Convergent Points
AN EAST-WEST CASE REPORT JOURNAL

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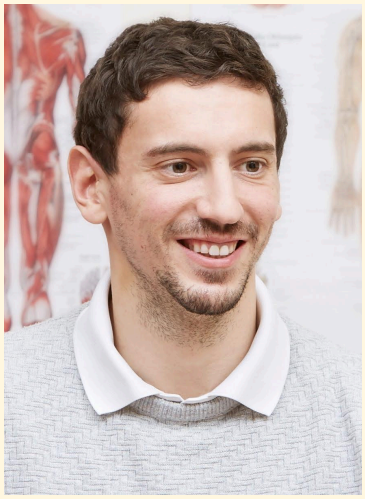

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Acupuncture and Tuina for Xerostomia: A Case Report

By Nick Lowe, MSc

Abstract

This case report describes the treatment and clinical outcomes of radiotherapy-induced xerostomia (RIX) and chronic neck stiffness with manual acupuncture and tuina massage. The patient received 14 treatments over the course of one year within a private practice setting in the UK. Diagnosis and treatment were informed by a combination of traditional Chinese medicine (TCM), applied channel theory (ACT), and medical acupuncture (MA) theory, in addition to a review of acupoints utilised for RIX in prior clinical trials. Traditional diagnosis was determined by a combination of symptomatic presentation, pulse, tongue, and palpation, and recorded using the ICD-11 TM1 pattern codes.

Patient-reported outcomes were collected routinely throughout the treatment course. Xerostomia questionnaire (XQ) scores demonstrated a progressive, clinically meaningful improvement in RIX symptoms, achieving a 25% improvement from baseline at nine months, with the results sustained at one-year follow-up. Patient Global Impression of Change (PGIC) scale responses were “much improved” for both RIX symptoms and neck stiffness. PROMIS Global Health v1.2 scores showed marginal but not clinically significant improvements in overall health. This case report demonstrates clinically meaningful improvements in RIX symptoms and related neck stiffness following a course of acupuncture and tuina massage therapy at one-year follow-up.

Keywords: Radiotherapy-induced xerostomia (RIX), acupuncture, case report, tuina massage, dry mouth

OPEN ACCESS
Citation: Lowe, N. (2025). Acupuncture and Tuina for Xerostomia: A Case Report. *Convergent Points: An East-West Case Report Journal 4*(2).
www.convergentpoints.com
Editor: Kathleen Lumiere, Seattle Institute of East Asian Medicine, UNITED STATES
Received: July 22, 2025
Accepted: September 16, 2025
Published: October 15, 2025

Data Availability Statement: All relevant data are within the paper and its supporting information files.
Funding: This article received no funding of any type.
Competing Interests: The author has declared that no competing interests exist.

Introduction

Radiation-induced xerostomia (RIX) refers to the common side effect of hyposalivation that occurs following radiotherapy treatment for head and neck cancers (Eisbruch et al., 2001; Pacholke et al., 2005). RIX can have a significant detrimental effect on the quality of life (QoL) among cancer survivors (Dreizen et al., 1976; Nathan et al., 2023), with decreased saliva secretion commonly leading to chronic dry mouth and associated difficulties with swallowing, talking, and eating (Lin et al., 2008). Pharmacological treatments, such as pilocarpine and amifostine, may provide some benefit but are not always well-tolerated by patients (Nathan et al., 2023).

A small number of case reports/series have been published on the treatment of RIX using acupuncture, all reporting clinically meaningful benefits (Blom, Dawidson, et al., 1993; Djaali et al., 2020; Lu et al., 2010; Wu et al., 2011). A multicentre randomised controlled trial (RCT), involving 339 participants, found that acupuncture was effective compared with usual care; however, the effectiveness compared to sham acupuncture was less clear due to differences in site outcomes and clinical settings between China and the USA (Garcia et al., 2019). A recent systematic review and meta-analysis also found no clear evidence that acupuncture was superior to sham acupuncture (Gu et al., 2025). However, a recent multi-site RCT (n = 258) conducted in the USA found statistically and clinically significant benefits at 12 weeks for acupuncture compared to sham acupuncture for RIX (Cohen et al., 2024).

Furthermore, functional magnetic resonance imaging (fMRI) revealed that actual acupuncture was associated with neuronal activations correlated with salvia production, which were not present during sham acupuncture stimulation. These activations were correlated with saliva production (Deng et al., 2008). Acupuncture may work by increasing vasodilation flow around the parotid glands, triggered by increased production of specific neuropeptides (Blom, Lundeberg, et al., 1993; Dawidson et al., 1998), improving vasodilation proximal to the salivary glands (Blom, Lundeberg, et al., 1993) and via central modulation of the salivary nuclei within the pons, subsequently leading to increased salivary production via direct innervation from the cranial nerves (Naik et al., 2014).

