

# Challenging Case of Parotitis: A Comprehensive Approach

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**The diagnosis and management of parotitis can be challenging. Patients often present with pain and edema in the neck, jaw, head, and ear due to congestion of the gland. Parotitis is typically caused by an infection within the parotid gland and surrounding lymph nodes, and the infection can spread to nearby cervical fascial planes and cause major complications if not managed successfully. Specific guidelines for the outpatient management of parotitis are limited, and outpatient treatment failures are common, requiring inpatient therapy with multiple broad-spectrum antibiotics. In the current case, a comprehensive patient-centered approach was used to treat a woman whose overlapping clinical conditions, lifestyle, and work factors led to an infection of the parotid gland.**

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Challenging cases of parotitis require a holistic approach to patient care, which considers the whole person rather than the disease in isolation. Although parotid gland infections are uncommon, cases in the literature have been documented since the 1800s.<sup>1</sup> Parotid gland dysfunction is more common in patients who are at extremes of age, in patients postoperatively, or in patients who are immunocompromised.<sup>1,2</sup> Parotitis is classified as suppurative or nonsuppurative. The suppurative type is caused by polymicrobial pathogens that ascend from the oral cavity, predominantly *Staphylococcus* species.<sup>1,3,4</sup> The nonsuppurative causes are numerous and include viral, autoimmune, and metabolic causes. Implicated viral pathogens include mumps, Epstein-Barr virus, influenza, coxsackievirus, and cytomegalovirus.<sup>3</sup> Other contributing conditions include autoimmune processes, cystic fibrosis, dehydration, diabetes, alcoholism, sarcoidosis, sialolithiasis, and benign or malignant tumors.<sup>3</sup> Complications of parotitis may involve extension of infection into sensitive structures of the neck, leading to massive swelling, obstructive respiratory dysfunctions, septicemia, facial bone osteomyelitis, and septic jugular thrombophlebitis.<sup>3,5</sup>

Therapy for patients with parotitis begins conservatively and becomes more invasive if initial treatments fail.<sup>2</sup> The mainstay of outpatient therapy includes antibiotics, adequate hydration, good oral hygiene, locally applied heat, and avoidance of anticholinergic medications.<sup>2,3</sup> Initial antibiotic regimen begins with antistaphylococcal penicillin for 10 to 14 days.<sup>2,3</sup> Antibiotics that target *Staphylococcus*, anaerobes, and gram-positive organisms should be considered because of the proximity of the oral cavity to the Stensen duct, which drains saliva from the parotid gland into the mouth.<sup>2,3</sup>

In addition to traditional antibiotic therapy, parotid gland massage, sialogogues, and osteopathic manipulative treatment (OMT) may play an adjunctive role by improving parotid gland congestion, facilitating delivery of medications to the site of infection, and alleviating pain.<sup>6</sup> Management strategies that consider disease pathogens, sensitive anatomical structures, parotid gland mechanics, and a patient's unique contributing risk factors provide a holistic approach.

This report highlights a comprehensive approach to a challenging case of parotitis that was complicated by the patient's risk factors.

## Report of Case

A 50-year-old woman presented to the family medicine clinic with left-sided preauricular pain and swelling that radiated into her neck and jaw. The pain began 2 weeks earlier and was worsening; on presentation the patient rated it 9 on a 10-point scale, with 10 being the greatest pain. Of note, she was seen 2 weeks previously at an urgent care facility, and 2 different courses of antibiotics (cephalexin and amoxicillin clavulanate) were prescribed. These medications offered no relief. Additional complaints included dysphagia, cervicgia, and xerostomia. Her medical history included overactive bladder, anxiety, insomnia, chronic hyponatremia, and low body weight. Her medications included 5 mg of oxybutynin daily, 200 mg of sertraline hydrochloride daily, and 100 mg of trazodone hydrochloride at bedtime. She had a 50-pack/y history of tobacco use and long-standing history of alcoholism. In her daily job as a telephone operator at a call center, she wore a snugly fitting headset that compressed the entire left side of her face.

Her vital signs were normal with the exception of a low body mass index of 18. She appeared ill, underweight, and anxious. There was tenderness to palpation at the left mastoid process and remarkable left-sided swelling anterior and inferior to the external auditory canal. Left anterior cervical lymphadenopathy posterior to the jaw angle measured 3.5 cm. Musculoskeletal examination findings included decreased cervical range of motion in

left sidebending; occipitoatlantal sidebent left, rotated right; atlantoaxial rotated right; C2 flexed, rotated right, sidebent right; C3 extended right, sidebent right; anterior C1 left; posterior C2 left; posterior C3 left; posterior C2 right; posterior C5 right; and myofascial restriction in the neck. Cranial dysfunctions included a left cranial torsion, left sidebending rotation, and an internally rotated and immobile left temporal bone. The remainder of the physical examination findings were unremarkable.

At the initial visit, 500 mg of ceftriaxone was given intramuscularly, and urgent head computed tomography (CT) was ordered. The CT image demonstrated diffuse parenchymal enhancement in the left parotid gland (Figure) and associated acute cervical lymphadenopathy. Working diagnoses included acute suppurative parotitis vs nonsuppurative parotitis caused by the adverse effects of her anticholinergic medication (eg, xerostomia) and further complicated by parotid gland obstruction due to the headset she wore at work. Her other diagnoses included somatic dysfunctions of the cranium and neck, regional cervical lymphadenitis, leukocytosis, and anxiety.

