

Temporomandibular Joint Dislocation following Pterygomasseteric Myotomy and Coronoidectomy in the Management of Postradiation Trismus

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Summary: Trismus is a known complication following treatment of oral and oropharyngeal cancers, with radiation therapy reported as a known risk factor for its development. The prevention of trismus after radiation therapy is hard to achieve, with no clear benefit of early prophylactic rehabilitation. Pterygomasseteric myotomy and coronoidectomy are well described procedures in the management of extra-articular trismus. Herein, we present 2 cases of temporomandibular joint dislocation as a cautionary tale of the potential risk for temporomandibular joint dislocation and need for closed reduction and maxillomandibular fixation. (*Plast Reconstr Surg Glob Open* 2020;8:e2942; doi: [10.1097/GOX.0000000000002942](https://doi.org/10.1097/GOX.0000000000002942); Published online 23 June 2020.)

Trismus, a severely restricted mouth opening, has been shown to yield functional impairments such as difficulty in chewing or maintaining oral hygiene, malnutrition, and weight loss when the mouth opening is restricted to <35 mm.¹ Reports of trismus in the literature range from 25% to 55% following the treatment of head and neck cancer.² Moreover, >33% of head and neck cancer patients have persistent or worsening trismus 5 years following the completion of radiation therapy.³⁻⁵

Radiation to the muscles of mastication, particularly the masseter and pterygoid muscles, is a known risk factor in the development of extra-articular radiation-induced trismus.⁶⁻⁹ Studies have shown a dose-dependent response between radiation dose and resultant trismus development.^{5,10} Additionally, oral cavity and oropharyngeal cancers represent an independent risk factor for trismus development.^{11,12}

The management of postoperative trismus includes rehabilitation exercises,^{13,14} medical management,¹⁵ and surgery. Operative interventions include mucosal and sub-mucosal scar release, myotomy of the masticatory muscles, and possible coronoidectomy to decrease the locking effect of the temporalis.¹⁶ Following adequate release, a soft tissue defect often results. Described reconstructive

techniques range from skin grafts and locoregional flaps to free flap reconstruction.¹⁷⁻²² Although postoperative outcomes are widely reported in the existing literature, the potential morbidity of trismus release is infrequently described.

Herein, we present 2 cases of temporomandibular joint (TMJ) dislocation following myotomy, coronoidectomy, and free flap reconstruction in the management of head and neck cancer patients with postradiation trismus.

METHODS

Pterygomasseteric myotomy and coronoidectomy were performed for the management of postradiation trismus. Through an intraoral approach, dissection was performed down to the coronoid process of the mandible, which was removed using a reciprocating saw. The muscular attachments to the mandible, including the masseter and medial/lateral pterygoids, were then detached using bovie electrocautery. The interincisal mouth opening was evaluated and compared with the preoperative mouth opening. The intraoral defect was then measured and subsequently reconstructed using free tissue transfer.

CASE 1

A 64-year-old man with a remote history of left buccal invasive squamous cell carcinoma status postresection and anterolateral thigh flap reconstruction presented following adjuvant radiation therapy with severe trismus (interincisal opening of 5 mm) which did not significantly

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improve with conservative measures. Following 2 debulking procedures at 6 and 9 months postoperatively, the patient underwent subsequent trismus release 2 years following his initial resection and reconstruction. Tracheostomy, release of the left pterygomasseteric sling, and a left coronoidectomy were performed. The resultant defect was reconstructed with a 15 × 6 cm right radial forearm free flap. Intraoperatively, an interincisal mouth opening of 5 cm was achieved. The patient was discharged from the hospital on postoperative day 6, and postoperative physical therapy was initiated. At 3-month follow-up, the patient was seen in the office, and malocclusion was noted. A computed tomographic scan was obtained, which demonstrated inferior/anterior left mandibular displacement with left TMJ dislocation for which the patient was readmitted and underwent operative closed reduction and 2 weeks of maxillomandibular fixation with heavy guiding elastics. At the most recent follow-up, 4 months postoperatively, the patient was noted to have approximately 3 cm of maintained interincisal mouth opening with no subsequent TMJ dislocation (Fig. 1–4).

CASE 2

A 68-year-old former smoker with a history of stage IVA right tonsillar squamous cell carcinoma for which he underwent radiation/Erbix therapy complicated by right mandibular body osteoradionecrosis and trismus was referred for management. On initial examination, a 7 mm

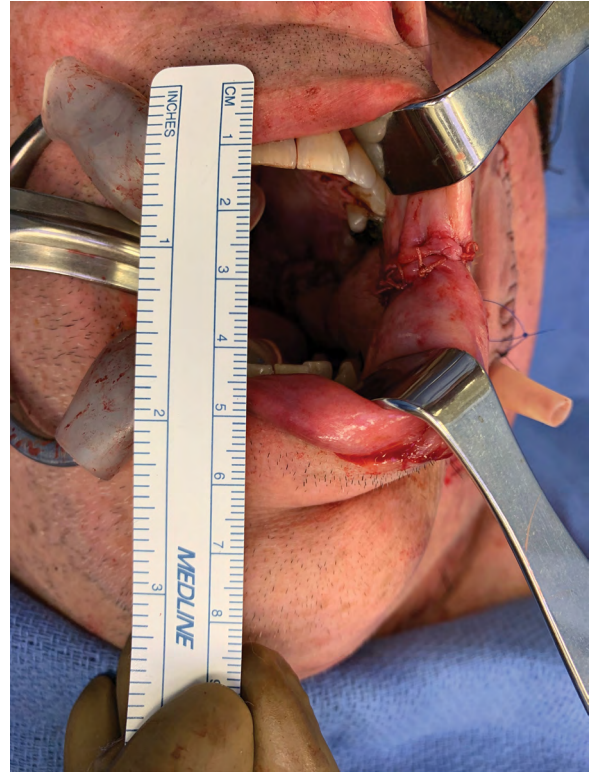


Fig. 2. A 5 cm interincisal opening following trismus release with radial forearm free flap: intraoral component.

