Supplemental Online Content

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eAppendix.

This supplemental material has been provided by the authors to give readers additional information about their work.

eAppendix.

McMillan Manual Therapy Method for Oral Opening (Head and Neck Cancer)

TIDieR Checklist

Item No.	Item	McMillan Manual Therapy Method for Oral Opening (Head and Neck Cancer)
1	Brief name	MMT
2	Why?	**Rationale**: Manual therapy applied to improve soft tissue pliability, joint mobility, and mobilize muscle in patients with trismus after head and neck radiation and/or surgery is expected to improve oral opening. **Theory**: Not applicable **Goals**: 1) Improve oral opening 2) Improving soft tissue pliability, joint mobility and mobilize muscles
3	What – Materials	Session Materials Therabite® ruler (ATOS Medical Ref. number: 182SC001), gloves, water-based lubricant (as need for intraoral work), appropriate PPE for intraoral manipulation Patient Materials: none
4	WHAT- Procedures	***Schedule:*** Frequency personalized based on acuity, patient goals, and access/proximity to institution. Clinical MT sessions coupled with exercise program (HEP) training. ***Precautions/Safety:*** No active bleeding, infection, fistula, osteoradionecrosis, crepitus, wound, disease, uncontrolled CKD, or other contraindications in the direct region of interest (ROI) receiving MT. Assess patient comfort and tolerance throughout evaluation and treatment sessions. ***Indication***: Maximum interincisal opening (MIO) ≤35mm or reported reduced oral opening relative to pre-cancer baseline ***Procedures:*** • Rule out contraindications • Examine oral cavity • Visually inspect mucosal and skin integrity in regions for MT (back, chest, neck, face, intraoral) • Palpation (tactile assessment) ○ Upper back/chest ○ Circumferential neck ○ Face ○ Intraoral • Measure MIO with Therabite ruler Pre-MT Oral ROM ○ Interincisal • Assess functional status (speech, swallow, chewing, oral care) and symptoms • Perform MT in hierarchical steps ○ Manual lymphatic drainage (MLD) (only in the presence of head and neck lymphedema) ○ Myofascial release (MFR) and/or massage ▪ *External: upper back, chest, circumferential neck, face, and/or muscles of mastication if fascial restriction or shortened muscle fibrosis present* ▪ *Intraoral: masseter, lateral pterygoid, medial pterygoid* ○ MT techniques and ROIs are personalized and hierarchically applied based on perceived patient tolerance, tissue tolerance, fatigue, and time remaining in session. Techniques proceed from MLD, MFR, to massage then incorporate range of motion (ROM) after soft tissue mobilization

		(progressing through manual ROM: passive range of motion (PROM) → active assist range of motion (AAROM) → active (functional) range of motion (AROM)) ○ Patients previously instructed on use of a PROM device were instructed to continue use as a component of their HEP as tolerated in addition to MT. PROM devices were not used in the MT sessions. ○ If regional restriction not applicable, advance to next technique • Measure MIO with Therabite® ruler after MT session • HEP training at first appropriate session, HEP modifications as needed at follow up sessions • Monitor tolerance/safety throughout MT session: ○ Palpate during and following every MT technique (tactile assessment: upper back/chest, circumferential neck, face, intraoral) ○ Ongoing safety monitoring throughout treatment (pain, tissue integrity, lightheadedness, etc)
5	WHO provided	Trainer/Lead Clinician (HM): Speech language pathologist with licensure in massage therapy with intraoral endorsement, certified lymphedema therapist with advanced training in Head and Neck; Ability to rule out contraindications and advise on MT cautions and rate CTCAE soft tissue fibrosis criteria and HN-LEF scales, and score mandibular range of motion Providers (CP, KS): Licensed SLP providers with institutional competencies in manual therapy practice. Ideally with specialty training in HNC, dysphagia, CLT, and/or massage certification
6	HOW	Mode of delivery: Face to face
7	WHERE	Outpatient clinic
8	WHEN and HOW MUCH	Clinic visit: per patient tolerance, up to one-hour MT sessions repeated up to 3 times weekly, then titrating in frequency per patient need and transition to HEP HEP prescribed: any combination of self- MT, MLD, stretching, strengthening to external head and neck and/or intraoral regions with passive and/or active stretching (1-3 sets/day).
9	TAILORING	Tailoring refers to the plan to personalize the MMT therapy sessions based on individual presentation, needs, progress to targets and goals of the patient ***Assessment procedures*** integrated into daily sessions form the basis for tailoring frequency and content of MMT therapy: • Assessment of MIO • Visual assessment of static and dynamic posture (at rest, closed mouth posture and oral opening) • Palpation of upper back, upper chest, circumferential neck, face, and mouth General criteria used to tailor the MMT plan by advancing to new functional goal/target or change therapeutic technique or sequence include: • If ROM improves to within normal range, and/or • If there is a plateau in the ROM parameter after two or more consecutive sessions or over 2 months. Therapeutic plateau was defined by no change in MIO over 2 or more consecutive sessions or over 2 months despite full HEP compliance. The decision to persist in MMT despite plateau is patient-centered based on clinical scenario and patient goals (e.g., maintenance).
10	MODIFICATIONS	There was no modification to the MMT framework or therapy model during the study, however, individual therapy plans were routinely tailored (see Section 9) based on patient tolerance, acuity, and/or availability for clinical follow-up.

11	ADHERENCE/FIDELITY – how well planned	***Patient Adherence*** was assessed in clinic by self-report: • Patients asked to report therapy adherence in clinical follow-up sessions ***Fidelity*** of MMT was assessed: • To assess fidelity to the hierarchical goals of the MT program, MT clinicians documented their sequence through the hierarchy of step 4 in the electronic health record (EHR). • To assess fidelity to the planned MT session dosing (minimum treatment time was 15 minutes, maximum of 60 minutes), manual therapy time was documented in 15 minutes unit clinical charges.
12	ADHERENCE – how well enacted	88% of patients (43/49) provided with an HEP. 42% (18/43) of patients were fully compliant (total compliance with set/reps as prescribed), 19% (8/43) were partially compliant (≥ 1x/day, < full Rx), and 5% were non-compliant (< 1x/day or no compliance).