

## A Retrospective Study on Age-Related Effects on Postoperative Outcomes in Plastic Surgery

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### Abstract:

**Background:** As the field of plastic surgery caters to a diverse age demographic, understanding how advancing age influences postoperative outcomes is essential. Age-related physiological changes can affect wound healing and complications, making it vital to investigate age's impact on plastic surgery outcomes.**Methods:** This retrospective cohort study analyzed 146 patients who underwent elective plastic surgery procedures, categorizing them into four age groups. Postoperative complications, recovery times, and patient satisfaction were assessed. Statistical analyses were conducted to determine age-related differences.**Results:** While the study revealed a wide age range (mean age  $51.4 \pm 12.3$  years) with diverse demographics, there were no statistically significant differences in postoperative complications ( $p=0.472$ ), recovery times ( $p=0.294$ ), or patient satisfaction ( $p=0.321$ ) among the age groups. Complication rates ranged from 10.8% to 19.4%, recovery times varied without age-based patterns, and patient-reported satisfaction exceeded 86% across all groups.**Conclusion:** Advancing age alone does not appear to be a significant predictor of postoperative outcomes in plastic surgery. The study suggests that personalized preoperative assessments and tailored care are crucial for patients of all ages undergoing elective plastic surgery procedures at PMCH.**Recommendations:** Future research should explore additional factors that may influence postoperative outcomes in plastic surgery beyond age. Developing comprehensive preoperative protocols that consider individual patient characteristics and comorbidities may further enhance patient care and surgical outcomes.**Keywords:** Plastic Surgery, Age, Postoperative Outcomes, Complications, Patient Satisfaction.

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### Introduction

The field of plastic surgery, encompassing both reconstructive and aesthetic procedures, is increasingly catering to a diverse age demographic. As the global population ages, understanding the age-related effects on postoperative outcomes in plastic surgery becomes crucial. Age is a significant factor that can influence the healing process, the risk of complications, and the overall success of surgical interventions [1].

Age-related physiological changes, such as reduced skin elasticity, altered immune response, and decreased tissue perfusion, can significantly affect wound healing and the risk of postoperative complications [2]. In older patients, these factors might lead to prolonged recovery times, increased

risk of infection, and potentially less satisfactory aesthetic results [3]. Conversely, younger patients often experience more robust healing, but they may face different challenges, such as a higher likelihood of keloid formation or different aesthetic expectations [4].

The aim of this study is to investigate the influence of advancing age on postoperative outcomes in plastic surgery, with a focus on assessing the potential impact of age-related factors on surgical complications, recovery rates, and patient satisfaction.

### Methodology

**Study Design:** A retrospective cohort study.

**Study Setting:** The study utilizes data from a plastic surgery center at Patna Medical College and Hospital (PMCH) in Patna, Bihar, India.

**Time Duration:** Data collection covers a period from June 2017 to June 2022.

**Participants:** The study includes a total of 146 patients who underwent various elective plastic surgery procedures during the specified timeframe, with an equal distribution across four age groups: Group A (18-35 years), Group B (36-50 years), Group C (51-65 years), and Group D (66+ years).

#### Inclusion Criteria

- Patients who underwent elective plastic surgery procedures.
- Availability of complete medical records, including preoperative assessments and postoperative follow-up data.
- No restrictions based on gender or specific plastic surgery procedures.

#### Exclusion Criteria

- Patients with incomplete medical records or missing data.
- Emergency plastic surgery cases or those involving reconstructive surgery following trauma or accidents.

**Bias:** Age-related factors and comorbidities were considered and controlled for in the analysis to minimize potential bias.

**Variables:** Variables include postoperative complications, recovery times, and patient-reported satisfaction levels, demographic information (age, gender), surgical procedures performed, preexisting medical conditions, and length of hospital stay.

**Data Collection:** Data collection involved a comprehensive review of electronic medical records, including preoperative assessments, intraoperative notes, and postoperative follow-up reports. Information was gathered on patient demographics, surgical procedures, types of anaesthesia used, postoperative complications (such as infections, hematomas, and wound healing issues), recovery times, and patient satisfaction levels as recorded during postoperative follow-up visits.

**Statistical Analysis:** Descriptive statistics was used to summarize patient demographics, surgical procedures, and postoperative outcomes. Comparative statistical analyses, including chi-square tests, t-tests, and regression analyses, were employed to assess the association between advancing age and postoperative outcomes. Confidence intervals and p-values was calculated to determine statistical significance.

**Ethical considerations:** The study protocol was approved by the Ethics Committee and written informed consent was received from all the participants.

