



## CASE REPORT

# Diagnosis of Tardive Dyskinesia in an Oral Surgical Office

Shamit S Prabhu<sup>1,2\*</sup>, Sameh Almousa<sup>1</sup>, Kevin Fortier<sup>3</sup> and Uday N Reebye<sup>2</sup>

<sup>1</sup>Wake Forest School of Medicine, North Carolina, USA

<sup>2</sup>Triangle Implant Center, North Carolina, USA

<sup>3</sup>Boston University Henry M. Goldman School of Dental Medicine, Massachusetts, USA

\*Corresponding author: Shamit Prabhu, MS, Triangle Implant Center, 5318 NC Hwy 55, Ste 106, Durham, NC 27713, USA, Tel: 919-816-5841, E-mail: [shamitprabhu@gmail.com](mailto:shamitprabhu@gmail.com)



## Abstract

Tardive dyskinesia (TD) presents as uncontrolled, repetitive movements of the body, typically beginning with orofacial structures, due to antipsychotic medications. The two classes of antipsychotics, atypical and typical, are mainly distinguished by their likelihood of producing extrapyramidal side effects (EPS), with atypical producing lower rates. Our case discusses a patient who presented at our clinic for dental extractions. Pre-operative consultation presented the rapid, repetitive tongue, lip, and cheek movements characteristic of tardive dyskinesia. An extensive search through her medical history showed long-term antipsychotic usage. After a consultation revealed she had never seen a psychiatrist outside of acute care centers, we referred her to a psychiatrist to evaluate her medications as she had been taking a typical antipsychotic. During the follow-up appointment, our patient's tardive diagnosis was confirmed by a psychiatrist and she had been prescribed an atypical antipsychotic. The clinical implications of this report are to encourage dental professionals to understand the medications associated with mental illnesses, as they can significantly affect oral health and other motor functions. Although we were unable to prevent the onset of tardive dyskinesia in our patient, her case serves as a cautionary reminder of the consequences when mental illnesses go unchecked and how dental professionals can potentially prevent a life-changing condition in their patients.

## Keywords

Tardive dyskinesia, Antipsychotics, Atypical, Typical, Neuroleptics, Extrapyramidal side effects

## Abbreviations

ASA: American Society of Anesthesiologists; TD: Tardive Dyskinesia; APDs: Antipsychotic Drugs; EPS: Extrapyramidal Side Effects; DSM: Diagnostics and Statistical Manual of Mental Disorders

## Introduction

Antipsychotic drugs (APDs) have been utilized to treat a broad range of symptoms associated with neuropsychiatric disorders, predominantly schizophrenia and bipolar disorder. There are two classes of APDs: typical or first-generation, and atypical, or second-generation. The most commonly prescribed atypical APDs are quetiapine, risperidone, aripiprazole, and olanzapine [1]. Typical APDs prescribed include haloperidol, loxapine, thioridazine, molindone, thiothixene, trifluoperazine, and chlorpromazine. Typical APDs are not as frequently prescribed due to their higher rate of producing extrapyramidal side effects, one of which is tardive dyskinesia (TD) [2]. However, there are cases showing the development of TD in patients treated with atypical APDs [3].

TD, a neurological syndrome first reported in 1957, results from usage of APDs. TD symptoms are characterized by involuntary, repetitive, and rapid movements, which may involve chewing motions, cheek puffing, tongue protrusion, puckering of the lips, and rapid eye blinking [4]. Movements of other body segments like arms, fingers and trunk may also occur, and symptoms may appear during sleep and/or wakefulness [5]. While, the exact etiologic mechanism of TD is not fully known, one hypothesis proposes that it is due to the drug-induced up-regulation of dopamine (D2) receptors [6,7]. TD may have dental implications, as repetitive motion of the lips and tongue causes attritions and abfractions on natural teeth [5].

Prosthetic management of the patient is hindered as TD deteriorates the stability of complete dentures and increases the risk of prostheses breaks. Furthermore, the medications that cause TD, combined with poor diet and the general apathetic nature of psychiatric patients, compound the issue of poor oral health [8]. Implant-supported fixed rehabilitation may appear as a valuable therapeutic option, though excessive oral movements may inhibit a positive outcome [5].

