

INTRODUCTION

- Advanced osteoradionecrosis (ORN) of the mandible is an unfortunate sequela of head and neck radiation therapy.
- Early ORN can be managed conservatively with oral hygiene, antibiotics, local debridement and hyperbaric oxygen therapy.
- “End-stage” ORN resulting in pathologic fracture, fistulization and/or severe pain necessitates segmental resection and microvascular reconstruction.
- While bony reconstruction is the gold standard for mandibular reconstruction, it is more complex and soft tissue reconstruction has a role in specific defect types.
- The purpose of this study is to evaluate outcomes with our surgical current treatment algorithm.

OBJECTIVE & METHODS

- A retrospective analysis of free flap reconstructions for mandibular ORNs between 1994-2023 was performed.
- Type I defects represented segmental bone defects with intact condyles, while type II defects comprised posterior defects with condylar resection.
- These were further subdivided to absence (A) or presence (B) of external skin defects.
- Defects were considered simple in the absence of skin involvement (Ia and IIa) and otherwise complex (Ib and IIb)
- .Data collection
 - Patient demographics
 - Perioperative characteristics
 - Postoperative outcomes
 - Survival data

RESULTS

Table 1. Patient Characteristics	
	N=274
Demographics	
Age, median (IQR)	63 (57-70)
BMI, median (IQR)	24 (21.5-27.2)
Male, %	195 (71%)
Comorbid conditions	
Hypertension	133 (48%)
Diabetes mellitus	28 (10%)
Coronary artery disease	41 (15%)
Peripheral vascular disease	31 (11%)
Active smoker	28 (10%)
Adjuvant Therapies	
History of chemotherapy	167 (61%)
History of radiation	
Preoperative trismus	
None	68 (25%)
Mild	54 (20%)
Moderate	32 (12%)
Severe	121 (44%)
Hospital length of stay in days, median (IQR)	8 (7-10)
Follow-up length in months, median (IQR)	27 (9-68)
Mandibulectomy type	
Anterior	6 (2.2%)
Hemi	72 (26%)
Segmental	188 (68%)
Posterior	9 (3.3%)
Intraoral defect	243 (88%)
Skin defect	166 (60%)
Concomitant glossectomy	19 (6.9%)
Reconstruction type	
Soft tissue only	48 (18%)
Bone only	226 (82%)

RESULTS

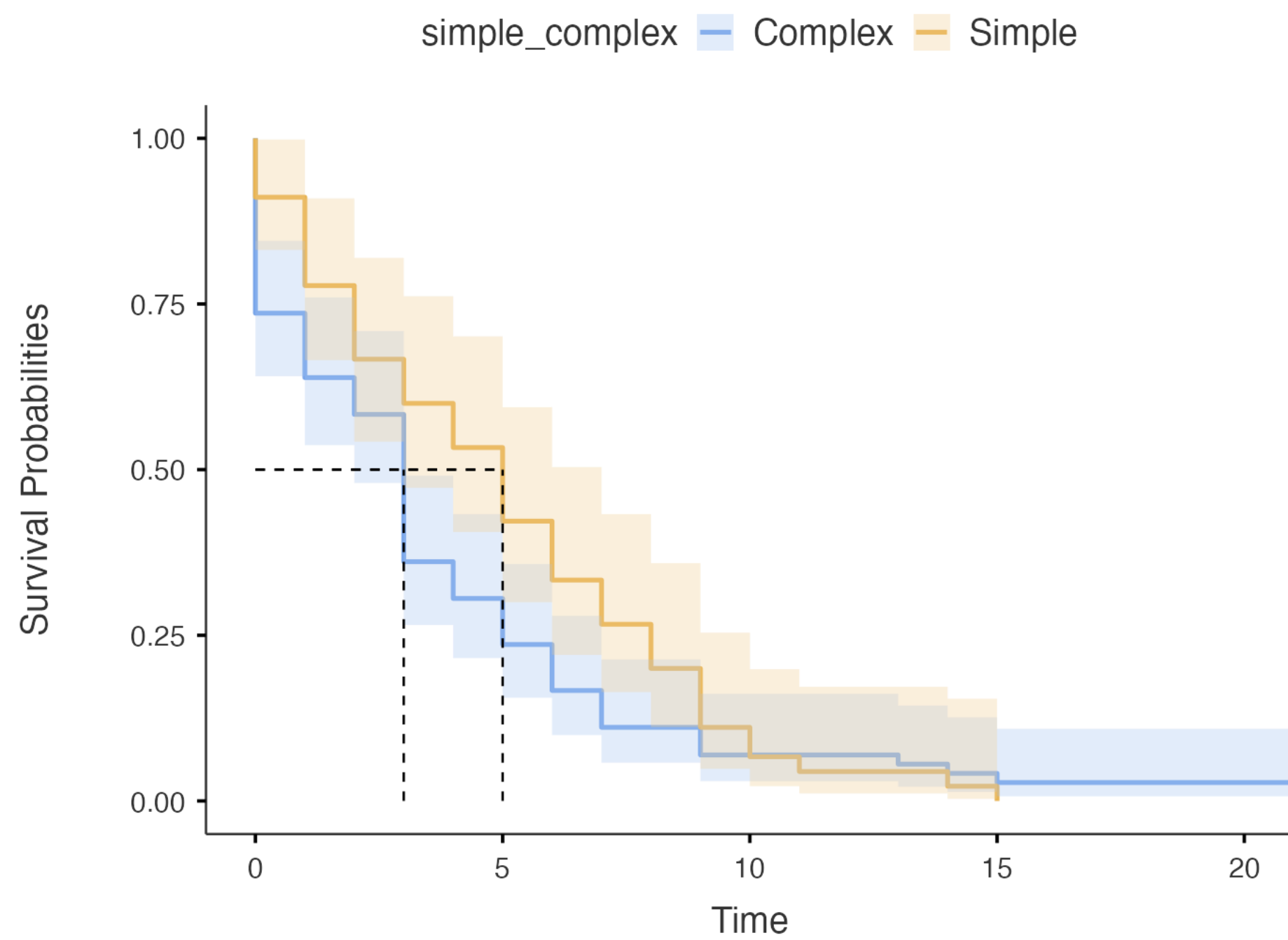
Table 2: Reconstruction by Defect Type				
	Ia 86 (31%)	Ib 114 (42%)	IIa N 23 (8.4%)	IIb 51 (19%)
Soft Tissue Reconstruction Only				
ALT	--	1 (0.3%)	8 (2.9%)	24 (8.8%)
Latissimus dorsi	--	--	--	1 (0.3%)
Radial forearm	--	--	1 (0.3%)	--
VRAM	--	1 (0.3%)	--	6 (12%)
Bony Reconstruction				
Fibula	83 (30.3%)	70 (25.5%)	13 (4.7%)	9 (3.3%)
Iliac crest	1 (0.3%)	1 (0.3%)	1 (0.3%)	1 (0.3%)
Double free flap				
Fibula + ALT	1 (0.3%)	28 (10.2%)	--	2 (0.6%)
Fibula + other soft tissue	--	11 (4%)	--	1 (0.3%)
Iliac crest + other soft tissue	1 (0.3%)	2 (0.6%)	--	--

