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| **Name:** |
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| 9A-4 |
| **Basic Science Question:** |
| What is the radiographic appearance of normal physiologic bone of the jaw? |
| **Report:** |
| Radiography allows us to look through seemingly solid bony structure. However, when viewing something like a panoramic X-ray, we find that bone is not completely solid and has a myriad of different features and complexities. These nuances are only visible because the change in bone density and composition are exposed using a radiograph.  The bone and structures of the jaw are no exception. A cross section of the mandible shows an outer layer of thick cortical bone with a softer “spongy” bone called cancellous bone in the middle. Sort of like a cadbury creme egg. Superiorly, pockets called the alveoli serve as a pocket for teeth to sit in. Between those teeth is a bony projection called the alveolar crest which in health is within 1.5mm of the cemento-enamel junction of both neighboring teeth.  In general, the bottom of the mandible has a brighter/denser/radio-opaque appearance in radiography due to the angle of the X-ray being taken, the particles struggle to pass through the inferior cortical bridge, producing a brighter line along the ridge of the mandible. A similar phenomena is seen on the alveolar crest proximal to the tooth in both the maxilla and mandible, this is called the lamina dura. The bone is just slightly thicker, giving an egg-shell appearance to the crest.  The majority of oral bone appears to be slightly darker/radio-lucent than the ridge, and fibrous due to the presence of trabeculae, or cancellous rods. In general the trabeculae are thicker in the mandible than in the maxilla, giving the mandible a courser pattern.  A variation of these features in trabecular pattern from prior visits may be due to something pathological which can cause bone loss or condensing osteitis, which would cause a darker or lighter balloon in the bone respectively. A few exceptions to the darker spots are the mandibular foramen, mental foramen, maxillary sinus, mandibular canal, and the nasolacrimal duct, which are normal structures that appear darker in radiographs because they are not filled with bone.  The teeth themselves are split into three sections of varying densities. The enamel, appears lighter, the dentin appears darker than the enamel, then the pulp appears darker than both. The pulp extends down the roots of the tooth until they open out the apical end (root canal). There are also darker bands surrounding the tooth right next to the lamina dura, this is where the periodontal ligaments are, and since they are made of collagen, they appear dark on the radiograph. |
| **References:** |
| White, S. and Pharoah, M., n.d. *Oral Radiology*. St. Louis: Mosby Elsevier, pp.152-174. |