In this report, we describe a case of a patient with oro-bucco-lingual TD who had previously received treatment for a multitude of mental health conditions at various acute care centers. This case is significant as it illustrates how dental professionals can assist their patients with mental illnesses in treating their conditions, in addition to demonstrating the importance of understanding the side-effects of various psychiatric medications.

### Case Presentation

A 52-year-old female patient presented to our clinic for the extraction of teeth numbers 3 and 15. Our patient had a BMI of 31, ASA III score, and Mallampati II airway. The patient's medical history includes clinical diagnoses in acute care centers of schizoaffective disorder, bipolar I disorder, mild intellectual disability, and hypothyroidism. Her current medications listed 5 mg haloperidol, 50 mcg levothyroxine, 300 mg lithium carbonate, 150 mg bupropion, and 2 mg benztropine. Although our patient was unable to recall her prior medications or dosages, an extensive search through her medical records showed that she been prescribed 5 mg trifluoperazine to be taken daily in 1996. In 2014, she was admitted and switched to 7.5 mg olanzapine to be taken daily. In August 2017, our patient was admitted and treated with 6 doses of 5 mg haloperidol shots over several days. She was discharged and prescribed 5 mg haloperidol to be taken daily. Questions of medication adherence indicated sporadic and inconsistent usage of the prescribed medications. Clinical notes in her health records pertaining to her mental health indicate

auditory hallucinations, symptoms of depression including sadness and indecision, manic episodes, and issues with personal relationships. Our patient reported her involuntary tongue movements first appeared in March 2018. She mentioned that her TD initially began with slight tongue movements and gradually progressed to rapid tongue movements in addition to lip pursing and cheek puffing.

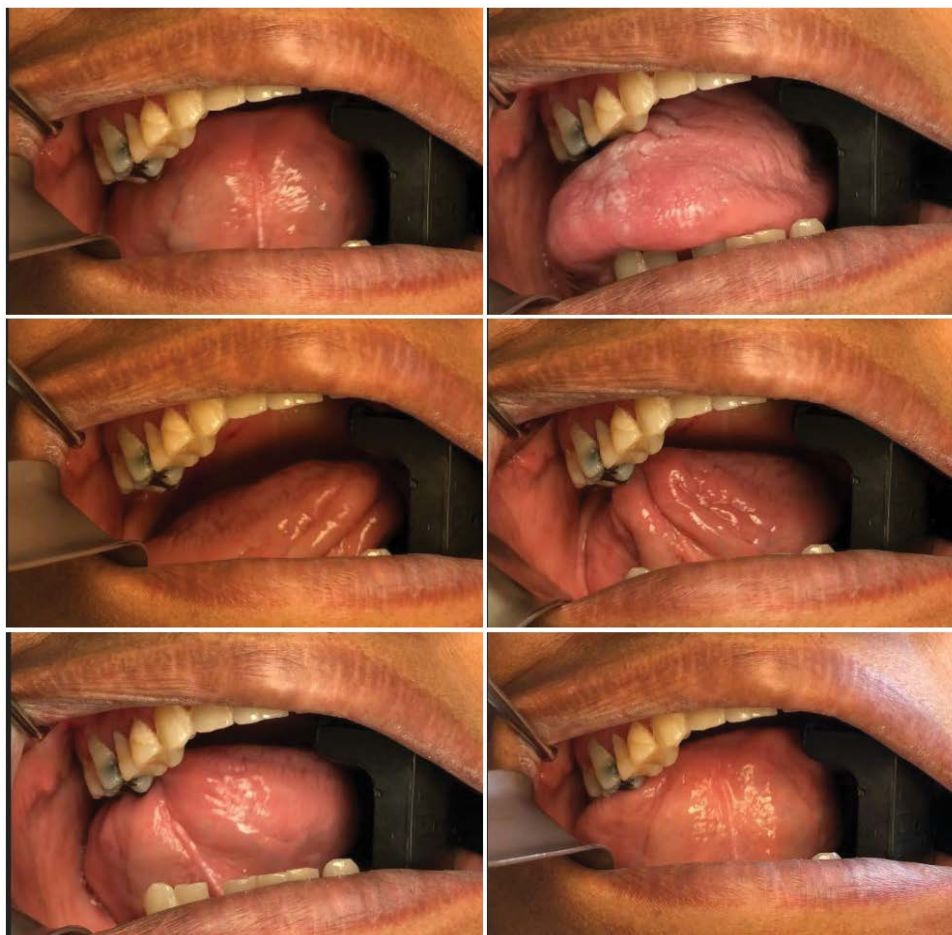
An intraoral exam revealed the patient had poor overall oral hygiene with multiple dental caries. She complained of gum pain and swelling without any visible signs of inflammation. Her lips were extremely dry and cracked. Due to the patient's TD, she had difficulty keeping her mouth and tongue in a stable position. After discussion with the patient, we planned to remove both teeth under general anesthesia to avoid any complications and interference from her rapid tongue movements.