This case report describes the treatment and clinical outcomes of RIX and chronic neck stiffness with manual acupuncture and tuina massage therapy. Patient-reported, rather than physician-assessed scores, are typically

recommended as the primary method for evaluating changes in RIX symptoms (Meirovitz et al., 2006). The Xerostomia Questionnaire (XQ) has been found to have the highest potential to capture changes in RIX according to COSMIN guidelines (Assas et al., 2021) and is typically the primary outcome measure used for evaluating effectiveness in RCTs (Cohen et al., 2022; Eisbruch et al., 2001; Garcia et al., 2019). Salivary flow rates and XQ scores almost paralleled one another, suggesting the XQ is highly sensitive to change and accurately reflects objective changes in saliva secretion (Memtsa et al., 2017). The XQ was therefore selected as the primary outcome measure.

To the author's knowledge, this case report is unique in that it incorporates the use of the XQ and multiple validated patient-reported outcome measures (PROMs), collected regularly throughout a course of treatment, to assess patient progress up to a one-year follow-up. This case report was written according to the CAse REport (CARE) extension checklist for acupuncture case reports (Duan et al., 2025).

Case Description

This case report presents the management of a 56-year-old Caucasian male with radiation-induced xerostomia (RIX) and persistent chronic neck stiffness, occurring one year after completion of treatment for head and neck cancer. Radiotherapy treatment caused some initial fatigue, likely due to low red blood cell count for the first nine months, but the patient mainly felt recovered from this by the time they presented for treatment. The patient's predominant symptoms were chronic dry mouth, accompanied by a near-complete loss of taste sensation. Chewing and overall eating ability were markedly impaired, with symptoms exacerbated by speaking, heavy breathing after exertion, and the consumption of dry foods.

The patient's neck muscles felt constantly stiff, tight, and 'woody'. The patient's symptoms were worse on the left side, which was the original site of the cancer and the focus of radiotherapy treatment. The patient constantly needed to manage their chronic dry mouth throughout the day using a gel spray. Otherwise, the patient was in relatively good health with no other medical comorbidities. His BMI (body mass index) was at 21, within the healthy range. He took no medications. The patient had been referred for acupuncture on the National Health Service (NHS) by their oncologist following radiotherapy. They were on the waiting list for NHS treatment but sought private acupuncture treatment in the interim.

Diagnostic Assessment

Diagnosis and treatment were informed using a combination of traditional Chinese medicine (TCM), applied channel theory (Wang & Robertson, 2008) (ACT), and medical acupuncture (MA) theory, in addition to a review of acupoints utilised in prior clinical trials (Garcia et al., 2019; Meng et al., 2012). One TCM theoretical approach aims to utilise Stomach channel points to promote the generation of salivary fluids. TCM and ACT approaches also utilise distal and local points on the affected channel locations of the disorder, informed by both symptomatic presentation and palpation. Whilst MA theoretical approaches target neurovascular tissues associated with salivary function (Garcia et al., 2019; Meng et al., 2012), it is worth noting that the majority of acupoints used (Garcia et al., 2019; Meng et al., 2012) are typically aligned with those traditionally indicated (Deadman & Al-Khafaji, 2007; Zhao, 2022) for use in hypo-salivary issues.

Postural assessment of the neck revealed significant forward protraction, and the range of motion (ROM) assessment showed limited cervical rotation, particularly when turning to the right side. The neck muscles were extremely tight bilaterally, and this was particularly pronounced on the left side, notably in the sternocleidomastoid (SCM). There was tenderness on palpation at the acupoints GB12 (Wangu) and GB20 (Fengchi). Distal acupoint and channel palpation found KI6 (Zhaohai) to be the most tender acupoint, producing an intense ache. LR3 also produced a numb ache. The Lung channel was slightly tighter on the left side around LU6. The Large Intestine channel was tight bilaterally but not tender. ST36 produced a mild ache and was somewhat tight, noticeably hollow, with some atrophy of the tibialis anterior muscle. The pulse was tight, most noticeably in the cun position, and distinctly tighter on the left side. The guan and qi positions remained relatively weak in comparison. The tongue was pale, dry, with a thin, dry, white coat and several small cracks in the central region and throughout.