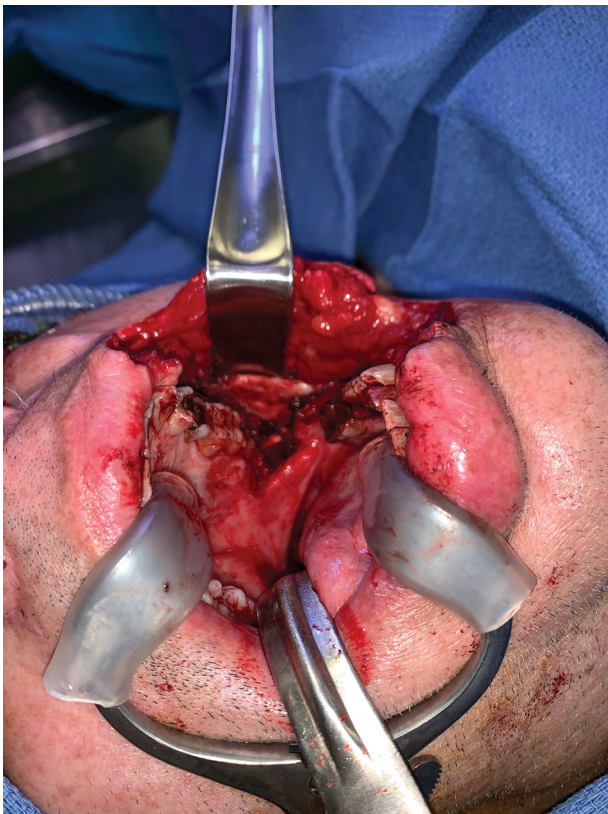


Fig. 1. Patient following left trismus release with pterygomasseteric myotomy and coronoidectomy with resultant 15 × 6 cm defect.



Fig. 3. A 5 cm interincisal opening following trismus release with radial forearm free flap: extraoral component.



Fig. 4. Computed tomographic scan taken 3 months postoperatively demonstrating left anterior and inferior condylar displacement.

of interincisal mouth opening was noted. The patient underwent tracheostomy, right mandibulectomy (body), right coronoidectomy, and reconstruction with a left fibula osteocutaneous free flap for both bone reconstruction and reconstruction of a 6×2 cm right intraoral mucosal defect. During the case, however, resistance to full mouth opening remained, with an interincisal mouth opening of 2 cm. A left coronoidectomy was subsequently performed through an intraoral incision, with improvement to 4 cm of interincisal opening. This resulted in a 4×3 cm left intraoral defect, which was reconstructed using a second (left radial forearm) free flap. Several days postoperatively, while in house, the patient was noted to have left TMJ dislocation (anterior/inferior left condylar displacement) for which he was taken to the operating room for closed reduction and placement of maxillomandibular fixation for 2 weeks with heavy guiding elastics. The patient was most recently seen 3 months postoperatively with 2+ cm interincisal mouth opening and no subsequent TMJ dislocation. (See figure 1, Supplemental Digital Content 1, which displays: A, Following right mandibular body excision and right coronoidectomy with 6×2 cm² intraoral mucosal defect reconstructed with fibula flap. B, Resultant left intraoral mucosal defect following left coronoidectomy reconstructed with radial forearm flap, <http://links.lww.com/PRSGO/B417>.) (See figure 2, Supplemental Digital Content 2, which displays: A, Computed tomographic (CT) scan demonstrating left anterior/inferior condylar displacement. B, CT scan demonstrating left anterior/inferior condylar displacement, <http://links.lww.com/PRSGO/B418>.)

DISCUSSION

Trismus is a known complication following treatment of oral and oropharyngeal cancers, with radiation therapy reported as a known risk factor for its development.

Trismus release and replacement with healthy vascularized tissue has been shown to be a successful technique for the management of trismus in the setting of postradiation fibrosis, especially in those patients who failed conservative treatments.²³ Existing literature focuses on gains in interincisal distance, as well as trismus recurrence.¹⁸

The reported complications of free flap reconstruction following trismus release are largely related to microvascular free tissue transfer. These include flap compromise (venous/arterial), flap loss, wound healing complications, and bleeding. However, the functional outcomes and morbidity of coronoidectomy and pterygomasseteric myotomy are less frequently described and require a closer evaluation.

CONCLUSIONS

Pterygomasseteric myotomy and coronoidectomy are well described procedures in the management of extra-articular trismus. Herein we present 2 cases of TMJ dislocation in both the acute and postoperative period. This represents a cautionary tale of the potential risk for TMJ dislocation and need for potentially preemptive closed reduction and maxillomandibular fixation for 2 weeks postoperatively.

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