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Osteoporosis and Its Impact on Oral and Dental Health

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INTRODUCTION

Osteoporosis is defined as a metabolic bone disorder characterized by low bone mass, and micro-architectural degradation of bone tissue leading to enhanced bone fragility and a consequent increase in fracture risk.¹ Females with an age above 50 years and males with an age above 65 years are commonly affected.² The risk factors for osteoporosis include older age groups involving both genders, and predilection for females with estrogen deficiency after menopause.³ Decrease in bone mineral density noted with advanced age and females with estrogen deficiency after menopause. Other risk factors for osteoporosis include hyperparathyroidism, glucocorticoid therapy, smoking, hyperthyroidism, and malabsorption which may result in decreased bone mass and decreased bone mineral density.

The bones of Osteoporosis patients are weak and tend to get fractured easily. The diagnosis and treatment plan for this disease is important to avoid complications of Osteoporosis. Patients with Osteoporosis will not have pain and remain undetected until they experience a fracture. World Osteoporosis Day is celebrated on 20th October every year to create awareness among people about this metabolic bone disease. This awareness is required for the prevention, diagnosis, and treatment of Osteoporosis. People should be educated about the measures to improve and maintain bone health of bone to prevent fractures.

The confirmative diagnosis of Osteoporosis is by dual-energy X-ray absorptiometry (DXA) scanners to assess bone mineral density. The two disadvantages of this scanner include its availability and high cost due to which this disease gets undiagnosed. The progressed stage of this disease may result in fractures of bone affecting the quality of life of patients. Dental radiographs play an important role in diagnosing Osteoporosis. Early screening and diagnosing osteoporosis can be done by digital panoramic

radiography. Using digital panoramic radiography, the quantitative and qualitative indices can be evaluated to assess the quality of bone in osteoporosis patients.

The quantitative and qualitative indices include mental index (MI), panoramic mandibular index (PMI), antegonial index (AI), mandibular cortical thickness (MCT), and mandibular cortical index (MCI).^(4,5) Digital panoramic radiography is indicated for maxillofacial structures and early bony cortical changes due to Osteoporosis can be recorded which will be helpful in preventing fractures. The main advantages of digital panoramic radiography are it is less costly and easy to interpret. Early changes in the bony cortex in patients with Osteoporosis can be detected using digital panoramic radiography and for further confirmation, necessary investigations using dual-energy X-ray absorptiometry (DEXA) should be advised.

Osteoporotic fractures of the spine and vertebrae are common. The treatment of fractures by orthopedic means with analgesia. The patient is advised to bed rest over a period of 2-3 weeks, muscle relaxants, and followed physiotherapy to improve mobilization. Osteoporosis can result in the alteration of bony cortical changes and so these patients may predispose to periodontal diseases. Other oral findings include alveolar bone ridge resorption, referred pain to the maxillary sinus, and bone loss. These patients should follow up with dentists for the evaluation of periodontal tissues and proper maintenance should be done to decrease bone loss and hence prevent tooth loss.

The measures which can decrease osteoporosis are lifestyle modifications including daily routine exercises and proper nutrition and reducing smoking and alcohol. Maintaining skeletal strength and decreasing skeletal trauma which decreases osteoporosis. Calcium and vitamin D can add to the supplementation of



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adults which can decrease bone loss. Medications that increase bone mineral density include bisphosphonates (BPs), selective estrogen receptor modulators, calcitonin, hormone replacement therapy, and recombinant human parathyroid hormone.⁶ These medications can be helpful in the treatment of osteoporosis.

CONCLUSION

Early detection of Osteoporosis due to Digital panoramic radiography will help in decreasing fractures and tooth loss. Necessary measures include lifestyle modifications, anti-resorptive agents, and calcium and vitamin supplementation should be taken to prevent and decrease osteoporosis. Digital panoramic radiography detects the bony cortical changes and erosion which can be useful in screening for Osteoporosis. The campaign should be organized to create awareness among the public about the risk factors of Osteoporosis and its prevention. The public should be educated about decreasing the habit of smoking and proper nutrition should be taken to maintain bone health.

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