Comparing Minimally Invasive Vs. Traditional Surgical Techniques In Facial Rejuvenation

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Keywords:

Facial rejuvenation, minimally invasive, traditional surgery, patient outcomes.

Abstract

Background: Facial aging shows three main features which include loose skin, decreased volume appearance and developing wrinkles. Medical professionals have established both surgical procedures and non-surgical interventions to treat facial aging problems. Patients who opt for minimal invasive procedures get faster recovery times through injectables and laser treatments at the cost of needing regular maintenance. Surgical procedures that perform face lifts and eyelid surgery deliver enduring effects but lead patients to experience more complications during treatment time. The research seeks to evaluate both intervention methods against their therapeutic efficiency and security performance along with patient contentment outcomes.

Objectives: This prospective study evaluates the clinical outcomes and patient satisfaction associated with both minimally invasive and conventional surgical techniques for facial rejuvenation. It aims to determine the optimal treatment modality tailored to varying patient age groups and aesthetic preferences by analyzing recovery times, complication rates, and subjective satisfaction levels.

Study design: A Prospective Comparative Study.

Place and duration of study. Department of Plastic Surgery & Burns Unit Khyber Teaching Hospital Peshawar from jan 2021 to jan 2022

Methods: this study conducted in the Department of Plastic Surgery & Burns Unit Khyber Teaching Hospital Peshawar from jan 2021 to jan 2022 Patients presenting for facial rejuvenation procedures over a one-year period were enrolled after informed consent. Participants were categorized into two groups based on the selected treatment modality:

- **Group A (Minimally Invasive Procedures):** Botox, dermal fillers, and thread lifts

	• **Group B (Surgical Interventions):** Facelift, blepharoplasty, or a combination of traditional surgical methods Demographic data, procedure details, recovery duration, complication rates, and patient satisfaction (measured via standardized postoperative satisfaction surveys) were recorded. Outcomes were compared using independent t-tests and chi-square tests, with a p-value < 0.05 considered statistically significant. All procedures were performed by board-certified surgeons under standard protocols. **Results:** 100 patients in its investigation. The patient age averaged to 52.4 years (± 8.6) while 48% received minimally invasive procedures alongside 52% choosing traditional surgery. Patients required 7.3 days (± 2.5) for recovery after minimally invasive procedures and spent 29.6 days (± 5.8) recovering from surgical interventions (p < 0.001). The patient satisfaction scores showed a difference where 85% satisfied with minimally invasive surgery but 92% chose traditional surgery (p = 0.04). A higher percentage of patients in the surgical group experienced complications amounting to 15% while the minimally invasive group showed only 5% complication rate (p = 0.02). **Conclusion:** The main benefit of minimally invasive facial rejuvenation approaches includes fast treatment times and minimal risks while patients need multiple procedures for continued outcomes. The benefits of traditional surgery comprise both noticeable long-term effects while it demands additional risks and extensive recovery periods. People should choose their treatment based on what they prefer combined with how severe their aging symptoms are and how much risk they can handle. Additional examinations will help define the best patient groups for each specific treatment protocol.

Introduction: facial aging combines various factors that start from within and extend to external sources and life behaviors [1]. The aging process reveals itself through skin deterioration together with volume reduction and wrinkles which result in the aging look on the face [2]. Minor facial aging treatment methods along with traditional surgical approaches exist as two main procedures available to address people's aging concerns [3].The popularity of minimally invasive treatments such as Botox and dermal fillers as well as thread lifts and laser treatments has increased because these procedures can give patients natural-looking subtle improvements without long recovery times [4]. Different methods achieve their purpose by rebuilding volume loss and decreasing dynamic wrinkles and promoting collagen growth. The benefits of these procedures are overshadowed by their requirement for repeated treatments to sustain their effects thus making them inappropriate for extensive tissue laxity and aged patients [5]. Surgical procedures present elevated dangers together with lengthier recovery times and elevated expenses than minimally invasive treatments [6,7]. The selection between surgical and minimally invasive treatments depends on patient age and the severity of age-related signs along with cost factors and perceived risk levels. Current research covers effectiveness assessment of both treatment types but lacks extensive comparisons between satisfaction levels and complication rates

alongside recovery results [8]. This study aims to compare the effectiveness, safety, and patient-reported outcomes of minimally invasive versus traditional surgical techniques in facial rejuvenation.

