

# Microvascular Reconstruction of Head and Neck Defects in the Elderly



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## Objective

Microvascular free flap reconstruction of the head and neck is a common technique utilised across many ages. The purpose of this study was to identify if advanced age or comorbidity was associated with worse postoperative outcomes in patients undergoing free flap reconstruction in those aged older than 75 years.

## Methods

A retrospective analysis was performed on 345 consecutive patients undergoing free flap surgery of the head and neck (HN). We compared 100 elderly patients (group 1) to 244 patients younger than 75 (group 2). Demographic, pathological, operative and clinical factors were collected, along with Charlson Comorbidity (CCI) and American Society of Anaesthesiologist (ASA) status. Logistic regression was used to identify the association of age, CCI or ASA with postoperative complication. A p value of <0.05 was considered significant and is represented by \* in each table.

| Table 1: Demographics            | Group 1 (≥75) | Group 2 (<75) |
|----------------------------------|---------------|---------------|
| Age, years *                     | 80 (77 to 84) | 62 (52 to 68) |
| Male sex, n (%)                  | 60 (60)       | 160 (66)      |
| Previous HN Free Flap (%)        | 14 (14)       | 29 (12)       |
| Previous HN Ablative Surgery (%) | 35 (35)       | 81 (34)       |
| Previous HN Radiotherapy (%)     | 20 (20)       | 53 (22)       |
| ASA III Status (%) *             | 64 (64)       | 121 (50)      |
| CCI score (IQR) *                | 6 (6 to 8)    | 4 (3 to 5)    |

## Results

Elderly patients (≥75 years) had a higher overall complication rate (OR 1.7, p =0.04) that was restricted to medical complications (OR 2.1, p = 0.05) and not surgical complications (OR 1.4, p=0.14). Reconstructions of defects from cutaneous malignancy predominated in the elderly cohort (48% vs 29%, p<0.01), but there was no difference in complication rate when cutaneous or mucosal subgroups were separated by age (table 4). Surgical complications did not differ between age groups (table 3). ASA IV was weakly associated with surgical complications (OR 3.89, p=0.053), but CCI was not associated with any outcome. Median length of stay was similar between age groups.

| Table 2: Surgical Characteristics | Group 1 (≥75) | Group 2 (<75) |
|-----------------------------------|---------------|---------------|
| Ablation site, n (%): *           |               |               |
| Mucosal                           | 47 (47)       | 159 (65)      |
| Cutaneous                         | 48 (48)       | 70 (29)       |
| Other                             | 5 (5)         | 15 (5)        |
| Flap Type, n (%):                 |               |               |
| ALT                               | 46 (46)       | 89 (37)       |
| RFFF                              | 30 (31)       | 64 (26)       |
| Other                             | 26 (26)       | 86 (36)       |

| Table 3: Postoperative Outcome      | Group 1 (≥75) | Group 2 (<75) |
|-------------------------------------|---------------|---------------|
| All Complications, n (%): *         | 47 (47)       | 85 (35)       |
| All Surgical Complications, n (%):  | 39 (39)       | 77 (31)       |
| Flap related complications, n (%)   | 27 (27)       | 65 (26)       |
| Other surgical complications, n (%) | 11 (11)       | 15 (6)        |
| Medical Complications, n (%): *     | 14 (14)       | 16 (7)        |
| LOS to discharge, days (IQR)        | 13 (10 to 19) | 13 (10 to 18) |

**Table 1 (left):** Patient demographics by age group.  
**Table 2 (Above, Top):** Patient surgical characteristics by age group.  
 \* Represents statistical significance (p < 0.05).



No difference was observed when comparing post operative medical complications, operative or anaesthetic time, length of stay in ICU, time to discharge and time to decannulation.

| Table 4: Complication by Flap   | Group 1 (≥75) | (Group 2) <75 |
|---------------------------------|---------------|---------------|
| Mucosal, n / total (%)          | 21 / 47 (44)  | 70 / 159 (40) |
| Cutaneous, n / total (%)        | 19 / 48 (39)  | 15 / 70 (22)  |
| Osseous flap, n / total (%)     | 10 / 14 (71)  | 18 / 45 (40)  |
| Soft tissue flap, n / total (%) | 31 / 79 (39)  | 67 / 197 (34) |

| Table 5: Logistic Regression     | Odds Ratio | 95% Confidence Interval | p value |
|----------------------------------|------------|-------------------------|---------|
| Age ≥ 75 & Any complication      | 1.65       | 1.03 – 2.66             | 0.036   |
| Age ≥ 75 & Medical complication  | 2.13       | 0.98 – 4.61             | 0.055   |
| ASA adjustment                   | 2.90       | 1.24 - 6.76             | 0.014   |
| Age ≥ 75 & Surgical Complication | 1.44       | 0.89 – 2.34             | 0.14    |
| ASA IV & Surgical Complication   | 3.89       | 0.98 – 15.42            | 0.053   |

**Table 3 (Left, Below):** Postoperative complications by age group.  
**Table 4 (Above, Top):** Complications by flap type, osseous vs. soft tissue.  
**Table 5 (Above, Bottom):** Logistic regression of elderly age, as well as by ASA status. \* represents statistical significance (p < 0.05).

## Conclusion

Increased age was associated with medical complications, and surgical complications were weakly associated with ASA status. Advanced age or comorbidity should not preclude microvascular reconstruction, but comorbid status should be optimised preoperatively.