

Long COVID Pharyngitis, Possible Glossopharyngeal Neuralgia, and Subluxation: A case report

Charles S Masarsky and Marion Todres-Masarsky

Abstract: A 79-year-old woman was seen 121 days after hospital admission for a severe episode of COVID-19. Her long COVID problems included fatigue, problems with long-term and short-term memory, dyspnea, and dryness in the mouth. She had a feeling of 'razor blades' in her throat that began at the onset of infection. This possibly neuralgic pain was thought by the patient to be 'how the COVID began'. She also suffered from pharyngitis experienced as a constricted feeling in her throat. At presentation, reverse digit span was 4, and forced vital capacity was 1.7 litres.

Chiropractic adjustments for the correction of vertebral, cranial, and upper extremity subluxations were administered for six visits over a period of four weeks. Adjunctive procedures included acupressure stimulation at the yin tang point during visits and oropharyngeal exercises as home care. During office visits, oropharyngeal exercises were combined with neurolymphatic stimulation for the sternocleidomastoid muscles.

With the exception of fatigue, the patient reported improvement in general and across all other symptoms. Her forced vital capacity increased to 2.3 litres. Her reverse digit span increased to 5.

Indexing Terms: Chiropractic; Subluxation; Long COVID; Pharyngitis, Glossopharyngeal Neuralgia

Introduction

Given the recent nature of the long COVID phenomenon, it is not surprising that the chiropractic clinical literature in this area is still in its early stages. While the pandemic was in its active phase, Blum discussed the potential role of chiropractic care in the coming wave of long COVID. (Blum, 2021) More recently, the US Veterans Administration included chiropractic under 'consults to consider' in a booklet on long COVID. (Veterans Administration, 2022) Halma et al discussed the potential benefits of a wide variety of pharmaceutical and non-pharmaceutical therapeutics for victims of Long COVID as well as COVID vaccine injury, but manual interventions such as chiropractic were not mentioned at all. (Halma et al, 2023)

We have previously reported two cases of long COVID under a course of chiropractic care. (Masarsky & Todres-Masarsky, 2022 2; Masarsky & Todres-

... It is thought the possible relationship between COVID-19 and scoliosis will emerge during the next decade using standard epidemiological techniques. We propose a hypothesis in this regard and recommend its testing'



Masarsky, 2022 3) The patient described in this paper responded to the same call for subjects (Appendix 1) and executed the same informed consent document (Appendix 2) as did the previous subjects. The call for subjects was given to her following a community class on long COVID presented by CSM.

Past History

History interview and initial examination were conducted by CSM and MT-M. Chiropractic care and follow-up examinations were conducted by CSM.

The patient is a 79y retired computer programmer. She reported a long history of intestinal problems. In 1961 she experienced complications following appendectomy, resulting in intestinal adhesions. In 1986 she experienced a particularly bad episode of what she described as '*blocked intestines*'. She has had some easing of her intestinal problems after beginning supplementation with probiotics a number of years prior to presentation. Her intestinal history with apparent dysbiosis may reflect suboptimal immune function, lending severity to her COVID-19 episode.

She experienced periodic episodes of tachycardia related to anxiety attacks. This problem existed prior to her COVID-19 diagnosis. She has been diagnosed with heart failure and is taking Metoprolol™ and low dose aspirin, prescribed by her cardiologist. This cardiac history could have been an additional contributor to the severity of her COVID-19 infection.

The patient fractured her left ankle due to falling from a horse 10 years prior to presentation. She had a bunion removed from her left foot (exact location not remembered) in 1991.

On December 14, 2022, the patient was hospitalised for COVID-19 infection complicated by pneumonia. She was released from the hospital on January 10, 2023. The initial visit and first adjustment took place on April 15, 2023.

Findings at Presentation

Questioning regarding the patient's current complaint was partially guided by a list of topics inspired by the COMPASS-31 questionnaire and a subjective scale of olfactory function, along with our general knowledge of long COVID (Appendix 3; Sletten et al, 2021; Gupta et al 2013).

