**Alendronate Bisphosphonate Therapy and Osteonecrosis of the Jaw: Successful Retreatment**

**INTRODUCTION**
Currently, osteonecrosis is the most common disease of bone metabolism encountered in dental implant patients. Estimates suggest 10 million individuals are diagnosed, and almost 3 million more have low bone mass, placing them at an increased risk of disease acquisition.7 Approximately one third of patients over the age of 60 are affected, with women incurring events twice as often as men.8 This number increases greatly when including taking medications, which predispose patients to osteonecrosis prophylactically.

Alendronate sodium (Fosamax, Merck, and Co., Whitehouse Station, USA) is one of three bisphosphonates.9-11 This is termed bisphosphonate-induced osteonecrosis of the jaws that occur in patients taking bisphosphonates.8,12 This is sometimes termed bisphophonate-related osteonecrosis of the jaws (BONJ).12 Patients taking bisphosphonates are at a high risk for bone loss, yet the exact mechanism of bone loss in the mandible has not been documented.13-18 Patients using bisphosphonates cannot meet periodic demands requiring repair and remodeling which is crucial to maintaining bone function, ultimately leading to painful exposed avascular bone in the mandible and simultaneous events have been documented.19 It is theorized that this impaired remodeling process presents a real environment for osteonecrosis.

MacTavish et al. were the first to accept the terminology to describe spontaneous or surgically induced non-healing ulcers in the jaws that occur in patients taking bisphosphonates. This is termed bisphosphonate-induced osteonecrosis of the jaw (BONJ).20 In 2008, BONJ was a condition that was first recognized and reported. BONJ is sometimes termed bisphosphonate-related osteonecrosis of the jaw (BRONJ).13,17,20 According to the AAOMS, the diagnosis of BRONJ is the jaws induced by BP is based on: (1) exposed bone greater than eight weeks in duration. (2) if it is induced by BP; (3) no history of radiation therapy to the jaws.20 Currently, BONJ is considered long term and irreversible, despite attempts to discontinue medication usage.20

**OBJECTIVE**
To accurately portray the management of a patient presenting with mandibular osteonecrosis following alendronate bisphosphonate exposure and immediate loading of dental implant treatment of the mandible.

**MATERIALS & METHODS**

**INITIAL PRESENTATION**

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**INITIAL TREATMENT**

Arbogast’s teeth (12,14,16,18) were extracted and ten Bränemark System implants (Nobel Biocare, Yorba Linda, CA) were placed in areas #’s: 20, 22, 24, 25, 27, 28 following Teeth in a Day® protocol. Two immediately loaded Brånemark System implants - Teeth #s: 22, 23, 24, 25, 26, 27 were extracted and 6 immediately loaded Brånemark System implants were surgically placed in areas #’s: 20, 22, 24, 25, 27, 29 following Teeth in a Day® protocol.

**MANAGEMENT OF BONJ**

**TWO WEEKS POST-OP**

An area of ulceration was noted area #22

**REFERENCES**

- It may be needed to place a patient on a “drug holiday” prior to any surgical intervention and subsequent surgery if the patient’s condition allows it.
- Bisphosphonates is on the rise, and greater populations taking BPs and therefore further consideration of the long term use of BPs is needed.
- More studies that investigate serum CTX will be helpful as it relates to number of years taking BPs to aid in establishing future guidelines.

**ACKNOWLEDGMENTS**
We would like to acknowledge Dr. Richard Rasmussen for his contribution to this patient’s case as well as Dr. Richard Harnpater for his contributions.

**DISCUSSION AND CONCLUSION**
- It is of utmost importance to use serum levels of morning fasting CTX as suggested by Marx et al20 to assess patients’ risk of developing BONJ by oral administration of BPs.
- It may be needed to place a patient on a “drug holiday” prior to any surgical intervention and subsequent surgery if the patient’s condition allows it.
- Bisphosphonates is on the rise, and greater populations taking BPs and therefore further consideration of the long term use of BPs is needed.
- More studies that investigate serum CTX will be helpful as it relates to number of years taking BPs to aid in establishing future guidelines.

**FINAL MANDIBULAR PROSTHESIS**

- Panoramic radiograph showing 8 years post operative of maxillary and 2 years post operative of mandibular implants
- Two implants placed following 2 year Drug Holiday

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