The primary channels affected were the Stomach (SG22) and Large Intestine channels (SG21), the Kidney channel (SG27), and the Conception vessel (SG31). This assessment was determined primarily by symptomatic presentation and palpation of the channels. The primary internal pattern was Stomach qi and yin deficiency (SF7C, SF7E), leading to a deficiency of fluids (SF10) as shown by a combination of symptomatic presentation, pulse, tongue, and hollowness on palpation of ST36. Traditional TCM diagnosis was reported according to the ICD-11 TM1 pattern codes (Reddy & Fan, 2022).

Treatment and Outcomes

The patient received a total of 14 treatments over the course of one year. The therapeutic intervention included acupuncture and tuina massage therapy carried out in the supine position. Acupuncture intervention details are reported according to STandards for Reporting Interventions in Clinical Trials of Acupuncture (STRICTA) guidelines (MacPherson et al., 2015) in Table 1. Tuina techniques are described in Table 2. The same practitioner carried out treatments in a private practice setting in the UK. The practitioner has 12 years of clinical experience, is qualified to MSc level, and is a member of the British Acupuncture Council (BAcC).

Table 1. Acupuncture intervention details

Acupoint	Stimulation	Needle length & gauge	Needle brand	Depth/angle of insertion	Manipulation techniques	Deqi sensations obtained	Needle retention	Used in tx
ST36	Acupuncture (manual)	25 mm × 0.20	Phoenix	20 mm, perpendicular	Even	Ache, spread, referral down leg	20 mins	All
KI6	Acupuncture (manual) & acupressure	25 mm × 0.20	Phoenix	15 mm, perpendicular	Even	Tingle, referral down foot, referral up to neck/throat region	20 mins	All
LI2	Acupuncture (manual)	15 mm × 0.18	Phoenix	5 mm, perpendicular	None	Referral up to neck/throat region	20 mins	All
CV24	Acupuncture (manual)	15 mm × 0.19	Phoenix	5 mm, oblique to left	Even	Tingle	20 mins	All
LU7	Acupuncture (manual)	15 mm × 0.20	Phoenix	10 mm, perpendicular	Even	Tingle, referral down arm	20 mins	3–6
GB12	Acupuncture (manual) & acupressure	25 mm × 0.20	Phoenix	15 mm, oblique distal	Even	Ache	20 mins	5–14

Table 2. Tuina massage therapy intervention details

Tuina technique	Pressure/force	Duration	Region	Patient feedback / sensations
Rou (rubbing)	Moderate	5 mins	Posterior & lateral neck	Stiff/woody feeling on left side
An (press)	Moderate to firm	5 mins	GB20 and GB12 acupoints	Relaxing/relieving
Neck traction & articulation	Moderate	2 mins	Lower limb traction	Relaxing/relieving

Follow-up

In the first four sessions, the patient reported a subtle but noticeable increase in salivation immediately following needle insertion. The patient no longer reported this phenomenon in subsequent treatments, attributing it to a possible ceiling effect: once salivary production had generally improved following the initiation of treatment, further changes became less noticeable. During the second treatment, following the needling of LI2, the patient reported an atypical deqi sensation, characterized by a swirling sensation around the neck region, in addition to a noticeable increase in salivation. Needling KI6 also produced a similar sensation in multiple initial treatments,

indicating that needling these distal acupoints seemed to produce a sensation around the region of the therapeutic target (neck, throat, and salivary glands). The treatment strategy remained relatively consistent throughout the course of treatments, with occasional new acupoints selected, but no significant deviation from the original diagnosis and treatment plan.

The patient temporarily discontinued treatment after three months for two months when they were offered acupuncture treatment on the NHS. The patient underwent four acupuncture treatments with an acupuncturist who was also trained in dentistry. Interestingly, the patient's qualitative statements indicate that these treatments appeared to be ineffective, and the patients returned for subsequent private treatments approximately six months after their first visit. Otherwise, the patient made no significant changes to their lifestyle or underwent any additional treatments specifically for RIX during the course of treatment.

Outcomes and Results

The Xerostomia questionnaire (XQ) (Eisbruch et al., 2001), comprising eight items scored on an 11-point scale ranging from 0 to 10, was selected as the primary outcome measure. The PROMIS Global Health v1.2 (Cella et al., 2010) and Patient Global Impression of Change (PGIC) scale (Guy (ed.), 1976) were used as secondary outcome measures to measure overall health/QoL and specific improvement for RIX and neck stiffness. The patient reported an initial 15% improvement after four weeks, which was sustained for up to three months (Figures 1 and 2, Table 3). The patient reported a further overall 25% improvement in XQ scores from nine months after starting treatment, which was sustained at the one-year follow-up. XQ score improvement represented a clinically meaningful improvement. A breakdown of individual XQ items indicates that the frequency of sipping liquids in general and for comfort improved notably, with general dryness and chewing also showing significant improvement (Figure 2, Table 3). PGIC for RIX was reported as 'minimally improved' from 4 weeks to 3 months and 'much improved' from 9 months to 1 year (Figure 1, Table 3). The patient no longer needs to use gel spray throughout the day.

