



The Age Factor: Exploring Age-related Differences In Outcomes

After Free Fibula Mandible Reconstruction

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BACKGROUND

- The fibula free flap (FFF) remains the gold standard for bony mandibular reconstruction.
- As the incidence of oropharyngeal cancer rises with age, older patients increasingly undergo FFF reconstruction.
- While older age is often associated with more comorbidities, its independent effect on postoperative outcomes following mandibular reconstruction remains unclear.
- Recent literature suggests advanced age alone may not increase risk, highlighting the need for further investigation.¹

STUDY OBJECTIVES

Primary Objective

- To comprehensively assess the impact of age on medical and surgical complication rates following free fibula flap for oncologic mandibular reconstruction

Secondary Objectives

- Evaluate the effect of age on rates of readmission, reoperation, length of stay (LOS) and FACE-Q PRO measure over time.

METHODS

- Patients >18 years of age who underwent oncologic mandible reconstruction using fibula flap between 2000-2023 were retrospectively reviewed.
- Patients were stratified into four age groups: <50, 50–59, 60–69, and ≥70 years.
- Demographics, medical comorbidities, cancer treatment history, complications (major/minor), length of stay, readmission, and reoperation rates were collected.
- FACE-Q scores were also analyzed at preoperative, 6-month and 1-year time points
- Variables of interest were compared across age groups using Multivariable logistic regression.

HYPOTHESIS

Older patients undergoing oncologic mandibulectomy with free fibula flap reconstruction will have higher rates of systemic complications and 90-day readmissions. Despite this, we hypothesize that patient-reported outcomes (FACE-Q scores) will not significantly differ across age groups.

Table 1: Baseline Patient Characteristics

Characteristic n, (%)	<50 (n=88)	50–59 (n=114)	60–69 (n=129)	≥70 (n=105)	p-value
Male	50 (57%)	77 (68%)	91 (71%)	53 (50%)	0.006*
CCI - Moderate	3 (3.4%)	27 (24%)	74 (57%)	73 (70%)	<0.001*
CCI - Severe	2 (2.3%)	2 (1.8%)	11 (8.5%)	32 (30%)	
BMI	22.8	24.8	24.7	24.5	0.14
Smoker	11 (13%)	22 (19%)	19 (15%)	5 (4.8%)	<0.001*
Chemotherapy	20 (23%)	20 (18%)	19 (15%)	17 (16%)	0.4
Radiation	11 (13%)	16 (14%)	17 (13%)	11 (10%)	0.6
Mandibulectomy					0.4
Anterior	11 (13%)	13 (11%)	24 (19%)	24 (23%)	
Lateral	40 (45%)	61 (54%)	56 (43%)	46 (44%)	
Bilateral	3 (3.4%)	2 (1.8%)	3 (2.3%)	3 (2.9%)	
Hemi	34 (39%)	38 (33%)	46 (36%)	32 (30%)	

