

Two Cases of Parkinson's Disease for Which Dental Treatment Was Effective

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How to cite this paper: Fujii, Y. (2020) Two Cases of Parkinson's Disease for Which Dental Treatment Was Effective. *Advances in Parkinson's Disease*, 9, 13-19.

<https://doi.org/10.4236/apd.2020.92002>

Received: February 23, 2020

Accepted: April 21, 2020

Published: April 24, 2020

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Abstract

The purpose of this study is to document the improvement observed in two cases of Parkinson's disease (PD) after dental treatment. The first subject is a man in his 60s with severe Parkinson's disease; medication has not been very effective in this case. Prior to treatment, he was unable to stand without support due to rigidity. Just after removing as much of the dental infection as possible, he was able to walk, albeit slowly, and as a result of continuing treatment, one month later, the symptoms had significantly improved. The second subject is a woman in her 40s, who became aware of joint stiffness seven years ago, and was later diagnosed with PD independently at three hospitals. Her main symptoms were rigidity, knee pain, and speech disorder. The dopamine medication worked well against rigidity, but the symptoms reappeared after the medication stopped working. Her condition was significantly improved just after one tooth with an apical lesion was extracted. Although the underlying mechanism has not been clarified, I hypothesize that, at least in these cases, negative signals that passed through the trigeminal nerve to the mid-brain affected predominantly the dopaminergic neurons in the substantia nigra of the midbrain. Removal of the harmful signals from the oral area resulted in normalization of the substantia nigra. Further research should be promoted with dental and medical cooperation.

Keywords

Parkinson's Disease, Dental Treatment, Trigeminal Nerve, Substantia Nigra, Midbrain

1. Introduction

Parkinson's disease (PD) is a progressive illness of the central nervous system, which is characterized by movement and motor activity disorder, accompanied

by psychological and social disturbances [1]. Nearly one million Americans are living with PD and approximately 60,000 are diagnosed with PD each year. The cause of PD is unknown, and although there is presently no cure, there are available treatments such as medication and surgery to manage its symptoms [2]. PD is a neurological condition involving loss of dopamine-producing neurons in the substantia nigra of the basal ganglia [3]. PD and Parkinsonian signs that occur in old age are expected to increase dramatically in the next decades [4]. Therefore, there is an urgent need to establish more effective treatments. Four motor symptoms are considered cardinal in PD: tremor, slowness of movement (bradykinesia), rigidity, and postural instability [5]. Moreover, a person with PD has two to six times the risk of developing dementia compared to the general population [5] [6]. Previously, I reported cases in which severe dementia improved dramatically after denture placement [7]. Considering the above possible association between PD and dementia, therefore, there may be a close relationship between dental health and brain function. However, no report has been published on a connection between dental treatment and PD. Here, I report on two cases in which PD symptoms improved after dental treatment.

2. Case Reports

2.1. Case 1

Subject, Methods, and Result

The subject was a man in his 60s, who was diagnosed with PD more than 10 years ago. He could not stand by himself due to rigidity (**Figure 1**), and he experienced tremor in his fingers, and masked face (hypomimia). He spoke very little. He had tried seven kinds of medication, which were effective at the onset of the disease, but gradually became ineffective. At his first visit, he hardly received medical treatment. Then, by consulting his oral cavity, more than five dental caries and two teeth which need root canal treatment are found. I performed two root canal treatments on this patient, and the infected dentin in the oral cavity was removed as much as possible and filled with glass ionomer cement. All the dental materials used were selected using the Bi-Digital O-Ring Test [8] [9]. Immediately after the treatments, he was able to walk by himself, albeit with some bradykinesia, postural instability, and masked face. As a result of the root canal fillings and subsequent prosthetic treatments, his symptoms of PD almost disappeared one month later, and his daily life became normal without any other treatment (**Figure 2**). No side-effects were seen with this treatment. For more than two years past, he is still in good condition without any medical treatment.

In order to watch the actual experiment described in this case, please visit the YouTube movie:

Dental treatment for Parkinson's disease, part 1
<https://www.youtube.com/watch?v=vbDwGoI1o7c>
(last checked: 15 Feb 2020).



Figure 1. The subject could not even stand by himself due to rigidity.



Figure 2. The subject could walk smoothly and he did not show a masked face one month later.

2.2. Case 2

Subject, Methods, and Result

The subject was a woman in her 40s. She was diagnosed with PD independently at three hospitals six years ago, and her symptoms had gradually worsened. The main symptom was rigidity, accompanied by speech problems and knee joint pain. The last three years, she had been taking Levodopa (L-Dopa). This medica-

tion was very effective against rigidity, but did not improve the speech disorder and knee pain. The effect of a single drug administration lasted about half a day. When the drug was no longer effective, the rigidity recurred. At her first visit, she was receiving medication at the medical department. At that time, her oral condition was no subjective symptoms, though presented an apical lesion in the lower left first molar. I extracted the lower left first molar under infiltration anesthesia. Twenty minutes after the tooth extraction, she was able to run, and her knee pain during knee flexion and speech problems also improved. Later, she also succeeded in reducing the medication. No side effects were seen with this treatment. After that, although a slight rigidity recurred, speech disorder and knee pain disappeared, as well as quantity of taking medicine (drug amount) reduced for more than three months. It shows that by performing dental prosthesis procedures at the defect region, her PD condition improved.