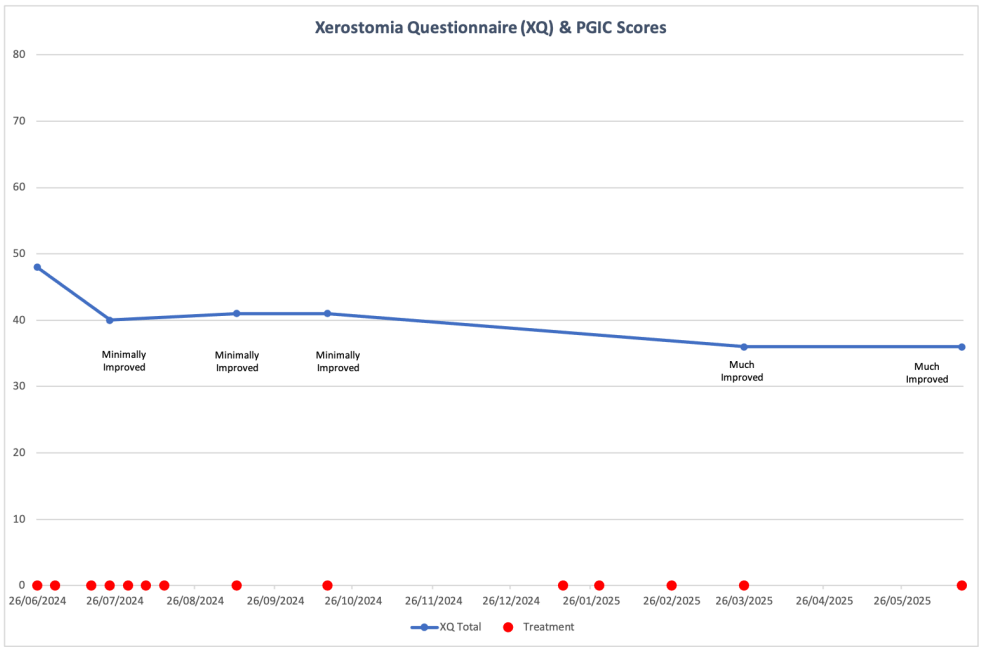

Figure 1. Xerostomia Questionnaire (XQ) & PGIC Scores

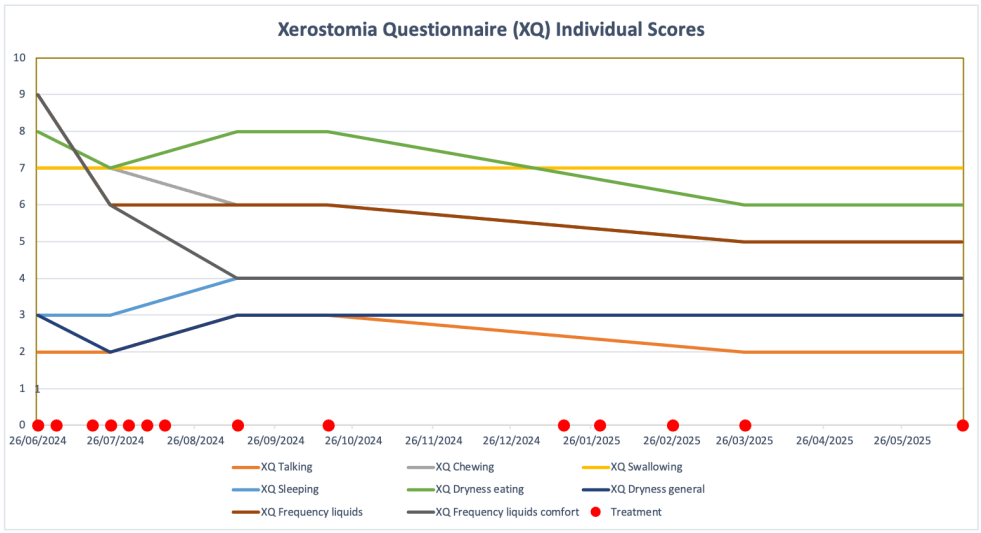

Figure 2. Xerostomia Questionnaire (XQ) Individual Scores

PGIC for neck stiffness was reported as 'much improved' from four weeks sustained to a year. After four weeks, the neck had also significantly improved in terms of neck tension on palpation, as well as cervical range of motion (ROM), which was now pain-free. Interestingly, despite some modest improvement, there was no clinically meaningful improvement in PROMIS

scores (Table 3). This was likely due to the patient's relatively high baseline score and otherwise good general overall health and QoL. The patient reported no adverse events from any of the treatments received.

