

Patterns of Postoperative Trismus Following Mandibulectomy and Fibula Free Flap Reconstruction



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Background

- Trismus is a serious sequela of head and neck cancer (HNC) treatment that can profoundly affect quality of life
- While radiotherapy (RT) has a well-recognized relationship with trismus in HNC patients, the influence of surgical interventions on trismus is less clear
- Patients undergoing mandibulectomy with fibula free flap reconstruction (FFFR) may be especially susceptible to postoperative trismus, as physicians are often reticent to initiate early jaw stretching exercises out of concern for stressing the bone graft

Methods

- Retrospective review of 106 patients undergoing mandibulectomy with FFFR at UCSF between August 2011 to March 2022
- Trismus was defined as maximum interincisal opening (MIO) of ≤ 35 mm
- Two analysis intervals: early postop period (≤ 3 months after surgery) and late postop period (> 6 months after surgery)
- Univariate and multivariable logistic regressions were conducted for age, preoperative trismus status, surgical indication, adjuvant therapy, and mandibulotomy location

Results

		Preop Baseline (N=106)			≤ 3 months Postop (N=76)			> 6 months Postop (N=58)		
		Trismus, n (%) [N=48]	No trismus, n (%) [N=58]	p-value	Trismus, n (%) [N=58]	No trismus, n (%) [N=18]	p-value	Trismus, n (%) [N=39]	No trismus, n (%) [N=19]	p-value
Surgical Indication	Primary Ablation	24 (35%)	44 (65%)	0.003	34 (71%)	14 (29%)	0.313	21 (58%)	15 (42%)	0.070
	Salvage	13 (52%)	12 (48%)		15 (83%)	3 (17%)		10 (71%)	4 (29%)	
	Osteonecrosis	11 (85%)	2 (15%)		9 (90%)	1 (10%)		8 (100%)	0 (0%)	
Preoperative Trismus	Present	100%	-	-	32 (89%)	4 (11%)	0.014	20 (80%)	5 (20%)	0.072
	Absent	-	100%		26 (65%)	14 (35%)		19 (58%)	14 (42%)	
Adjuvant Therapy	Adjuvant RT/CRT	20 (32%)	42 (68%)	0.001	31 (74%)	11 (26%)	0.568	24 (62%)	15 (38%)	0.185
	None	28 (64%)	16 (36%)		27 (79%)	7 (21%)		15 (79%)	4 (21%)	
Posterior mandibulotomy	Ramus-involving	33 (56%)	26 (44%)	0.014	34 (81%)	8 (19%)	0.291	28 (82%)	6 (18%)	0.004
	Ramus-preserving	15 (32%)	32 (68%)		24 (71%)	10 (29%)		11 (46%)	13 (54%)	