CCI: Charlson Comorbidity Index Score

Figure 2: 90-Day Complication Rates by Age Group

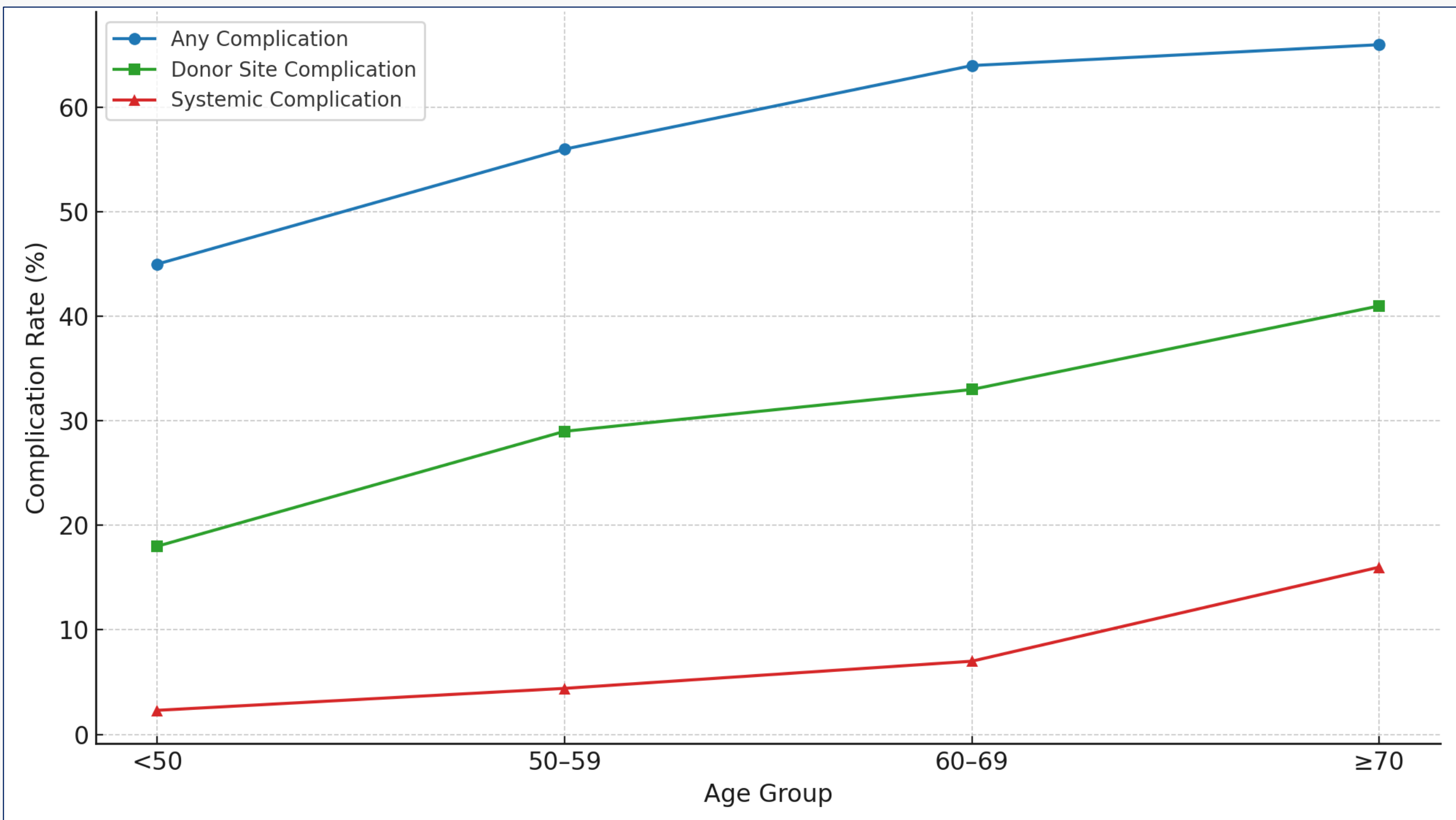


Figure 1: CAD/CAM of a two-piece free fibula flap for reconstruction of a hemimandibulectomy defect