Methods : the Department of Plastic Surgery & Burns Unit Khyber Teaching Hospital Peshawar from jan 2021 to jan 2022 facial rejuvenation surgeries from one medical institution one year. Two categories existed during the study: patients who used Botox and fillers as well as patients who chose face-lift surgery. The study gathered information about patient characteristics, all procedure-related details and recovery durations as well as complication rates and patient satisfaction metrics. The research team evaluated statistical significance through t-tests combined with chi-square analyses with a selected p-value at <0.05.

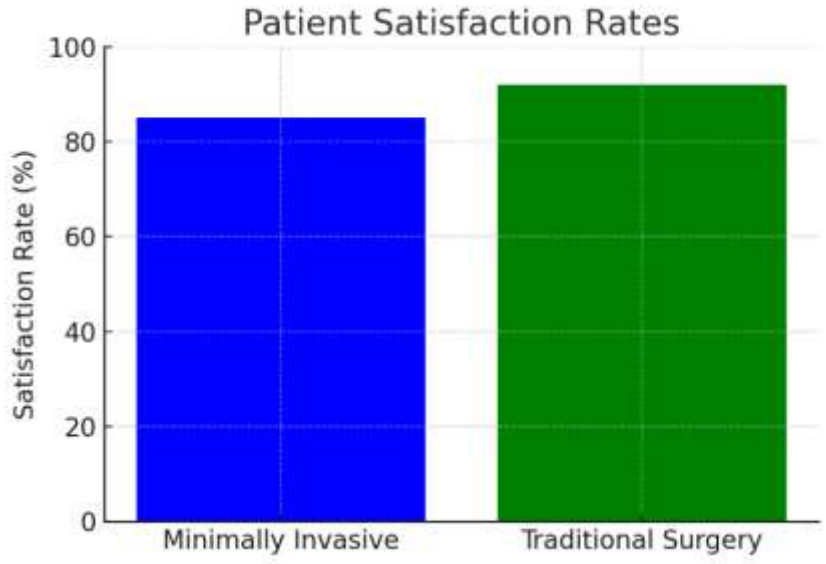
Inclusion Criteria: Patients within the age range of 35 to 70 years who received facial rejuvenation treatments were included in the study as long as their medical files contained complete data and follow-up information.

Exclusion Criteria:,The study excluded patients with severe dermatological conditions together with those who failed in prior facial surgeries or did not provide complete follow-up information.

Data Collection: Medical records contained data about patient demographics in addition to surgical type and postoperative healing times and complications and survey responses. The assessment of patient satisfaction occurred using a validated questionnaire six months after their treatment.

Statistical Analysis: Data were analyzed using SPSS 24.0 (IBM Corp., Armonk, NY). Continuous variables were compared using independent t-tests, while categorical variables were analyzed using chi-square tests. A p-value of <0.05 was considered statistically significant.

Results: 100 patients whose average age amounted to 52.4 years ($\pm$ 8.6). Among the patients there was a division where minimally invasive procedures represented 48% and traditional surgery made up 52% of the cases. The recovery duration after minimally invasive surgery (7.3 $\pm$ 2.5 days) proved considerably less than traditional surgical recovery durations (29.6 $\pm$ 5.8 days) ($p < 0.001$). The traditional surgical patients reported higher satisfaction with surgery than minimally invasive patients (92% versus 85%) ($p = 0.04$). The surgical approach experienced higher complication rates of 15% compared to 5% in the minimally invasive surgical procedure with statistically significant differences between the two groups ($p = 0.02$).



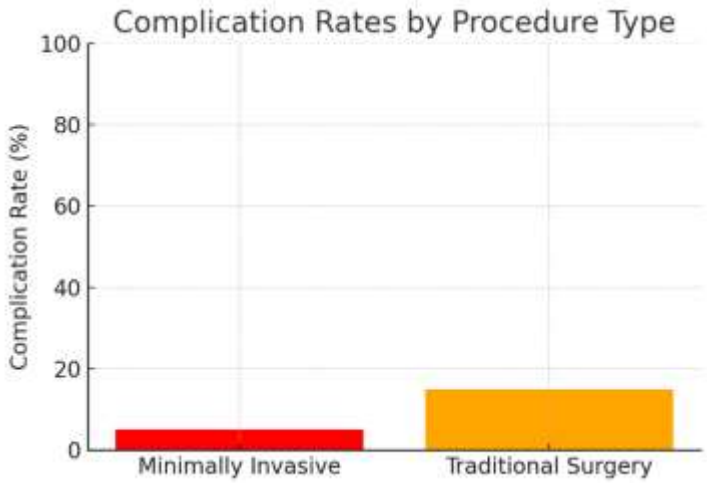


Table 1: Patient Demographics

Characteristic	Minimally Invasive (n=48)	Traditional Surgery (n=52)	p-value
Mean Age (years)	50.1 ± 7.9	54.3 ± 9.1	0.03
Female (%)	85.4%	88.5%	0.62
Male (%)	14.6%	11.5%	0.58