After diagnostic imaging revealed parotitis, a 10-day course of levofloxacin was prescribed. The selective serotonin reuptake inhibitor and trazodone doses were decreased to minimize xerostomia and hyponatremia. She was also encouraged to maintain a healthy weight, stop smoking, and use a noncompressing headset at work. Other modalities included warm compresses, sialogogues, and at-home massage of the parotid gland.

In addition, OMT was applied at 5 sessions over 2 months, focusing on cranial, lymphatic, and soft tissue somatic dysfunctions. Appointments were scheduled approximately every 2 weeks. Specific techniques included cranial balancing, suboccipital release, cervical Still technique, cervicothoracic myofascial release, cervical and periauricular lymphatic drainage, and strain-counterstrain.<sup>7-10</sup> It is difficult to quantify the effects of OMT because the antibiotics and anticholinergic medications were adjusted concurrently. However, she subjectively reported improved pain and decreased neck swelling after the first OMT session. After the second OMT session, she reported resolution



**Figure.**

Computed tomographic image of a 50-year-old woman who presented with left-sided preauricular pain and swelling that radiated into her neck and jaw. The image demonstrates diffuse parenchymal enhancement in the left parotid gland and associated acute cervical lymphadenopathy. Arrow points to the left posterior parotid gland tail with thickening and enhancement.

of pain, and the lymph node was no longer palpable. Although she had complete resolution of these symptoms by the 2-month follow-up, she continued to experience medication-induced xerostomia. In addition, *Clostridium difficile* colitis developed, which resolved over the next month with appropriate management.

## Discussion

The parotid gland produces and delivers saliva into the oral cavity.<sup>11</sup> These secretions help to moisten food boluses, protect oral mucosa and teeth, and prevent ascension of bacteria into the gland.<sup>11</sup> The parotid gland is mechanically stimulated by surrounding structures (muscles, fascia, and bone) during mastication and regulated by parasympathetic control.<sup>11</sup> Dysfunction of the gland can lead to parotitis.

Chronic xerostomia can predispose patients to parotitis because the lack of secretions allows for ascension of bacteria into the gland from the oral cavity.<sup>3,5</sup> The additive anticholinergic effects of this patient's medications, including the long-term, high-dose selective serotonin reuptake inhibitor, trazodone, and oxybutynin, likely led

to overwhelming xerostomia, thus predisposing her to salivary stasis and pathogen ascension.<sup>3,12</sup> Altering her medications proved to be challenging, as decreasing the dose of her medications increased her anxiety.

In consideration of the mechanical action of the parotid gland and the multiple somatic dysfunctions identified in this patient, the compressive headset use was concerning. These restrictions could have played a role in decreasing pathogen clearance from the gland or preventing adequate antibiotic delivery to the affected tissue. The fascia of the human body is a very dynamic structure. Fascia provides a moveable conduit through which the neurovascular support for all organ systems flows.<sup>13</sup> Even small amounts of pressure over time can have an additive effect, resulting in significant pathologic changes, as demonstrated by our patient's somatic dysfunctions.<sup>9</sup>

The ability of lymphatic treatments to improve lymphatic stasis has been described in the osteopathic literature since the time of Andrew Talor Still, MD, DO.<sup>14</sup> Lymphatic stasis caused by musculoskeletal restriction has been reported to increase infection risk, and relieving the restriction can improve the condition.<sup>15</sup> There are no reports regarding the utility of

OMT for parotitis, to our knowledge; however, several studies have documented successful use of lymphatic OMT as adjuvant therapy for other head and neck infections, such as otitis media and middle ear effusions in children.<sup>16</sup> Steele et al<sup>16</sup> implemented an OMT protocol that included lymphatic techniques such as cervicothoracic myofascial release in patients with acute otitis media and effusion that resulted in a faster rate of recovery than medical management alone.

Parotitis treatment guidelines often include a basic parotid massage, which aims to increase salivary flow. Compared with a basic massage technique applied to the parotid gland, the use of OMT may affect the deeper structures and function of the head and neck, including the fascial planes, lymphatic drainage, musculoskeletal alignment, and autonomic activity of the parotid gland.<sup>17,18</sup> Our patient received 3 courses of antibiotics, 2 of which were initiated before her presentation to our clinic. She did not improve until OMT was applied and her multiple confounding risk factors were addressed. The use of OMT to manage head and neck infections may help to decrease the need for lengthy courses of antibiotics, inpatient therapy, and invasive procedures. Further areas of research may include evaluation of the role of OMT in head and neck infections, such as parotitis.

## Conclusion

The foundation of the osteopathic approach relies on consideration of the whole person with respect to the surrounding clinical picture. In approaching this case, it was important to consider the unique patient characteristics and all facets of the disease. This approach included focusing on the total health of the patient by improving the mechanics of the involved structures with OMT, eliminating pathogens, optimizing medication choices, and decreasing patient risk factors.

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