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TEMPOROMANDIBULAR JOINT DISLOCATION AFTER LONG-TERM MECHANICAL VENTILATION

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ABSTRACT

Introduction: Dislocations of the temporomandibular joints (TMJ) are relatively common and occur in as many as 7% of the entire population at some point in their lives. Anterior dislocations are the most common and are defined as the excessive forward movement of the mandibular condyle out of the glenoid fossa beyond the articular eminence with complete separation of the articular surfaces. However, anterior bilateral TMJ dislocation after intubation described in this case report, is a very uncommon complication.

Case description: A 43-year-old woman with an unremarkable medical history presented to the emergency department with respiratory distress. She was admitted to the intensive care unit for non-invasive ventilation and intubated on the same day. After 10 days she was extubated. Post-extubation, the patient was unable to close her mouth, speak, or swallow, causing severe drooling. A computed tomography scan revealed a bilateral dislocation of the TMJ. An ear, nose and throat specialist successfully and easily repositioned the mandible under 5 ml of propofol, restoring normal jaw anatomy and function.

Discussion: Endotracheal intubation is a predisposing factor for TMJ dislocation. Other risk factors include female sex, interincisal distance, and age. Early recognition and management are imperative, since delay scan cause difficult repositioning due to muscle spasms. Longer delays can cause long-lasting dysfunctions and pain.

Conclusion: Bilateral anterior TMJ dislocation is a known but rare complication of endotracheal intubation. Swift recognition and treatment are imperative in order to prevent long-lasting anatomical and functional defects.

KEYWORDS

Bilateral temporomandibular dislocation, intubation, muscle relaxation

LEARNING POINTS

- Bilateral temporomandibular dislocation is a rare complication after intubation.
- Swift repositioning of anatomical structures is important to prevent long term complications.
- Long-term complications of prolonged dislocation of the temporomandibular joint include persistent disfunction and/or pain.

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INTRODUCTION

Dislocations of the temporomandibular joints (TMJ) are relatively common and occur in as many as 7% of the entire population at some point in their lives[1]. TMJ dislocations can occur at any age but are most common between 20-40 years of age[1]. Several morphological variants exist based on the position of condyles to articular eminence, such as anterior, posterior, medial, and lateral[2]. Anterior dislocations are the most common and are defined as the excessive forward movement of the mandibular condyle out of the glenoid fossa beyond the articular eminence with complete separation of the articular surfaces[3]. Anterior bilateral TMJ dislocation after intubation is a very uncommon complication but may have long-lasting consequences[4]. TMJ dislocation is not always obvious, and it is therefore easily overlooked, especially in cases where patients have a decreased consciousness and when clinicians are unfamiliar with this pathology[5]. Failure to recognize TMJ dislocation can cause permanent dysfunction and damage to the TMJs[3]. Swift action should be undertaken to restore normal anatomical proportions.

We describe the delayed diagnosis and treatment of a case of bilateral TMJ dislocation in a 43-year-old woman who could not close her mouth after extubation.

CASE DESCRIPTION

A 43-year-old woman with an unremarkable medical history presented to the emergency department with respiratory distress. She was diagnosed with an influenza A infection, with bilateral infiltrative abnormalities on the chest X-ray. Due to the severity of her condition, she was admitted to the intensive care unit (ICU) for non-invasive ventilation. However, since her clinical condition deteriorated, she was urgently intubated on the same day. The intubation procedure was uncomplicated. Because her condition deteriorated further within hours, she required muscle relaxation and prone-position ventilation. Luckily, after 5 days her condition improved, allowing the weaning process to begin. After a total of 10 days on mechanical ventilation, she was extubated. However, post-extubation, the patient was unable to close her mouth, speak, or swallow, causing severe drooling. She complained about jaw pain. The differential diagnosis at that moment included residual effects of sedative and muscle relaxant medications, soft tissue and/or nerve injury or inflammation, and TMJ dislocation.

A computed tomography (CT) scan revealed a bilateral anterior dislocation of the TMJ *(Fig. 1)*. An otorhinolaryngology specialist successfully and easily repositioned the mandible under 5 ml of propofol, restoring normal jaw anatomy and function. Paracetamol 1000 mg q.i.d. was administered to relieve pain. A Philadelphia collar was applied for 24 hours, and the patient was advised to avoid excessive jaw movements.

DISCUSSION

Anterior TMJ dislocation has been described during manoeuvres needing excessive opening of the mouth, whether it be "natural" movements such as eating or yawning or during procedures such as dental procedures[2]. In addition, anatomical variations such as poor joint capsule integrity, weak articular eminence morphology, and muscle hypotonicity are considered predisposing factors[6]. Endotracheal intubation has also been described as a risk factor for TMJ dislocation[3]. Martin et al. have determined a number of risk factors for TMJ disfunction associated with endotracheal intubation, being female gender, interincisal distance, and age[6]. We are not aware of any suggestion that the use of muscle relaxants, which were used in our patient, should be considered to be an independent risk factor.

The clinical presentation of anterior TMJ dislocation after anaesthesia can vary significantly[3]. Our patient presented with severe pain in the periauricular area and an inability to close the mouth, the inability to swallow, and heavy salivation. This combination of symptoms quickly led to the



Figure 1. Computed tomography scan of the A) left and B) right side of the jaw joint showing dislocation of the temporomandibular joint.

diagnosis. However, we remain uncertain about the time at which the dislocation has occurred. In the worst-case scenario, the dislocation occurred during intubation 10 days earlier and remained unrecognized.

Diagnostic delays for over 14 days have been documented previously, mostly due to a decreased level of consciousness, such as after head trauma or sedation as in the described patient[2]. It is imperative to reposition the jaw swiftly. In the short term, spasms of the masseter and pterygoid muscles may worsen over time, causing the mandible to contract into the dislocated position, therefore making the reduction procedure more difficult[7]. Long-term-delays, for more than 14 days, are described to potentially cause complications such as fractures and fibrosis, resulting in permanent joint dysfunction[3]. Repositioning of the TMJ requires a simple manoeuvre and can generally be performed under light sedation. Benzodiazepines, narcotics, and induction agents, such as propofol, have all been described at various doses.

We describe a case of bilateral TMJ dislocation after intubation and artificial ventilation including muscle relaxation for a period of 10 days. In this case the dislocation was detected after extubation. The fact that the patient was on muscle relaxants for a number of days could have played an additional causative role. TMJ dislocation as a consequence of endotracheal intubation is a rare complication that can cause permanent functional problems and/or pain if not diagnosed and treated swiftly. Luckily our patient did not experience lasting negative effects.

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