethical standards, ensuring the confidentiality and privacy of patient data. Informed consent was obtained for the use of medical records in this retrospective study. Additionally, standard care including antibiotic prophylaxis with cephalexin was provided to all patients as part of the treatment protocol.

Results

In this study involving fat grafting for hand rejuvenation, 74 individuals were closely monitored for over a year through direct consultations. This extended follow-up period was crucial for evaluating changes in the hand's contour and the overall skin improvement post-procedure. Among the participants, 63 (representing 85% of the total) reported being pleased with the results during the follow-up period.

A smaller group, consisting of 10 patients (13.5%), experienced partial satisfaction and expressed interest in undergoing an additional session of fat grafting to fully meet their expectations. This subgroup included seven individuals who smoked, four with hyperthyroidism, two who used fat-burning dietary supplements, and two who had previously experienced severe burns. Conversely, a single patient, accounting for 1.5% of the total, was dissatisfied with the outcome of the procedure. The study also noted four cases of temporary swelling in the hands, which naturally subsided without the need for medical intervention. Importantly, the study observed no major long-term complications associated with the fat grafting process.

Table 1: Patient's demographics

Demographic Factor	Data
Total Number of Patients	74
Average Age of Patients	52.4 years
Youngest Patient	34 years
Oldest Patient	82 years
Number of Female Patients	56 out of 74
Number of Male Patients	18 out of 74
Average Time Required for Procedure	22 minutes

In the study the postoperative complications were closely monitored and recorded. Notably, there were no permanent or long-term complications reported following the procedure. Temporary paresthesia, a common minor complication, was ob-

served in 8 of the 74 patients, which resolved naturally within 48 hours without the need for any additional intervention. Additionally, a minor complication of temporary swelling of the hands was noted in 4 of the 74 patients, which also resolved sponta-

neously within 72 hours. It's important to highlight that all 74 patients in the study were followed up for a minimum period of 12 months to ensure a comprehensive assessment of both the immediate and long-term outcomes of the fat grafting procedure. This thorough follow-up underscores the study's commitment to evaluating the safety and efficacy of the hand rejuvenation technique.

Discussion

The study on hand fat grafting encompassing 74 patients yielded several significant findings. Primarily, a high satisfaction rate was observed, with 85% (63 patients) expressing contentment with the outcomes. This high satisfaction rate underscores the effectiveness of the procedure in achieving the desired aesthetic and functional improvements. The partial satisfaction reported by 13.5% (10 patients) suggests a nuanced understanding of patient expectations and the variability in individual responses to the procedure. Notably, the dissatisfaction rate was minimal, at only 1.5% (1 patient). The occurrence of temporary hand swelling in a small fraction of patients (4 cases) without any long-term complications points to the safety and tolerability of the procedure.

The high satisfaction rate can be attributed to the procedure's ability to effectively address age-related changes in hand appearance, such as volume loss and skin laxity. The need for additional fat grafting sessions in a subset of patients highlights the importance of managing patient expectations and recognizing that multiple sessions may be required to achieve optimal results. The correlation between partial satisfaction and specific patient characteristics (such as smoking, hyperthyroidism, and previous burns) suggests that these factors may influence the outcomes of fat grafting. The absence of long-term complications reinforces the procedure's safety profile, making it a viable option for hand rejuvenation.

Similarly, [6] demonstrated a high rate of patient satisfaction with fat grafting for hand rejuvenation, noting significant improvements in skin texture and hand contour, and a minimal risk of complications, paralleling our findings. [7] also focused on aesthetic outcomes of hand rejuvenation using fat grafting, finding an 80% satisfaction rate and emphasizing the importance of technique, slightly echoing our study's results. [8] Explored the regenerative properties of adipose-derived stem cells, providing insight into the biological mechanisms enhancing skin quality, complementing our clinical observations. [9] reported similar findings to ours, with significant improvements in hand appearance and texture, high patient satisfaction, and minimal complications, reinforcing fat grafting's viability and effectiveness in hand rejuvenation.

These studies collectively affirm the efficacy and safety of fat grafting for hand rejuvenation, aligning well with our study's outcomes.

Conclusion

The study presents fat grafting as a highly satisfactory and safe procedure for hand rejuvenation, with most patients experiencing significant improvements in hand appearance. The need for individualized treatment plans, considering patient-specific factors, is crucial for optimizing outcomes.

The procedure's safety profile, evidenced by the absence of long-term complications, makes it an attractive option for those seeking hand rejuvenation. Future research should focus on long-term outcomes and the impact of patient-specific factors on the efficacy of the procedure.

Limitations: The limitations of this study include a small sample population who were included in this study. The findings of this study cannot be generalized for a larger sample population. Furthermore, the lack of comparison group also poses a limitation for this study's findings.

Recommendations: In future research on fat grafting for hand rejuvenation, a focus on long-term outcomes is essential to understand the durability of the procedure's effects. Additionally, studies should investigate how individual patient factors, such as age, lifestyle, and underlying health conditions, influence the efficacy of the treatment. This approach will enable more personalized and effective treatment plans, ensuring optimal results for a diverse patient population.

Acknowledgement: We are thankful to the patients; without them the study could not have been done. We are thankful to the supporting staff of our hospital who were involved in patient care of the study group.

Source of funding: No funding received.

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