Table 3: Functional Outcomes by Defect Type						
	Simple			Complex		
	Bone, 86 (92%)	Soft tissue, 7 (7.5%)	p-value	Bone, 126 (76%)	Soft tissue, 39 (24%)	p-value
Tube-dependent feeds	30 (30)	3 (33)	>0.99	32 (26)	15 (38)	0.12
≤50% Intelligible speech	6 (6.2)	0 (0)	>0.99	9 (7.4)	3 (9.4)	0.71
MBS			0.33			0.79
Aspiration	59 (67)	4 (57)		67 (64)	16 (59)	
Normal Swallow	20 (23)	1 (14)		30 (29)	8 (30)	
Leak	9 (10)	2 (29)		8 (7.6)	3 (11)	
Diet details			0.78			0.004*
Regular	32 (32)	4 (44)		53 (42)	8 (21)	
Oral + Tube	1 (1.0)	0 (0)		2 (1.6)	3 (7.7)	
Pureed	14 (14)	0 (0)		20 (16)	2 (5.1)	
Soft	23 (23)	2 (22)		18 (14)	11 (28)	
Tube	30 (30)	3 (33)		32 (26)	15 (38)	
SLP details			0.17			0.57
Unintelligible	0 (0)	0 (0)		1 (0.8)	1 (3.1)	
≤50 % Intelligible	6 (6.2)	0 (0)		8 (6.6)	2 (6.2)	
50–80 % Intelligible	13 (14)	3 (38)		11 (9.0)	4 (12)	
>80 % Intelligible	77 (80)	5 (62)		102 (84)	25 (78)	

RESULTS

Table 4: Complications by Defect Type						
	Simple			Complex		
	Bone, 86 (92%)	Soft tissue, 7 (7.5%)	p-value	Bone, 126 (76%)	Soft tissue, 39 (24%)	p-value
Readmission in 30 days	21 (21)	4 (44)	0.21	26 (20)	7 (18)	0.73
Reoperation in 30 days	19 (19)	3 (33)	0.38	31 (24)	8 (21)	0.62
SSI	14 (14)	1 (11)	>0.99	19 (15)	5 (13)	0.74
Abscess	9 (9.0)	0 (0)	0.52	15 (12)	4 (10)	>0.99
Cellulitis	5 (5.0)	1 (11)		4 (3.1)	1 (2.6)	
Dehiscence	6 (6.0)	1 (11)	0.46	8 (6.3)	3 (7.7)	0.72
Fistula	4 (4.0)	0 (0)	>0.99	4 (3.1)	2 (5.1)	0.63
SSO	15 (15)	2 (22)	0.63	24 (19)	12 (31)	0.12
Flap loss	6 (6.0)	2 (22)	0.07	9 (7.1)		0.81
Partial	3 (3.0)	0 (0)	>0.99	7 (5.5)	1 (2.6)	0.68
Total	3 (3.0)	2 (22)	0.053	2 (1.6)	0 (0)	>0.99
Microsurgical	6 (6.0)	2 (22)	0.13	9 (7.1)	1 (2.6)	0.46
Venous thrombosis	5 (5.0)	2 (22)	0.1	8 (6.3)	1 (2.6)	0.69
Arterial thrombosis	1 (1.0)	1 (11)	0.16	2 (1.6)	0 (0)	>0.99

Figure 1. Survival Data for Complex vs. Simple Defects



CONCLUSION

Microvascular reconstruction can be reliably performed in advanced mandibular ORN.

There were no significant differences in postoperative complications by defect type or reconstruction modality.

Complex ORN defects confer lower overall survival rate.