Table 3. Patient-reported outcomes

Tx	XQ Total	XQ Talking	XQ Chewing	XQ Swallowing	XQ Sleeping	XQ Dryness eating	XQ Dryness general	XQ Frequency liquids	XQ Frequency liquids comfort	PGIC Xerostomia improvement	PGIC Neck stiffness improvement	PROMIS Global Health v1.2
1	48	2	7	7	3	8	3	9	9	Minimally	Much	41
2	40	2	7	7	3	7	2	6	6	Minimally	Much	38
3	41	3	6	7	4	8	3	6	4	Minimally	Much	40
4	41	3	6	7	4	8	3	6	4	Minimally	Much	42
5	36	2	5	7	4	6	3	5	4	Much	Much	41
6	45									Much	Much	

Discussion

This case report demonstrates clinically meaningful improvements in RIX symptoms and related neck stiffness following acupuncture and tuina massage therapy at a one-year follow-up. The case report utilises multiple validated patient-reported outcome measures (PROMs) collected regularly throughout a course of treatment to quantify various aspects of patient progress. Patient outcomes were aligned with XQ scores reported in clinical trials (Cohen et al., 2024; Gu et al., 2025) and may help estimate effectiveness and expectations for prospective patients.

A separate RIX case reported a comparable 30% improvement in saliva production using a combination of manual acupuncture, auricular acupuncture, and electro-acupuncture (Wu et al., 2011). Another case reported specific pain reduction from (Visual Analogue Scale (VAS) scores from 4-to-1) as well as improvements in taste and function after 12 acupuncture sessions (auricular, balance method, and TCM) (Djaali et al., 2020). It is unclear whether or not the tuina massage therapy provided any additional benefit in reducing RIX symptoms compared to acupuncture alone. The addition of massage therapy was primarily used as an adjunctive therapy to address symptoms of neck stiffness, for which there is evidence of improved cervical range of motion and pain (Guzmán-Pavón et al., 2022).

A literature search was conducted before the patient's initial visit to identify case reports and RCTs of acupuncture treatments for RIX, which provided useful context, diagnostic and treatment information, as well as identifying the most robust method of measuring patient progress in selecting the XQ questionnaire. The case report illustrates the utility of using an integrated

treatment approach, which concurrently views the patient's pathology from both conventional medical and traditional diagnostic perspectives.

This case also reports an interesting phenomenological sensation in the patient, who experienced both deqi-referred sensations from distal acupoints to the target therapeutic area (neck and throat) and a noticeable increase in saliva secretion immediately after needle insertion in multiple treatments. These sensations may be reflective of acupuncture-specific effects and could be observed in other cases where the sensations may be reproducible.

The discrepancy in perceived effectiveness, as reported by the patient, between the private and NHS acupuncture treatments received is noteworthy. It may have been due to specific (such as acupuncture point selection/stimulation, or training backgrounds) and/or non-specific (such as therapeutic relationship and clinical setting) differences.

Conclusion

This case report quantifies the clinical outcomes of RIX symptoms and related neck stiffness associated with acupuncture and tuina massage therapy in real-world clinical private practice settings at one year's follow-up. Acupuncture likely represents a valuable treatment option for RIX, especially when pharmacological interventions are not well tolerated.

Patient Statement

"After starting treatment with Nick, there was a noticeable improvement in my saliva production on my left side, which over time has meant that I no longer need to regularly sip water or use a spray, although I do need to make a constant effort to stay fully hydrated. During sessions with Nick, I also received a neck massage, which I found helped considerably with some muscle tightness in my neck, caused by the radiotherapy. It is hard for me to assess whether this was also beneficial with the saliva issues.

After around 3 months of treatment with Nick, I was offered acupuncture treatment under the NHS. I personally found this to be ineffective, to the point that my saliva production actually worsened slightly. I understand that other patients, who had previously received no acupuncture treatment, have found the NHS treatment effective. In my experience, I found the NHS treatment to be less personalised and somewhat more amateurish in its approach (the treatment was carried out by the dental department, rather than a fully

qualified practitioner). After 1 year of treatment, I am still finding benefit from continuing with acupuncture."

Informed Consent

The patient consented to the publication of their anonymised data for this case report.

Statement of Safety

Acupuncture treatment was carried out in accordance with the British Acupuncture Council (BAcC) Code of Safe Practice. The practitioner was fully insured to practice, and the premises were registered with the local environmental health authority.

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