The patient reported fatigue and weakness, stating she could not remain standing for long periods of time, and also felt '*shaky*' when standing. Along with this, she felt her sense of balance to be poor. These symptoms may have been pre-existing but were exacerbated post-COVID.

Her sense of taste was gone for 3½ months after her COVID-19 diagnosis. During that time, she experienced salt and sugar craving in an apparent adaptation to her ageusia. However, at the time of presentation, her sense of taste had returned.

She reported recently suffering from dry mouth, although the time frame was not certain.

The patient had difficulty taking a deep breath. This dyspnea was pre-existing but had become worse since COVID-19 infection.

The patient's memory was severely impacted by COVID-19 infection and its aftermath. Upon her release from the hospital, she no longer remembered how to write, and had to re-learn this basic skill. At presentation she could write, but still had difficulty remembering recipes that should have been familiar due to long use.

Itching bothered her, especially in the scalp, and she reported an occasional '*bee sting*' sensation in the left scapular area. The timing of these symptoms was not certain.

Pain that she felt was arthritic in nature was noticeable in her right hand. This may have been long-standing.

Probably the most significant symptom at presentation was a '*razor blade*' like feeling in the back of her throat. She stated '*That's where the COVID started.*' A feeling of throat constriction accompanied this pharyngeal paresthesia.

On examination her reverse digit span was 4. Active extension and flexion of the cervical spine exacerbated the feeling of constriction in the throat. On finger-to-nose testing the patient missed her nose with the right hand with eyes closed. Three trials of spirometry were performed, with forced vital capacity recorded at 1.6 litres, 1.7 litres, and 1.7 litres. The left shoulder was elevated in the standing posture. Static and motion palpation revealed restriction at the T11-12 and C4-5 motion segments. Manual muscle testing revealed inhibition of the left sartorius muscle, and therapy localisation to the xiphoid process while holding inspiration revealed inhibition of a previously intact muscle, indicating distress in the diaphragm, according to Applied Kinesiology protocols. (Walther, 1988)

Intervention and Outcome

First Adjustment: 15 April 2023

Manoeuvres other than high velocity low amplitude adjustments follow Applied Kinesiology protocols unless otherwise stated. (Walther, 1988) High velocity low amplitude adjustments were administered to the T11-12 and left glenohumeral motion segments. C4 was adjusting the utilising respiratory assist procedure according to Applied Kinesiology protocols. Neurolymphatic reflexes were stimulated for the diaphragm and left supraspinatus muscle, and neurovascular reflexes for the diaphragm were stimulated as well.

Second Adjustment: 19 April 2023

The patient stated her throat constriction was '*starting to break up*', but she felt '*terribly fatigued*'. Based on palpation, motion palpation, and Applied Kinesiology challenge, high velocity low amplitude adjustments were administered at L2, T9, C7, C1 and C2. Post-isometric relaxation was performed to increase cervical range of motion in cervical rotation and lateral flexion. The yin tang acupressure point was stimulated by digital pressure for approximately three minutes.

Third Adjustment: 21 April 2023

The patient reported her throat constriction and '*razor blade*' feeling had not changed. However, on testing active cervical flexion and extension, no exacerbation of throat discomfort was noted. In fact, she stated the activity '*feels good*'. Opening the jaw caused a slight improvement in her throat sensations.

When palpating C1 on the right, she reported a '*radiating thing in the ear*'.

Based on criteria previously described, high velocity low amplitude adjustments were administered at the right sacroiliac, L2, and T3-5 (anteriority manoeuvre).

The patient complained of considerable discomfort at C1 on the right; therefore, a modified respiratory assist adjustment was performed. With the patient in the supine position, the adjustor placed a finger against the right C1 transverse process. The patient was asked to press her neck against the adjustor's finger while breathing in. She was then asked to relax her neck while breathing out. Several cycles of this were performed, until Applied Kinesiology challenge was negative at C1. In this manner, the patient was in control of the amount of pressure against the sensitive motion segment.

The left wing of the sphenoid was adjusted from anterior to posterior, using a respiratory assist manoeuvre. The yin tang acupressure point was stimulated for approximately three minutes. With the patient supine, the adjustor's fingers were curled under the shelf of the occiput for approximately one minute to apply a light traction to the suboccipital muscles (suboccipital release).