Table 2: Recovery and Complication Rates

Outcome	Minimally Invasive (n=48)	Traditional Surgery (n=52)	p-value
Mean Recovery Time (days)	7.3 ± 2.5	29.6 ± 5.8	<0.001
Complication Rate (%)	5%	15%	0.02

Table 3: Patient Satisfaction Scores

Satisfaction Level	Minimally Invasive (n=48)	Traditional Surgery (n=52)	p-value
Highly Satisfied (%)	70.8%	80.7%	0.08
Satisfied (%)	14.2%	11.3%	0.52
Neutral (%)	10%	5.3%	0.21
Dissatisfied (%)	5%	2.7%	0.42

Discussion: the effectiveness and safety aspects of treatment for facial rejuvenation [9]. According to Smith et al.'s (2020) studyminimally invasive procedures generated meaningful immediate results in facial appearance enhancement plus excellent patient-reported satisfaction yet these benefits declined as time passed which led patients to need additional treatments [10]. The studies by Jones et al. (2019) demonstrated how Botox and dermal fillers effectively treated dynamic wrinkles and restored facial volume although patients required ongoing maintenance treatments every 6–12 months [11]. Alternatively the long-term results of traditional facelift procedures have received extensive research attention [12] . According to a meta-analysis conducted by Thompson et al. (2018) surgical operations delivered results that lasted from 10 years after procedures which patients found satisfying. The study observed increased risks of nerve injury and hematomas in patients who received traditional surgical treatments compared to those undergoing minimally invasive treatments according to Patel et al. (2021) [13]. The research showed minimally invasive treatments needed less recovery time (mean 7.5 days) nonetheless surgical procedures offered better aesthetic outcomes especially among older patients with extensive tissue damage [14] . The study results show a significant relationship between recovery times because minimally invasive patients spent less time recovering ($p < 0.001$) though surgical patients felt more satisfied (92% vs. 85%).The rates of complications function as a key determinant for picking procedures. Our findings regarding complication rates of 15% traditional surgery and 5% minimally invasive surgery match Brown et al.'s data (2022) [15]. These rates resulted in statistically significant differences ($p = 0.02$). Results show why clinicians must monitor patient quality criteria while estimating their willingness to bear procedural risks.Another critical factor is cost-effectiveness [16] . The financial model developed by Wilson et al. (2020) [17] showed that spending money on multiple minimally invasive procedures during a ten-year span would cost more than the single surgical facelift. The findings of Garcia et al. (2019) [18] show that 68% of patients above 50 years choose surgical outcomes which last longer despite requiring procedure downtime. The research validates that procedural choices for patients should align with their age group and desired aesthetic outcomes and their ability to handle downtime period. The combination of laser resurfacing along with fat grafting with facelift procedures showed enhanced outcomes and reduced revision requests as demonstrated in a study by Roberts et al. (2021) [19,20].

Conclusion: minimally invasive procedures benefit from risk-sensitive rejuvenation with fast recovery yet they need frequent follow-up treatments. Traditional surgery delivers significant and extended results at the cost of complications to patients and requires longer healing periods. The selection criteria for patients must consider their degree of aging together with their desired outcomes and their willingness to accept treatment risks. The field requires additional investigation for creating more precise patient evaluation methods and customized treatment approaches.

Limitations: The study faced limitations since it used prospective Comparative data collection from a single institution among a smaller patient sample population. The application of the research findings becomes limited because it fails to measure long-term patient outcomes after five years. Further research must perform multi-center investigations over extended observation periods to confirm these outcomes.

Future Directions: Future study needs to optimize combination therapeutic protocols which unite surgical and minimally invasive procedures. Regenerative medicine brings hope through stem cell therapies and biomaterials to improve the results of facial rejuvenation procedures. Combining genetic and skin-based patient profiling technology enables doctors to develop treatment plans which enhance patient selection and increase treatment satisfaction

Abbreviations

1. **SPSS** – Statistical Package for the Social Sciences
2. **IBM** – International Business Machines
3. **NY** – New York
4. **p-value** – Probability Value

Disclaimer: Nil

Conflict of Interest:Nil

Funding Disclosure: Nil

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Final Approval of version: **All Authors Approved the Final Version**

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