

# Parotid abscess in a patient with obstructive sleep apnea treated with continuous positive airway pressure therapy

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## Introduction

Continuous positive pressure therapy (CPAP) is a mainstay of treatment of obstructive sleep apnea (OSA). A CPAP device pressurizes room air and blows it through a nasal or oronasal mask into the patient's airway, preventing the dynamic collapse of the airway soft tissue structures. In order to apply a sufficient pressure, there has to be a seal between the CPAP mask and the patient's facial structures.

Most complications of CPAP therapy are related to a mask interface (skin abrasion, leakage) or dryness of the inspired air (nasal/throat dryness, nasal congestion, rhinorrhea) [1]. We report a case of a man with OSA who, once started with CPAP, developed worsening of the preexisting parotid sialoadenitis that eventually led to parotid abscess formation and required removal of the gland.

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## Case report

A 44-year-old man presented for sleep evaluation with symptoms of snoring, gasp arousals, and excessive daytime sleepiness. He had a history of complex partial seizures, hypertension, and recurrent parotid swelling. On physical examination, he was obese (body mass index of 42.7 kg/m<sup>2</sup>) and had a Mallampati grade 3 oropharynx, with significant restriction of lateral dimensions. Polysomnography, scheduled in a split-night fashion, showed moderately severe obstructive sleep apnea with apnea-hypopnea index (AHI) of 26/h and significant worsening in events in rapid eye movement (REM) sleep (REM AHI of 106/h). He responded well to CPAP set at 10 cmH<sub>2</sub>O and was prescribed a device set at this pressure. He has reported troubles adjusting to his FlexiFit 432 Full Face mask (size XL, Fisher Paykel Healthcare, Irvine, CA, USA), with leakage and excessive pressure over the nose and cheeks, which prompted adjustments of the mask.

His parotid swelling had been present intermittently for the previous 20 years and was bilateral—either gland would swell once a month to once every few months. Typically, these symptoms resolved in 12–36 h without any intervention or with warm compresses. Episodes were not associated with diet or activity. A sialogram had previously demonstrated bilateral tortuous parotid ducts without other abnormalities seen. After starting the CPAP therapy, he noticed a morning increase in the swelling of both parotid glands and parotid ducts due to the retention of saliva. This responded easily to local massage to empty the parotid ducts.

He presented 2 months after the start of therapy with swelling and redness of the right parotid gland, associated with right facial pain. He was diagnosed with acute parotitis and was given warm compresses and a 10-day course of



**Fig. 1** FlexiFit 432 Full Face Mask with straps partially overlying the parotid gland (*shaded area*)

ciprofloxacin 500 mg twice daily. He stopped using his CPAP. Eight days into the antibiotic treatment, he noticed purulent drainage out of the retroauricular and external auditory canal. Bacterial culture of the fistulous drainage showed *Streptococcus milleri/anginosus*. He was given a diagnosis of parotid abscess and was treated with amoxicillin/clavulanate with an improvement of symptoms. Due to the risk of recurrence, he underwent a right superficial parotidectomy 6 weeks later.

Following the surgery, the patient was suggested to use a different mask that would not put direct pressure on the contralateral parotid gland. He declined and restarted using CPAP a month after his surgery, using the same full-face mask. The patient continues to do well after 6 months of follow-up with no recurrence of symptoms on the contralateral side.

## Discussion

Local complications of CPAP therapy in patients with OSA are typically mild and comprise interface problems (mask leak, skin abrasion, claustrophobia) and pressure-related symptoms (rhinitis, rhinorrhea, dryness, headache, aerophagia). Oral dryness is a frequent symptom of untreated OSA and typically improves with CPAP therapy, especially if heated humidification is used [2, 3]. Infectious complications are rare and are usually related to improper cleaning of the equipment and/or using of contaminated water in the CPAP humidifier [4].

Parotid abscess is a hitherto unreported complication of CPAP therapy. The reported risk factors for chronic sialoadenitis and suppurative infections of the parotid gland include an acute decrease in salivary flow due to blockage by scarring, foreign body or tumor, Sjögren's syndrome, immune compromise, dehydration, debilitation, and poor oral hygiene [5–7]. On the other hand, the use of CPAP

may be associated with excessive oral dryness in spite of in-line humidifiers that are used with CPAP devices. Temporal association of the onset of symptoms of excessive sialorrhea with the beginning of CPAP therapy suggests a causative effect. We speculate that patient's prior tendency toward poor drainage of the parotid ducts, combined with the direct pressure from the mask straps on the parotid gland (Fig. 1) and/or direct effect of pressurizing oral cavity, resulted in the worsening of the retention of the saliva and, eventually, infection with abscess formation in the lower pole of the parotid gland. As the Wharton's duct runs parallel to the mask straps, we do not believe that direct pressure on the duct was involved.

Our case underlines the need for caution in treating with CPAP patients with a history of chronic salivary gland problems. Though the causative link was not established, our case indicates that patients who suffer from chronic sialoadenitis may be at risk for developing sialostasis, which may be complicated by infection and abscess formation. Meticulous attention to air humidification and the use of nasal pillow masks that do not put direct pressure on the parotid gland should be strongly considered in such patients.

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