In order to watch the actual experiment described in this case, please visit the YouTube movie:

Dental treatment for Parkinson's disease

<https://www.youtube.com/watch?v=fthGQbm2g9s>

(last checked: 15 Feb 2020).

3. Discussion

PD is a chronic and progressive neurological disease, meaning that symptoms continue and worsen over time. Thus far, it has been impossible to reverse the progression of the illness through medication or surgery. There are few reports of the effects of dental treatment on PD so far. However, the dental technique presented here did not only alleviate the symptoms, but also to reverse the progression of the illness without any side-effects. In case 1, even medication worked well in the initial stage, the effect was not lasting because of medicine resistance. However dental treatment was effective when any medical approaches were no longer dealing with the subject's symptoms. Since so far, despite no medical treatment, he has been in good condition for more than two years. In case 2, medication worked well for the subject at the first consultation, but the effect was not long-lasting. Then after taking the dental treatment, the subject's condition improved. After that, although a slight rigidity recurred, speech disorder and knee pain disappeared, as well as quantity of taking medicine (drug amount) reduced for more than three months. The underlying reason why this treatment was so dramatically successful remains unclear. More investigation is needed with multidisciplinary cooperation. I hypothesize that harmful signals by apical lesions, periodontal infections, and infected dentin may be transmitted from the oral area to the midbrain via the trigeminal nerve, which is the largest of the 12 cranial nerves (**Figure 3**). The trigeminal nerve reaches the midbrain (mesencephalic nucleus of trigeminal nerve, **Figure 4**) and may affect the substantia nigra in the midbrain. The substantia nigra is a basal ganglia structure located in the midbrain that plays an important role movement [10]. PD is characterized by loss of dopaminergic neurons in the substantia nigra pars compac-

ta [11]. I have previously reported the relationship between dental health and other pathological conditions [7] [12] [13] [14] [15]. A systemic disease, in which dentistry is involved in the cause, may be considered intractable. This illness may be such a case.

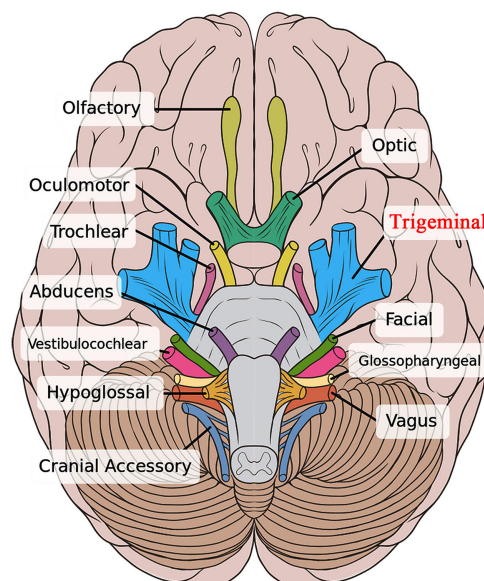


Figure 3. The trigeminal nerve is the largest of 12 cranial nerves. This figure is reproduced from https://en.wikipedia.org/wiki/Trigeminal_nerve.

Midbrain

Axial section at the level of the superior colliculus and CN III

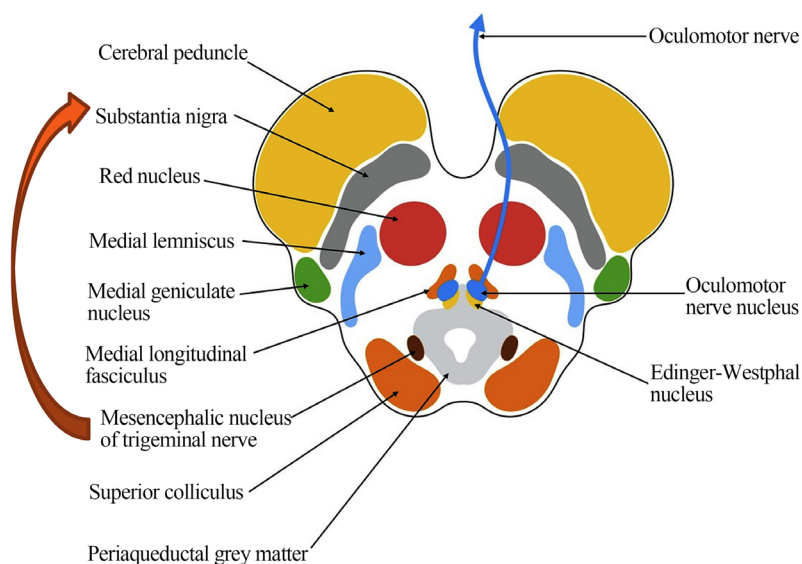


Figure 4. The trigeminal nerve reaches to the midbrain (Mesencephalic nucleus of trigeminal nerve). Trigeminal nerve may affect the substantia nigra in these cases (arrow). This figure is reproduced from <https://radiopaedia.org/cases/midbrain-anatomy?lang=gb>.