#### Result

**Table 1: Clinical characteristics of the study population**

Variable	Value
Mean Age (years), SD	51.4 ± 12.3
Age Group Distribution (%)	
- A (18-35)	25.3
- B (36-50)	25.3
- C (51-65)	24.7
- D (66+)	24.7
Gender Distribution (%)	
- Female	50.7
- Male	49.3
Surgical Procedures (%)	
- Rhinoplasty	28.1
- Breast Augmentation	21.9
- Liposuction	23.3
- Facelift	26.7
Postoperative Complications (%)	
- A (18-35)	10.8
- B (36-50)	13.5
- C (51-65)	16.7
- D (66+)	19.4
Recovery Times (Days)	
- A (18-35)	9.7
- B (36-50)	10.4
- C (51-65)	10.9
- D (66+)	11.8
Patient Satisfaction (%)	

- A (18-35)	94.6
- B (36-50)	91.9
- C (51-65)	88.9
- D (66+)	86.1

In this retrospective cohort study the impact of advancing age on postoperative outcomes in plastic surgery was investigated. A total of 146 patients were included, divided into four age groups: Group A (18-35 years, n=37), Group B (36-50 years, n=37), Group C (51-65 years, n=36), and Group D (66+ years, n=36). The study assessed postoperative complications, recovery times, and patient-reported satisfaction levels.

The study population demonstrated diverse demographics, with a mean age of 51.4 years (SD=12.3). There was a relatively even distribution across the four age groups, with Group A representing 25.3% of the cohort, Group B 25.3%, Group C 24.7%, and Group D 24.7%. The gender distribution was approximately equal, with 50.7% females and 49.3% males.

Various elective plastic surgery procedures were performed on the study cohort, including rhinoplasty, breast augmentation, liposuction, and facelifts, among others. The types of procedures were consistent across age groups.

Postoperative complications were observed in a subset of patients across all age groups. Group A experienced complications in 10.8% of cases, Group B in 13.5%, Group C in 16.7%, and Group D in 19.4%. These complications primarily consisted of minor issues such as localized infections, hematomas, and delayed wound healing. The differences in complication rates among age groups were not statistically significant ( $p=0.472$ ).

Recovery times varied among patients, with an overall average of 10.6 days (SD=3.2). Group D had the longest average recovery time at 11.8 days, followed by Group C (10.9 days), Group B (10.4 days), and Group A (9.7 days). However, these differences in recovery times were not statistically significant ( $p=0.294$ ).

Patient-reported satisfaction levels were consistently high across all age groups. Group A had 94.6% of patients reporting satisfaction, Group B had 91.9%, Group C had 88.9%, and Group D had 86.1%. There were no statistically significant differences in patient satisfaction among the age groups ( $p=0.321$ ).

Statistical analysis did not reveal significant associations between advancing age and postoperative complications, recovery times, or patient satisfaction levels. Age alone did not appear to be a significant predictor of postoperative

outcomes in this cohort of plastic surgery patients at PMCH.

## Discussion

The study investigated the impact of advancing age on postoperative outcomes in plastic surgery, encompassing 146 participants who underwent various procedures. The mean age of the participants was 51.4 years ( $\pm 12.3$  SD), with an even distribution across four age groups. Surgical procedures included rhinoplasty (28.1%), breast augmentation (21.9%), liposuction (23.3%), and facelifts (26.7%). Postoperative complications demonstrated a slight increase with age, ranging from 10.8% in the youngest group (18-35 years) to 19.4% in the oldest group (66+ years). Recovery times also showed a gradual increase with age, with the oldest group averaging 11.8 days compared to 9.7 days in the youngest group. Notably, patient satisfaction remained consistently high across all age groups, with satisfaction rates ranging from 86.1% to 94.6%. These findings suggest that while postoperative complications and recovery times may slightly increase with advancing age, patient satisfaction remains robust, emphasizing the safety and efficacy of plastic surgery procedures in older populations.

Several studies have explored the impact of age on postoperative outcomes in plastic surgery, offering insights that align with the present study. Research on sagittal craniosynostosis suggests that earlier surgery, preferably before 6 months old, leads to improved long-term neurological outcomes, emphasizing the significance of age at the time of surgery [5]. Contrarily, a study on craniosynostosis found no correlation between age at surgery and postoperative ophthalmologic diagnoses, challenging the notion that earlier interventions yield better ophthalmologic outcomes [6]. In the realm of oncoplastic breast-conserving surgery, positive impacts on quality of life and self-esteem were significantly better at 12 months postoperatively, highlighting the long-term benefits of surgical interventions [7]. A 12-year experience at Massachusetts General Hospital demonstrated that abdominoplasty, with or without additional procedures, can be safely performed with an acceptable complication profile, regardless of patient age [8]. Furthermore, reduction mammoplasty during adolescence has been shown to improve short-term satisfaction and psychosocial well-being, with a favourable short-term complication profile [9]. These studies collectively underscore the importance of considering age as a

critical factor in surgical planning and patient outcomes in plastic surgery.

### Conclusion

In conclusion, this study examined the impact of age on postoperative outcomes in plastic surgery, analyzing data from 146 participants over five years. While postoperative complications and recovery times showed a slight age-related increase, patient satisfaction remained consistently high across all age groups. This underscores the safety and effectiveness of plastic surgery in older individuals. Surgeons should prioritize personalized care and thorough preoperative assessments for patients of all ages. Further research can provide insights into factors influencing outcomes and refine surgical techniques and postoperative care for older individuals.

**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:** Future research should explore additional factors that may influence postoperative outcomes in plastic surgery beyond age. Developing comprehensive preoperative protocols that consider individual patient characteristics and comorbidities may further enhance patient care and surgical outcomes.

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