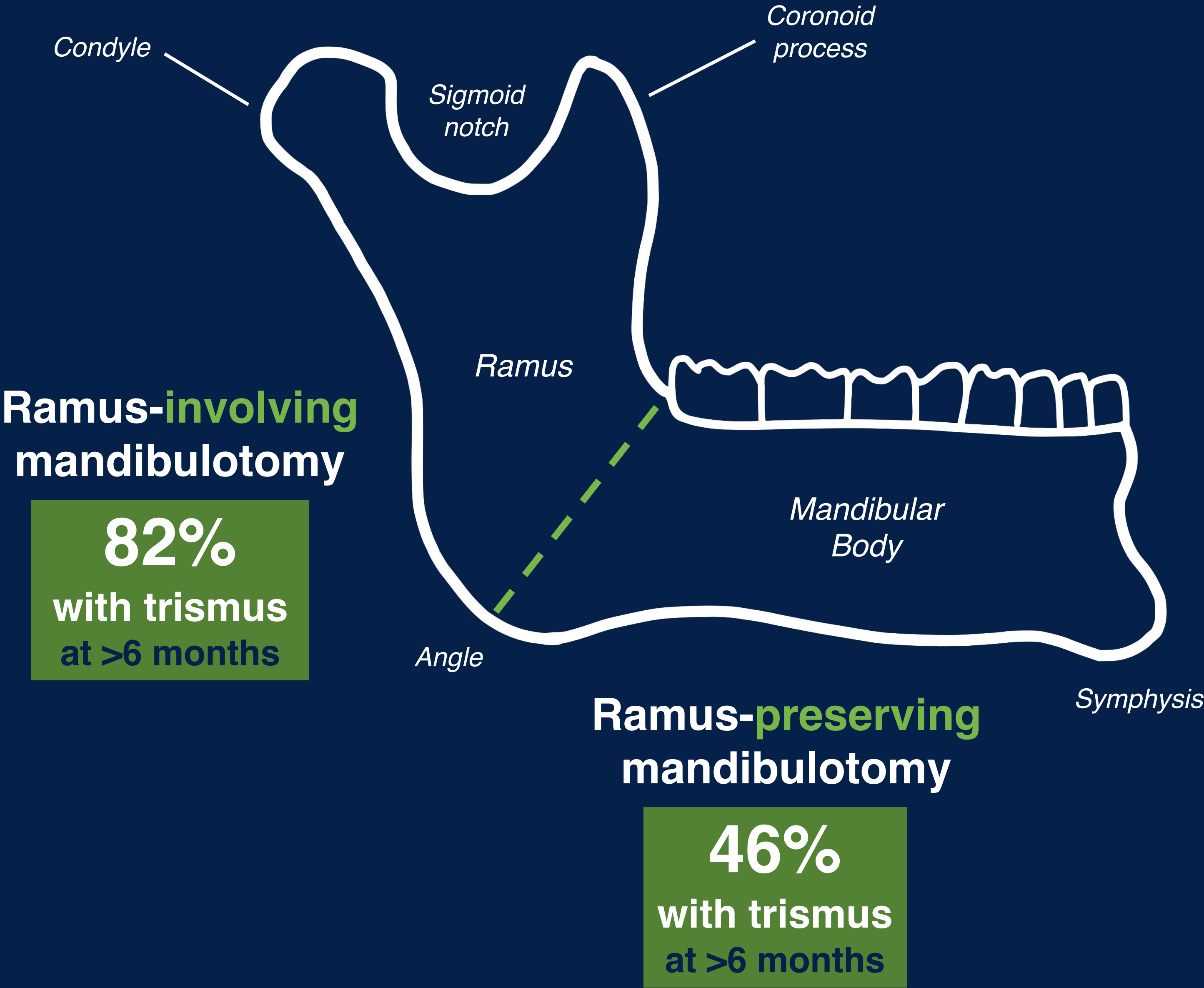
		Univariate		Multivariable	
		Odds Ratio	p-value	Odds Ratio	p-value
Preoperative trismus	Age	1.00 (0.96-1.05)	0.876	1.00 (0.95-1.04)	0.906
	Absent	ref		ref	
	Present	2.95 (0.89-9.77)	0.077	0.81 (0.16-4.17)	0.799
Surgical Indication	Primary ablation	ref		ref	
	Salvage	1.79 (0.47-6.79)	0.395	2.00 (0.29-13.59)	0.478
	Osteonecrosis	-	-	-	-
Adjuvant therapy	None	ref		ref	
	Adjuvant RT/CRT	0.43 (0.12-1.53)	0.191	1.10 (0.13-9.58)	0.933
Posterior mandibulotomy	Ramus-preserving	ref		ref	
	Ramus-involving	5.52 (1.67-18.17)	0.005	7.94 (1.85-33.97)	0.005

- The surgical indication was primary ablation in 64%, salvage for recurrence in 24%, and osteonecrosis in 12%
- Trismus rates were 76% in the early postop period and 67% in the late postop period
- Late postop trismus occurred more frequently in patients with ramus-involving vs. ramus-preserving posterior mandibulotomies (82% vs. 46%, $p=0.004$)
- A ramus-involving mandibulotomy was the only variable significantly associated with late postop trismus on multivariable regression (OR, 7.94; 95% CI, 1.85–33.97; $p=0.005$)

Discussion

- Trismus is a complex, multifactorial condition that represents a formidable challenge in HNC patients
- Trismus is common after mandibulectomy with FFFR, with the majority of patients experiencing trismus in both early and late postoperative periods
- We implicate the anatomy of mandibular resection as a potential risk factor for trismus development, reporting that posterior mandibulotomies which involve or remove the ascending ramus are associated with substantially higher odds of persistent trismus after surgery
- These findings may inform future surgical planning and potentially optimize functional outcomes in patients undergoing significant mandibular resection

Resections involving the mandibular ramus are associated with higher rates of persistent postoperative trismus



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