

Incidental Dental Radiographic Findings: Dense Bone Islands

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Figure 1b. Periapical radiograph showing the radiopacity in the right posterior mandible.

Dense bone islands are synonymous with endostosis or idiopathic osteosclerosis. These present as areas of increased osseous density or radiopacities in the maxilla or mandible with defined borders, located at or around the apical regions of teeth, interradicular area, or with no apparent connection to the teeth. There is a large variation in size ranging from a few millimeters to about 2 centimeters. The effect on adjacent teeth may include indistinct lamina dura and periodontal ligament space and root resorption. The associated teeth are usually asymptomatic. Dense bone islands do not cause osseous expansion; hence, these do not affect the fit of prostheses.

The differential diagnoses for such radiopacities in the jaws could include benign cemento-osseous lesions and inflammatory lesions such as apical sclerosing or condensing osteitis. Dense bone islands may be distinguished from the aforementioned categories by the presence of intact lamina dura and/or perio-



Figure 1a. Panoramic radiograph showing the radiopacity in the right mandible.

dontal ligament space. However, it may not always be easy to discern the continuity of the lamina dura and periodontal space due to the inherent superimposition of structures in conventional two-dimensional radiography.

Histologically, dense bone islands are characterized by obliteration of marrow spaces by heavy trabeculation or dense cortical bone. The quality or density of bone in the edentulous areas is an important predictor of dental implant success. The available bone can be classified by using the Lekholm and Zarb (1985) classification, in which the quality of bone is divided into four subtypes based on density as follows:

- Type 1: Almost entire jaw is comprised of homogenous compact/cortical bone
- Type 2: A thick layer of cortical bone surrounding a core of dense trabecular bone
- Type 3: A thin layer of cortical bone surrounding a core of dense trabecular bone
- Type 4: A thin layer of cortical bone surrounding a core of low-density trabecular bone

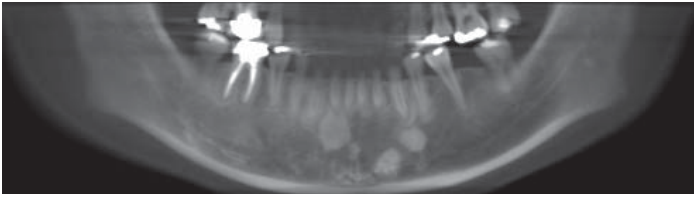


Figure 2a. Panoramic image reconstructed from cone-beam CT data showing multiple radiopacities in the mandible depicting dense bone islands.



Figure 2b. Cross-sectional image reconstructed from cone-beam CT data showing absence of buccolingual expansion or thinning of the mandibular cortical plates associated with the dense bone islands.

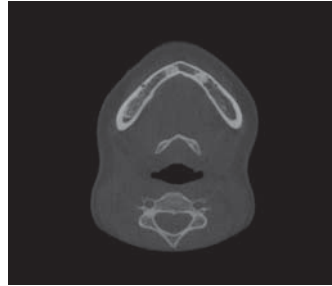


Figure 2c. Axial image reconstructed from cone-beam CT data showing multiple enostosis/dense bone islands.

A dense bone island is Type 1 bone. Its density provides good cortical anchorage, which is necessary for immediate functional loading of dental implants. However, this type of bone has limited vascularity.

Figures 1a and 1b represent radiographic presentation of enostosis or idiopathic osteosclerosis in the right posterior mandible in panoramic and periapical radiographs, respectively. The dense bone island presents a defined circular corticated radiopacity located mesial to, but not attached to, the mesial root of the second molar in the edentulous region corresponding to the first molar. The periapical radiograph confirms the panoramic presentation. Figures 2a–2c represent reconstructed images from cone-beam computed tomography (CT) data, showing location and characteristics of multiple dense bone islands. ■

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