Pre-operative vitals recorded a blood pressure of 152/98, heart rate of 85 beats per minute, and 100% oxygen saturation. Our anesthesiologist attained intravenous access in the antecubital fossa and the patient was induced using propofol. A total of 220 mg of propofol, 4 mg of ondansetron and 1 g of cefazolin were administered for the duration of the operation, lasting 13 minutes. As the patient began losing consciousness, her tongue movements began to diminish until there were no movements (Figure 1). Prior to the extractions, both sites were infiltrated with carpules of 2% lidocaine with 1:100,000 epinephrine. Teeth numbers 3 and 14 were easily extracted using a No. 150 upper universal forcep. The sockets were curetted and irrigated with normal saline solution and packed with gauze.

As the patient began regaining consciousness, her tongue movements became more rapid (Figure 2). Once the patient was fully conscious and alert, her pre-operative tongue movements returned in terms of frequency of motion and intensity (Figure 3). Post-operative recovery, next-day follow-up, and a one-week follow-up yielded no further complications and both sites were



**Figure 1:** Pictures taken in 10 second intervals showing an absence of tongue movement.



**Figure 2:** Pictures taken in 4 second intervals showing slowly increasing tongue movement.

healing normally. During post-operative recovery and subsequent follow-ups, we provided our patient with resources to seek the appropriate care from a psychiatrist for her TD. During the one week follow-up, our patient said she had been evaluated by a psychiatrist in which her diagnoses of tardive dyskinesia was confirmed and she was prescribed an atypical antipsychotic, quetiapine.

## Conclusions

Diagnostic criteria for TD, according to the *Diagnosics and Statistical Manual of Mental Disorders-V* (DSM-V), include: 1) Involuntary movements of the orofacial structures, trunk, or extremities developed through antipsychotic usage, 2) Involuntary movements have been present for at least 4 weeks with patterns of choreiform, athetoid, or rhythmic movements, 3) Movements developed during exposure of antipsychotics, 4) Exposure to antipsychotics for at least 3 months, 5) Symptoms not due to an underlying neurological or general medical condition, and 6) Symptoms are not better characterized by another antipsychotic-induced movement disorder [9]. Further, the DSM-V states that TD can continue despite changing or discontinuation of the medication [9]. For these reasons, our patient's symptoms in conjunction with history of antipsychotic medications is consistent with the diagnostic criteria of tardive dyskinesia. Other possible diagnoses, such as

Huntington's disease, Wilson's disease, and Sydenham's disease, were ruled out due to symptoms presenting after long-term usage of antipsychotics as opposed to preceding administration of medication. Neuroleptic withdrawal-emergent dyskinesia was ruled out due to the tardive dyskinesia lasting greater than 4-8 weeks [9].

The fact that our patient presented with poor oral health was not surprising. Extensive research exists detailing the relationship between mental illness and poor oral hygiene. Individuals with mental illnesses tend to have low self-esteem and are consequently more likely to neglect their oral health [10,11]. Research has shown that mentally ill patients are more likely to have dental caries, missing teeth, xerostomia, and oral lesions [12,13]. There have been instances where patients have somatic delusions pertaining to abnormalities in the oral cavity resulting in unnecessary dental procedures [14-16]. Our patient's persistent concern over her gums without any physical indication of an issue illustrates a somatic delusion.