Fourth Adjustment: 26 April 2023

A progress examination was performed at this visit. In terms of fatigue, the patient stated she was not better, possibly worse. However, all other symptoms were improved or stable. The ability to remember recipes, the ability to take a deep breath, and stability when standing were '*fine*' according to patient report. She no longer complained of dry mouth. Periodic anxiety and cold intolerance were unchanged and are probably long-standing. In terms of her throat sensation, she stated the '*razor blade*' sensation was gone, but constriction remained, sometimes traveling into the ear.

Cervical range of motion was improved in flexion with no disturbing throat sensation; other cervical ranges of motion were unchanged. Reverse digit span was 4, unchanged from initial exam. Finger-to-nose test was negative, indicating improved upper body coordination. Three readings of forced vital capacity were 2.0 litres, 1.7 litres, and 2.3 litres, compared to a maximum reading of 1.7 litres at presentation.

Based on criteria previously described, high velocity low amplitude adjusting was performed at T10-11. Respiratory assist adjusting was administered at C4. The neurolymphatic reflex for the diaphragm and the yin tang acupuncture point were stimulated.

In an effort to encourage improved pharyngeal tone in the hopes of relieving the feeling of throat constriction, the patient was instructed in oropharyngeal exercises, and was advised to perform each exercise for a minimum of 3 minutes each every day (Appendix 4). These exercises were originally developed within the discipline of speech therapy. Recent research suggests that they are helpful for patients with mild to moderate obstructive sleep apnea. (Guimaraes et al, 2009)

Based on the encouraging results to date, and given the introduction of home care advice, two more visits were scheduled.

Fifth Visit: 2 May 2023

Reverse digit span was now 5, evidencing an improvement in short term memory and attention span. She reported compliance with the oropharyngeal exercises and was encouraged to continue them. Overall, she stated that she feels she has been helped.

Based on criteria previously described, high velocity low amplitude adjusting was performed at C4. The left external pterygoid muscle was released by intra-oral digital pressure. The temporomandibular joint was mobilised by asking the patient to open and close her mouth while the adjuster gently pulled the pinna of both ears anterior, posterior, superior, and inferior. (Cottam TMJ technique) The yin tang acupuncture point was stimulated.

In an effort to promote good lymphatic function in the tissues of the head and neck while activating the oropharyngeal tissues, the patient was asked to perform each oropharyngeal exercise for 10 seconds each, while the adjuster stimulated the left neurolymphatic reflex for the sternocleidomastoid muscle. The procedure was repeated for the right *sternocleidomastoid* muscle.

Sixth Visit: 10 May 2023

At this visit, the patient still did not note any improvement in fatigue. However, she stated the congested feeling in the throat was improving, with '*phlegm breaking up*'.

Based on criteria previously described, high velocity low amplitude adjusting was performed at the L3, T12, and left glenohumeral levels. C4 was adjusted with respiratory assist technique. The left *sternocleidomastoid* muscle was found to be inhibited on manual muscle testing, therefore the procedure of stimulating the neurolymphatic reflex for that muscle while performing the oropharyngeal exercises for 10 seconds each was administered, as in the previous visit. The yin tang acupuncture point and the neurolymphatic reflex for the left supraspinatus muscle were stimulated. Manual soft tissue release was applied to a tender point in the left upper trapezius muscle.

Discussion

The failure of the patient to improve in term of fatigue is disappointing. The patient's history of heart failure, and possible side effects of Metoprolol™ may be preventing recovery from this symptom. However, we hope to see positive change in this symptom going forward. She has asked to continue as a chiropractic patient after the end of the research protocol, giving us the opportunity to observe any such change

In contrast to the patient's response in terms of fatigue, the positive change in almost every other symptom and sign during the course of six visits was very encouraging. Improvement in her long-term memory as evidenced by her ability to remember familiar recipes was noted along with improvement in short-term memory and attention span as evidenced by her increase in reverse digit

span. Her feeling of mouth dryness resolved. Dyspnea was lessened, and her forced vital capacity improved. She stated that she felt improved overall.