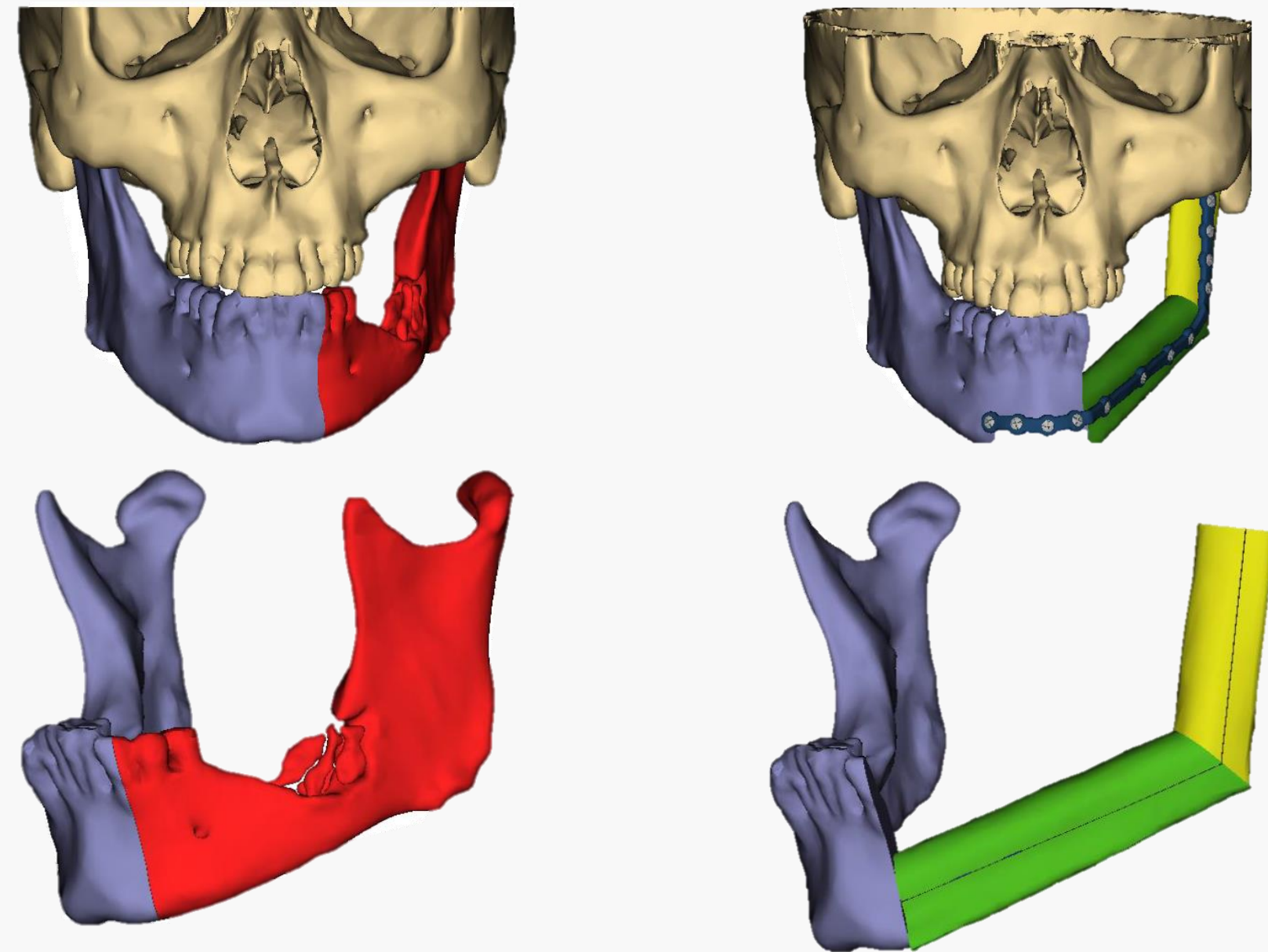


Table 2: Multivariate Analysis between Age groups

Age	Odds Ratio (95% CI)	p-value
Surgical Complication		
<50	—	—
50-59	1.41 (0.68, 2.97)	0.4
60-69	2.54 (1.15, 5.69)	0.022*
70+	3.06 (1.23, 7.70)	0.016*
Medical Complication		
<70	—	—
70+	3.57 (1.70, 7.54)	<0.001*
Readmission		
<50	—	—
50-59	0.53 (0.21, 1.38)	0.2
60-69	0.98 (0.39, 2.58)	>0.9
70+	0.51 (0.17, 1.57)	0.2
Reoperation		
<70	—	—
70+	0.94 (0.38, 2.06)	0.9
Length of Stay (Beta)		
<50	—	—
50-59	-0.9 (4.1, 2.2)	0.6
60-69	-1.7 (-5.1, 1.6)	0.3
70+	1.7 (-5.6, 2.1)	0.4

*For Surgical Complications, Remission and Length of Stay analysis included age, CCI score, neoadjuvant chemotherapy and radiation, and mandibulectomy type. For Medical Complications and Reoperation the model included age, mandibulectomy and preoperative radiation.

RESULTS

- 436 patients underwent fibula free flap reconstruction. <50 (20%), 50–59 (26%), 60–69 (29.5%), ≥70 (24%).
- 58% of patients experienced a complication within 90 days, with rates increasing by age: <50 (45%), 50–59 (56%), 60–69 (64%), ≥70 (66%), (p=0.018). Donor site (p=0.007) and systemic complications (p<0.001) were significantly more common in older patients.
- Patients ≥70 had 3× higher odds of surgical complications (OR 3.06, p = 0.016) and 3.5× higher odds of medical complications (OR 3.57, p = <0.001).
- Readmission, reoperation, and length of stay were not significantly affected by age.
- FACE-Q scores showed no significant age-related differences across time points

CONCLUSIONS

- Increasing age is a significant independent predictor of early post-operative complications, particularly donor site and systemic events, following oncologic mandible reconstruction with free fibula flap.
- Despite these differences, readmission, reoperation, and length of stay remained low and comparable across age groups.
- FACE-Q scores indicated preserved satisfaction with appearance and function, even in older cohorts, underscoring the potential for meaningful recovery regardless of age.
- While older patients may require enhanced perioperative risk mitigation, age alone should not be viewed as a contraindication for fibula flap reconstruction in the oncologic setting.

REFERENCES

¹Graboyes, E. M., et al. (2018). Association of comorbidity with postoperative complications and survival in patients with head and neck cancer. JAMA Otolaryngology–Head & Neck Surgery, 144(11), 1013–1020. <https://doi.org/10.1001/jamaoto.2018.2090>

