Case Report

Neuralgia-inducing cavitational osteonecrosis in a patient seeking dental implants

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ABSTRACT

NICO (Neuralgia-Inducing Cavitational Osteonecrosis) is one of the jawbone versions of ischemic osteonecrosis, a common disease affecting any bone but with special affinity for those of the hips, knees and face. By definition, NICO is associated with pain. Osteonecrosis itself may or may not be painful. It may or may not affect multiple sites. It is a problem of poor blood flow through the marrow Patients can trace the onset of their pain subsequent to one or more extractions, perhaps decades ago. Notably, if patients had infections following their extractions or even dry sockets, there was a greater likelihood of NICO development. NICO's can refer pain across the midline; that is, a lesion in the right jaw can cause pain on the left side of the face, head, neck or body. Yes, NICO's can refer pain to various areas of the body, including the neck, arms and hands, legs and feet, groin.

Key words: Avascular, cavitation, neuralgia, osteonecrosis

Introduction

History and overview

Most people know what we mean when we say cavity, but the word cavitation is confusing. A cavity is a hole in the tooth, whereas a cavitation is a hole in bone. Unlike most tooth cavities, bone cavitations cannot be detected by simply looking at the bone, and even using X-rays, many cavitations are missed. The term cavitation was coined in 1930 by an orthopedic researcher to describe a disease process in which a lack of blood flow into the area produced a hole in the jawbone and other bones in the body. Dr. G. V. Black, the father of modern dentistry, described this cavitation process as early as 1915 when he described a progressive disease process in the jawbone, which killed bone cells and produced a large cavitation area or areas within the jawbones. He was intrigued by the unique ability of this disease to produce extensive jawbone destruction without causing redness in the gingiva, jaw swelling, or an elevation in the patient's body temperature. Essentially, this disease process is actually a progressive impairment which produces small blockages (infarctions) of the tiny blood vessels in the jaw bones, thus resulting in osteonecrosis or areas of dead bone. These dead cavitational areas are now called neuralgia-inducing cavitational osteonecrosis (NICO) lesions.[1] In his book on oral pathology, Dr. Black suggested surgical removal of these dead bone areas.

The cause of NICO is allegedly avascular osteonecrosis (AO) (also known as ischemic osteonecrosis). This bone ischemia would result from a chronic low-grade infection or susceptibility to thrombosis.

The suggested treatment for NICO involves surgical decortication and debridement of bone via curettage.[2]

Access this article online

Quick Response Code:

Website: www.njms.in

DOI: 10.4103/0975-5950.102173

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A female patient, 56 years of age, reported to the maxillofacial outpatient department with a chief complaint of pain in the lower jaw since the last 2

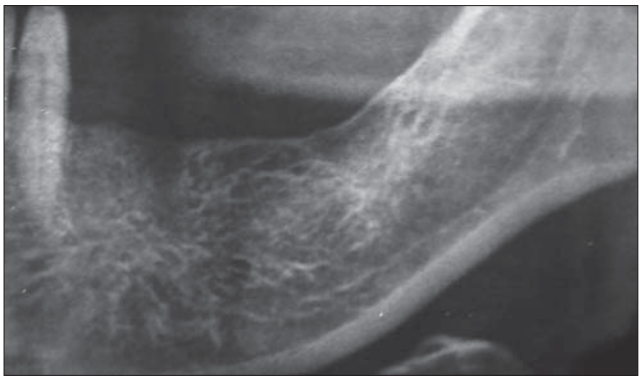

Figure 1: OPG radiograph showing rarefaction in the molar region

Figure 2: Post debridement

Figure 3: Post-op 15 days

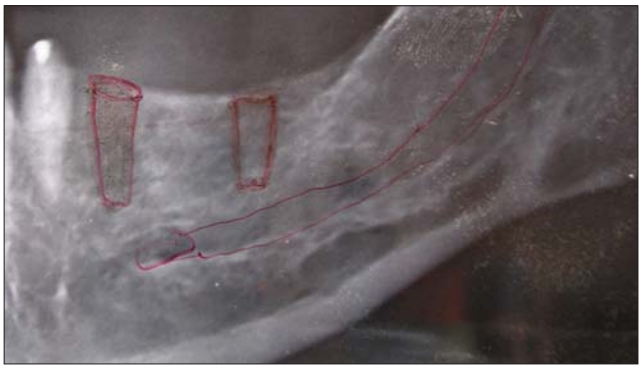

Figure 4: 3 months post-op

Figure 5: 4 months post-implant insertion

years. She had consulted numerous dental surgeons who provided a conservative approach comprising medication and endodontic treatment of neighboring teeth.

In addition to this, she had received treatment by an oral surgeon for trigeminal neuralgia (Carbamazepine 200 mg TID). There was no relief from the said treatment; so, the patient was referred to a neurosurgeon who put her on a regimen of Gabapentin.[3]

After 2 weeks of the same, the patient still complained of the same symptoms. On examination, the orthopantomogram (OPG) [Figure 1] radiograph revealed some rarefaction of trabecular pattern in the molar region on the left side of the mandible. The area was opened under local anesthesia by way of a crestal incision with vertical releasing limbs . The cortical bone in the alveolar region was discolored with a darkish hue. Upon probing, the bone was soft and demonstrated a drop-in effect with a sharp instrument.

The whole of the affected bone was removed using rotary instruments and the area debrided [Figure 2]. A bi-layered collagen membrane was used to cover the defect and primary closure achieved using 4-0 vicryl sutures.

The patient was reviewed 3 days later and was found to be doing well with almost complete resolution of the pain, the only discomfort being that from the surgery and sutures.

After a week, the patient reported for review and near-complete resolution of earlier symptoms was noted.

The patient reported 3 months later with complete resolution of symptoms and a repeat OPG radiograph showed good radiodensity in the area [Figures 3 and 4].

Three endosseous implants were planned in the region for rehabilitation of both the premolars and molars [Figure 5].

Conclusion

Because of the lack of clear etiological data, a NICO diagnosis should be considered only as a last resort when all possible local odontogenic causes for facial pain have been eliminated. It is recommended that NICO be included in the differential diagnosis of idiopathic facial pain syndromes.

If a NICO lesion is suspected in relation to an endodontically treated tooth, if possible, periradicular surgery and curettage should be attempted, not extraction. In addition, the practice of recommending the extraction of endodontically treated teeth for the prevention of NICO, or any other disease, should be avoided.

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How to cite this article: Gandhi YR, Pal US, Singh N. Neuralgia-inducing cavitational osteonecrosis in a patient seeking dental implants. Natl J Maxillofac Surg 2012;3:84-6.

Source of Support: Nil. **Conflict of Interest:** None declared.