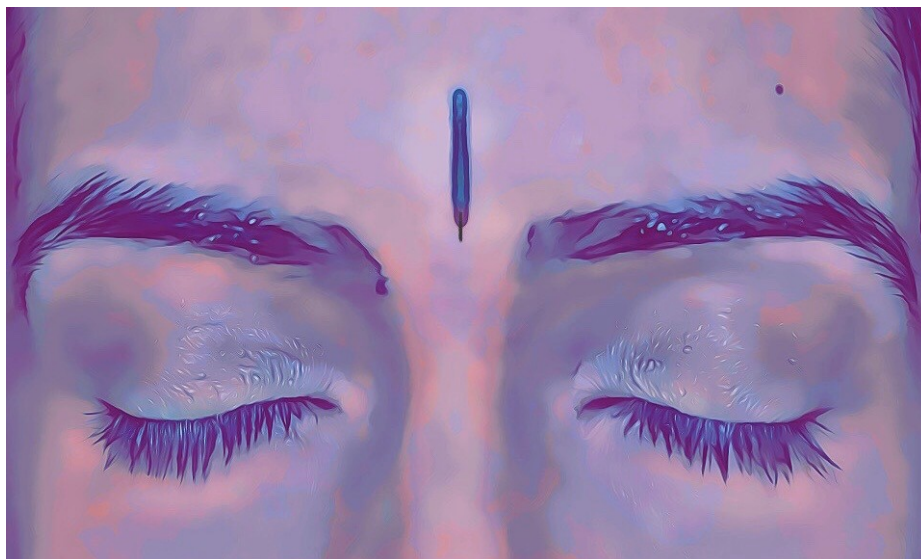
The patient's 'razor blade' like feeling in her throat is consistent with published reports of *glossopharyngeal* neuralgia. Indeed, there is at least one published case report of *glossopharyngeal* neuralgia as a feature of long COVID. (Nguyen and Alaimo, 2022) Radiation of sensation to an ear is not uncommon with this neuralgia.

It is interesting that these symptoms of probable neuralgic origin appeared early in the COVID infection, as evidenced by the patient's comment 'That's where the COVID started.' A recent case series of long COVID neuralgia found the symptoms usually appearing some 30 days after the onset of infection, suggesting an autoimmune origin. (Oaklander, et al 2022) However, the early appearance of neuralgia in this patient's case seems to suggest a different aetiology in her case, perhaps involving a persistent inflammatory process.

At the patient's third adjustment, palpation of C1 caused a radiating discomfort in the right ear. The segment was adjusted, and at the next visit, she reported that the 'razor blade' sensation was gone. The exact motion segments adjusted varied from visit to visit; therefore, it is not known which adjustments had the most relevance in terms of the probably neuralgic symptom. However, the timing of the patient's response and the fact that C1 palpation reproduced the radiation to the ear suggest that C1 subluxation was a significant aggravating factor in this patient's throat pain. Reduction of more common neuralgic symptoms under chiropractic care, including cranial and cervical adjusting, has been previously reported. (Cramer and Persky, 2019; Subchuk et al, 2019)

Progress in terms of the patient's feeling of throat constriction seems to have been accelerated by oropharyngeal exercises as home care. While these exercises were originally part of speech therapy, and benefit for patients with obstructive sleep apnea has been reported, we are not aware of any previous application for patients with long COVID. The use of neurolymphatic stimulation for the *sternocleidomastoid* muscles during oropharyngeal exercises during office visits was intended to augment the benefit of the exercises. In the future, this patient may benefit from self-stimulation of these reflex points while practicing the exercises. We are unaware of any health hazard associated with this procedure. Therefore it may be worthwhile to explore its application in obstructive sleep apnea, swallowing disorders, and non-COVID pharyngitis, as well as throat symptoms associated with long COVID.

The yin tang acupuncture/acupressure point (sometimes called the extra one point) is located between the eyebrows at the root of the nose. Previous research has found acupressure stimulation at this point to be useful for stress relief and pain control. (Young-Chang et al, 2011) Therefore, it can be a useful adjunctive procedure in concert with the chiropractic adjustment.



