

Botulinum Toxin in Prosthodontics: A Case Report

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Introduction

Helping edentulous patients who struggle with tissue supported prosthesis by using implant therapy, is a rewarding part of being a prosthodontist; but one that also comes with a set of challenges and complications one should be aware of. Understanding possible outcomes and relaying those to patients before the start of treatment is of utmost importance, in the words of Dr. Jack D. Preston *"Explaining the problems before, makes you a smart diagnostician. Explaining the problems after are excuse!"*

The often sought after "All-on-X" is one that majority of patients are seeking but understanding and critically evaluating restorative space, TMJ Status, A-P Spread, vertical dimension, force delivery, lip support along with many other factors are every clinician's responsibility in evaluating patients' candidacy to receive such treatment.

Case Description

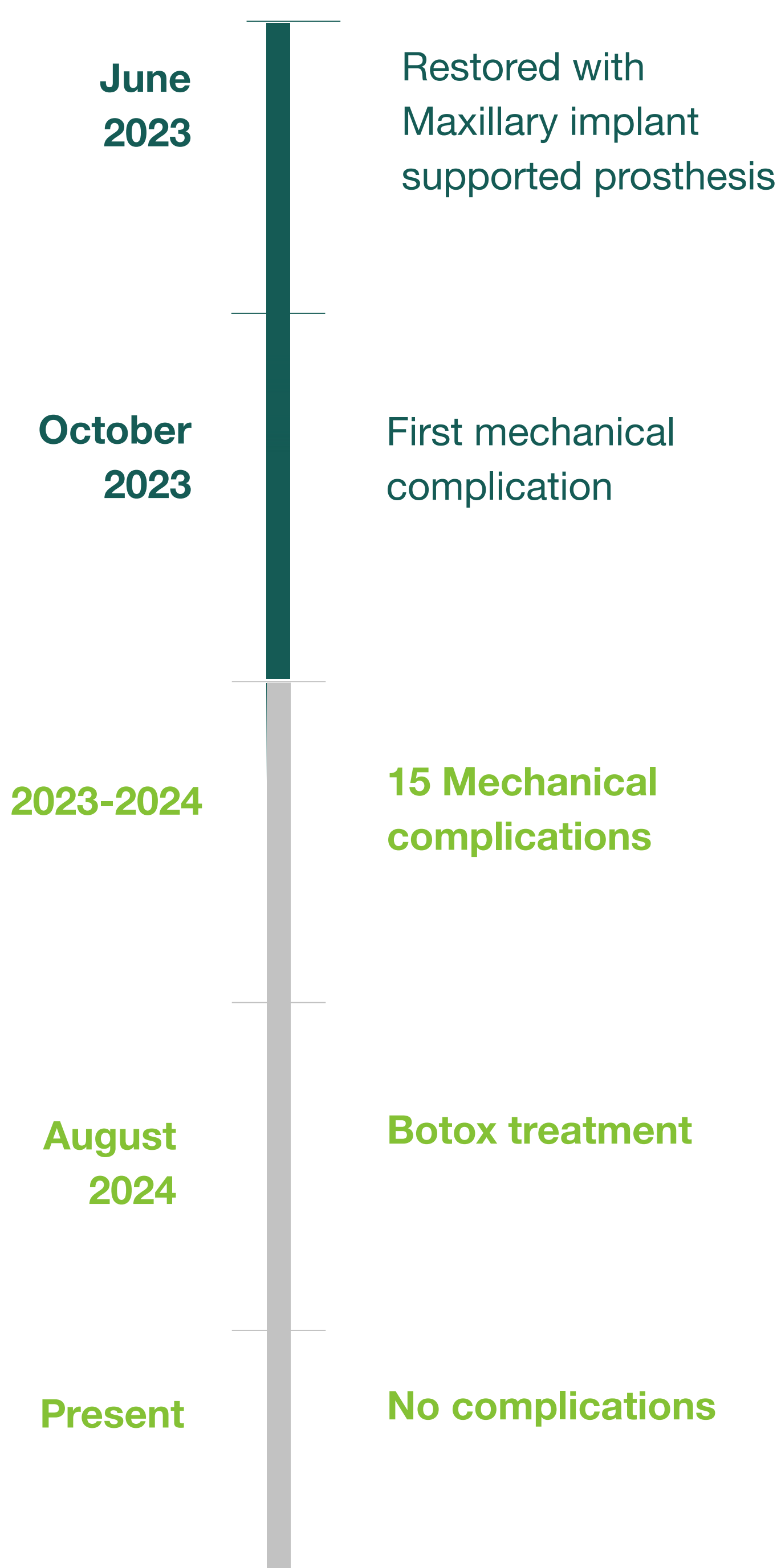
Mr JL is a 73 year old male, with history of significant obstructive sleep apnea, who presented to UCSF Graduate Prosthodontics clinics with chief concern of wanting better masticatory efficiency.

Treatment

- The patient initially presented to UCSF in 2016 with natural dentition exhibiting generalized severe clinical attachment loss, mobility and fremitus. He was subsequently restored with maxillary and mandibular implants for future implant supported prosthesis. In 2017 after failure of the all maxillary implants, the patient was restored with a maxillary conventional complete denture and mandibular screw retained hybrid prosthesis..
- After 5 years of dissatisfaction with his complete denture, the patient requested re-evaluation for a maxillary implant supported prosthesis. Given the history of implant failure and severely atrophic ridges, the maxilla was restored with quad zygomatic implants. After adequate healing, the maxilla was restored with (2) fully implant supported overdentures, utilizing a milled bar and supra-structure with (1) hader clip.

- After 4 months of use, the patient presented with a sheared #9 (on set #1) and #25 on his mandibular hybrid denture (which has previously had no mechanical complications). During repair of set #1, patient fractured additional teeth on set #2. The prostheses were evaluated and deemed to have appropriate centric relation, vertical overlap, horizontal overlap, and occlusal scheme.

Timeline



Background

- BTX injections reduce muscle contraction by interrupting acetylcholine neurotransmission to the muscles. Relying on patient compliance with follow up injections can be a limitation or concerns such as facial dissymmetry and reduced chewing power, have hindered its widespread use as a management strategy.



Conclusion



Because no debonding of teeth occurred, it was concluded the mechanical complications were due to occlusal trauma and parafunctional habits. Over the course of 10 months, we had a total of 15 complications, all of which were sheared teeth (both anterior and posterior teeth). In evaluating the patient, we began to notice masseter muscle hypertrophy, resulting in an increase in maximum bite force. The patient was referred for bilateral botox injections (50 units on each side). After botox treatment and until present time, no additional complications have occurred.

One might argue, acrylic and metal prosthesis is of the past and, with superiority of available materials, Zirconia is the most predictable material of choice in treatment. Although it is probable we would have encountered less mechanical complications with a zirconia prosthesis, an overdenture was chosen for this patient due to the need for lip support, material compatibility, and ease of cleansability.

Discussion

We hope this case report illustrates the challenges of predicting a patient's maximum bite force and therefore the inability to accurately predict material compatibility when transitioning patients to implant supported prosthesis. It is crucial to have a thorough discussion with a patient on the inability of clinicians to accurately predict the occurrence of mechanical complications related to the changes in maximum bite force. The prognosis of our treatment modalities can however be increased through extra oral treatment, such as botox.



Initial Presentation
2021

6MRC. post Maxillary Prosthesis
Delivery
2023

6MRC after Botox
Treatment
2025