4. Conclusion

I herein report on two cases of PD improved through dental treatment. Harmful stimulation by apical lesions, infected dentin, and periodontal disease was transmitted to the midbrain via the trigeminal nerve, which may affect the substantia nigra, reducing the amount of dopamine in the midbrain. Removal of harmful stimuli from the oral area may allow the substantia nigra to regain its proper function and produce sufficient dopamine. Since no treatment is considered to reverse the progression of PD, it is significant to find new treatments. To clarify more details of this action, further research is needed in the future with the cooperation of dentistry, medicine, and other medical fields.

Acknowledgements

The subjects agreed for his case to be reported.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

- [1] Lees, A., Hardy, J. and Revesz, T. (2009) Parkinson's Disease. *Lancet*, **373**, 2055-2066. [https://doi.org/10.1016/S0140-6736\(09\)60492-X](https://doi.org/10.1016/S0140-6736(09)60492-X)
- [2] Parkinson's Disease Foundation. http://www.pdf.org/about_pd
- [3] Nord, M., Zsigmond, P., Kullman, A., Arstrand, K. and Dizdar, N. (2010) The Effect of Peripheral Enzyme Inhibitors on Levodopa Concentrations in Blood and CSF. *Movement Disorders*, **25**, 363-367. <https://doi.org/10.1002/mds.22613>
- [4] Murray, A.M., Bennett, D.A., Mendes de Leon, C.F., Beckett, L.A. and Evans, D.A. (2004) A Longitudinal Study of Parkinsonism and Disability in a Community Population of Older People. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, **59**, 864-870. <https://doi.org/10.1093/gerona/59.8.M864>
- [5] Jankovic, J. (2008) Parkinson's Disease: Clinical Features and Diagnosis. *Journal of Neurology, Neurosurgery, and Psychiatry*, **79**, 368-376. <https://doi.org/10.1136/jnnp.2007.131045>
- [6] Caballol, N., Martí, M.J. and Tolosa, E. (2007) Cognitive Dysfunction and Dementia in Parkinson Disease. *Movement Disorders*, **22**, 358-366. <https://doi.org/10.1002/mds.21677>
- [7] Fujii, Y. (2016) Two Cases of Severe Dementia Showing Dramatic Improvement after Denture Placement. *Advances in Alzheimer's Disease*, **5**, 46-52. <https://doi.org/10.4236/aad.2016.52004>
- [8] Yoshiaki, O. (1993) Bi-Digital O-Ring Test for Imaging and Diagnosis of Internal Organs of a Patient. US Patent 5188107. <http://academic.reed.edu/economics/parker/f11/354/pat/o-ring.pdf>
- [9] <http://bdort.org/>
- [10] Rabey, J.M. and Hefti, F. (1990) Neuromelanin Synthesis in Rat and Human Substantia Nigra. *Journal of Neural Transmission. Parkinson's Disease and Dementia Section*, **2**, 1-14. <https://doi.org/10.1007/BF02251241>

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- [11] Kim, S.J., Sung, J.Y., Um, J.W., Hattori, N., Mizuno, Y., Tanaka, K., Paik, S.R., Kim, J. and Chung, K.C. (2003) Parkin Cleaves Intracellular Alpha-Synuclein Inclusions via the Activation of Calpain. *Journal of Biological Chemistry*, **278**, 41890-41899. <https://doi.org/10.1074/jbc.M306017200>
 - [12] Fujii, Y. (2012) Do Dental Implants Cause Scoliosis? Case Report. *Personalized Medicine Universe*, **1**, 79-80. <https://doi.org/10.1016/j.pmu.2012.05.012>
 - [13] Fujii, Y. (2015) Orthodontic Treatment to Improve Hip Joint Mobility and Balance. *Journal of Dentist*, **3**, 29-32. <https://doi.org/10.12974/2311-8695.2015.03.01.5>
 - [14] Fujii, Y. (2017) Severe Dermatitis Might Be Caused by a Cross-Reaction between Nickel and Palladium and Dental Amalgam Resolved Following Removal of Dental Restoration. *Clinical Case Reports*, **5**, 795-800. <https://doi.org/10.1002/ccr3.938>
 - [15] Fujii, Y. (2019) Evaluation of a Mouthguard Customized Using the Occlusal Position during Maximal Grip Strength to Improve Sports Performance. A Case Report. *Case Reports in Clinical Medicine*, **8**, 147-151. <https://doi.org/10.4236/crcm.2019.86017>