Conclusion

Long COVID can affect any system of the body. The scientific community's understanding of this phenomenon is in its early stages. We hope that many other chiropractic practitioners publish case reports documenting their experience with these patients. It seems to us that it is almost impossible to care for these patients without learning something of clinical value each time.

Marion Todres-Masarsky
BA, MA, DC
Private Practice of Chiropractic, Vienna, VA

Charles S. Masarsky
B.S. Biology, DC
Private Practice of Chiropractic, Vienna, VA
Northern Virginia Community College
viennachiropractic@verizon.net

Cite: Masarsky CS, Todres-Masarsky M. Long COVID Pharyngitis, Possible Glossopharyngeal Neuralgia, and Subluxation: A case report URL Asia-Pac Chiropr J. 2023;4.1. URL apcj.net/Papers-Issue-4-1#MasarskyTodreaMasarskyLongCovid

Conflict of interest

The authors declare no conflict of interest regarding this paper.

Also by these authors

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Appendix 1: Call for Subjects

Call for Research Volunteers: Long Haulers (COVID)

What Is Our Hypothesis (Research Question)?

It is not uncommon for COVID-19 survivors to have residual problems for weeks or months after the fever and acute symptoms are gone. These people are sometimes referred to as “long haulers”. Common long-haul symptoms include headache, fatigue, attention deficit, and difficult breathing.

We know from both published research and our own clinical experience that chiropractic adjustments often help people with these symptoms whether or not they are infection related. The possibility that chiropractic adjustments can help people with these same symptoms post-COVID seems reasonable.

In a previous newsletter, we provided a brief discussion of a COVID-19 survivor who had lost her sense of smell and seemed to regain it immediately after her adjustment.

Our hypothesis: *In some cases, chiropractic adjustments can reduce the severity of COVID-19 long-haul symptoms.*

How Do You Qualify for the Project?

We are calling for volunteers who are COVID-19 survivors with lingering symptoms who have had no chiropractic care for at least one month. We will need written documentation of your COVID-19 diagnosis. If you may still be contagious, we will delay your participation.

What Can You Expect During Your Participation?

If you are an established patient, we will perform a brief case history and exam focused on your long-haul symptoms as well as our usual chiropractic checkup. If appropriate, an adjustment will be performed. This visit will last approximately 30 minutes.

If you are a new patient, we will perform the same case history and examination that any other new patient would experience, along with specific questions related to long-haul symptoms. If appropriate, a chiropractic adjustment will be performed. This visit will last approximately one hour.

There will be two follow-up visits for additional chiropractic adjustments, lasting approximately 15 minutes each. At the fourth and final research visit, a progress exam will be conducted.

What Will We Do with the Data?

We hope to publish these cases in a peer-reviewed, indexed clinical journal. Published papers will not include your name or any information that can be used to identify you. Your privacy and your safety will always be our paramount consideration.

Will There Be Payment?

This research is not grant-funded, so we cannot offer cash payment. All chiropractic services received as part of your participation in this research will be free of charge.

Contacting Us

If you are interested in volunteering, or if you have a friend or family member who would like to, contact us by phone: 703-938-6441. Feel free to spread the word by forwarding this e-mail, or by copying and sharing this flyer.

Thank you!

Appendix 2: Consent for Research Participation

VIENNA CHIROPRACTIC ASSOCIATES, P.C.

243 Church Street NW, #300-B, Vienna, VA 22180
703-938-6441

Directors: Charles S. Masarsky, D.C. & Marion Todres-Masarsky, D.C.

Thank you for helping us investigate the chiropractic management of long-haul COVID-19 symptoms.

We will measure the severity of your symptoms before and after a brief series of chiropractic adjustments.

We are committed to your safety and well-being during your participation in this research, as we would be with anyone under our care. Nevertheless, you have the right to withdraw your participation at any time for any reason.

We hope this research leads to publication in a clinical journal. In compliance with standard rules for such publications, we will not reveal your name, initials, unique characteristics, or any other information that poses a foreseeable threat to your privacy.

“I have read the above, asked any questions I have about the project described, and I understand the information presented. I consent to participate.”