Consideration for the veracity of patient's complaints who have a history of depression, schizophrenia, or other mental illnesses, should be undertaken prior to beginning any procedure. For patients without any clinical diagnoses of mental illnesses, the importance of the initial medical history documentation and pre-operative interview vastly increases [17]. Obtaining



**Figure 3:** Pictures taken in 2 second intervals showing pre-operative, rapid tongue movements.

a thorough history from a patient, in conjunction with their prior medication history, can provide insight into the mental health status of a patient. In most private practices, time restraints and staff untrained in mental health issues hinder the clinical team's ability to assess a patient's mental and emotional well-being. However, any indication of somatic delusions, or other psychotic behaviors, in the absence of any physiological abnormalities, should prompt healthcare providers to acquire a mental health evaluation prior to undertaking any procedure.

While behaviors associated with severe mental illnesses have a negative overall impact on oral hygiene, medications prescribed to treat mental illnesses can further exacerbate oral health issues. A meta-analysis of studies investigating the link between severe mental illness and oral health concluded that individuals with

severe mental illness were 61% more likely to have suboptimal oral health [18]. A combination of social determinants in conjunction with the side effects of psychotropic medications were identified as predictors of suboptimal oral health in populations with severe mental illness [18]. Psychiatric patients are frequently prescribed anticholinergic, antidepressants, and/or antipsychotic drugs for their illnesses. Anticholinergic drugs, specifically those targeting the M3 muscarinic receptor, have been shown to cause hypofunction of the salivary glands and a resulting reduction in saliva production [19,20]. Additionally, antidepressants and antipsychotic drugs have been linked to xerostomia [21-24]. Since these types of medications are frequently prescribed for psychiatric patients, they are at higher risk of poor oral health. Reduced saliva production affects the pH balance in the oral cavity and increases mouth dryness. Since saliva has a protective function for oral and

perioral tissues, increased mouth dryness places patients at greater risk of dental caries and oral infections [19,25,26]. As such, there is a high likelihood of these patients acquiring dental procedures from their providers. Specifically, patients with tardive dyskinesia should use an electric toothbrush and take precautionary measures to prevent plaque buildup [27]. The increased risk of xerostomia should be combated with salivary substitutes with fluoride varnish placed during dental visits [28]. During oral surgical procedures, the use of a strong suction is necessary to mitigate the swallowing difficulty experience by patients with TD [27].

Based on clinical experience, many psychiatric patients who frequent the emergency room are juggled between a handful of staff, varying from mid-level providers to nurses to physicians. These healthcare providers all hail from various specialties and are affiliated with various hospitals and outpatient clinics. Consequently, these patients can become lost in the system and end up receiving inadequate care, as was the case with our patient. While the dental professional's foremost concern is the oral health of their patients, they are an integral cog in assessing both mental and physical health. The dental profession allows for greater continuity of care as most patients do not frequently change their provider. As such, it is imperative to place close attention to patient's medications, mannerisms, and any possible signs of EPS. If typical antipsychotic medications are listed, the dental professional should refer the patient to a psychiatrist or neurologist, so they may be evaluated to switch to an atypical antipsychotic. Patient's should be informed that tardive dyskinesia can be irreversible and that switching from a typical to an atypical will likely not solve the issue of extrapyramidal movements and occurrence of tardive dyskinesia is still possible.

Dental professionals are like family practitioners in that patients are typically under their care for the long-term. This position can be utilized to ensure patients with mental conditions are regularly seeing a psychiatrist and are up-to-date on their medications. While information pertaining to mental illnesses is out of the scope of training for many dental professionals, having a basic understanding of some common mental illnesses and their associated medications can be extremely beneficial. As a key component of the healthcare team, dental professionals can avoid a case such as ours, by catching medical issues before they manifest into life-changing problems.

## Conflict of Interests

Shamit S Prabhu, Sameh Almousa, Kevin Fortier, and Uday N Reebye declare that they have no conflicts of interests.

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