Printed Name of Participant: _____

Signature of Participant: _____

Today's Date: _____

Appendix 3: History Questions Relevant to Long COVID

Some History Questions Relevant to Long COVID (discuss frequency, severity, + whatever other details patient can add)

Autonomic Function

Since COVID, when standing after sitting or lying down do you feel:

- Dizzy?
- Shaky/weak?
- Do you break into a sweat?
- Does your vision blur?
- Does your heart race (palpitations)?

Do you get dry mouth more than you used to? Excess salivation more than you used to?

Do you get dry eye more than you used to? More tearing up than you used to?

Are you experiencing more diarrhea than you used to? More constipation than you used to?

Do you have more difficulty emptying your bladder than you used to?

Are you more sensitive to bright light than you used to be?

Do you have more difficulty seeing/driving at night than you used to?

Olfactory Function

Since COVID, what score would you give your sense of smell if “0” means you are unable to smell anything, and “5” is completely normal sense of smell?

If your score is less than “5”, do you find yourself using more salt and other seasonings?

Cognitive Function

Do you have more trouble concentrating than you used to?

Do you have more trouble with your memory than you used to?

Do you feel more mentally “foggy” than you used to?

Breathing

Do you have more trouble than before taking a deep breath?

Do you have to stop to take a breath when speaking more often than you used to?

Endocrine (Glandular)

Do you get tired more easily than you used to?

Do you have less sex drive than you used to?

Are you more sensitive to heat or cold than you used to be?

Do you have more of a craving for salt than you used to?

(Sletten et al, 2012; Gupta et al, 2013)

Appendix 4: Oropharyngeal Exercises

A publication by a Brazilian research group found a series of oropharyngeal exercises effective in reducing the clinical manifestations of obstructive sleep apnea (**Guimaraes et al, 2009**). The following exercises are based in part on the Guimaraes et al paper. In addition, **any respiratory exercise mentioned in this section** can help the respiratory muscles overcome oropharyngeal obstruction while improving FVC to reduce episodes of hypoxia. When appropriate, smoking cessation and weight control are of critical importance for these patients.

Say “Ah”

When an examining doctor looks into your mouth and asks you to say, “Ah,” they look for elevation of the soft palate. The same vocalization can be used as an exercise to tone the soft palate.

Say, “Ah” for 10-60 seconds, according to comfort. Alternate staccato vocalization (“Ah-ah-ah-ah...” etc.) with longer efforts of “holding the note” (“Ahhhhhhhh...”). Shoot for a total of at least 3 minutes per day.

Variations: You can say, “Ah” with your mouth wide open and your tongue all the way out and down. This recruits additional throat and tongue muscles. For those familiar with yoga, this somewhat resembles the “lion” pose. Also, instead of just saying, “Ah,” you can sing something, with “Ah” as the lyric.

Resisted Tongue Thrust (Forward)

Press your lips together, and press your tongue forward against the resistance. Do this for 10-60 seconds according to comfort, shooting for a total of at least 3 minutes per day.

Variation: You can open your mouth and press your tongue against your fingers or a spoon.

Tongue to the Roof

Press your tongue to the roof of your mouth. Assist the pressure with suction, so your tongue is actually being sucked upward against your palate. Hold for 10-60 seconds according to comfort, shooting for a total of at least 3 minutes per day.

Tongue to the Floor

With the tip of your tongue touching your lower teeth, press the rest of your tongue down against the floor of your mouth. Hold for 10-60 seconds according to comfort, shooting for a total of at least 3 minutes per day.

Tongue to the Cheek

Press your tongue against your right cheek, with the tongue and cheek resisting each other. Hold for 10-60 seconds according to comfort, shooting for a total of at least 3 minutes per day. Repeat with left cheek.

Variation: To emphasize the cheek muscles, you can place your fingertip in your mouth and use it for resistance rather than your tongue.

Back-Lick

Pressing your tongue against the roof of your mouth just behind your front teeth, move your tongue as far back as possible, licking the roof of your mouth from front to back. Then lick from back to front. Repeat for 10-60 seconds according to comfort, shooting for a total of at least 3 minutes per day.