

## Bundle bone

The **alveolar process** is that part of the maxilla and mandible that forms and supports the sockets of the teeth. Like all bone, mature alveolar bone is by weight 60% mineralized, or inorganic material, 25% organic material, and 15% water. The **inorganic** component consists of mainly **calcium hydroxyapatite** with the chemical formula of  $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$ . This calcium hydroxyapatite is similar to that found in higher percentages in enamel and dentin and is most similar to that of cementum. The alveolar process consists of **two** main parts:

1. **Alveolar bone proper** — is a thin layer of compact bone that is a specialized continuation of the cortical plate and forms the tooth socket or alveolus. **Note:** The lamina dura is a horseshoe-shaped white line on a dental radiograph that roughly corresponds to the alveolar bone proper. The lamina dura has minute openings that provide passages for vascular and nerve components. It is composed principally of bundle bone, which provides a course surface for ligament fiber attachment. Bundle bone typically covers a layer of dense lamellar bone.

2. **Supporting alveolar bone** — that bone that surrounds the alveolar bone proper and gives support to the socket. It **consists** of:

- **Cortical plate** — structurally, the cortical plate is composed of lingual and facial plates of compact bone. The cortical plate is dense in nature and provides strength and protection and acts as the attachment for skeletal muscles. The mandibular cortical plate is more dense than the maxillary cortical plate and has fewer perforations for the passage of nerves and blood vessels.

**Note:** The **alveolar crest** is the highest point of the alveolar ridge and joins the facial and lingual cortical plates.

- **Spongy bone** (*cancellous bone*) — fills in the area between cortical plates and alveolar bone proper. This type of bone is not present in the anterior region of the mouth; here the cortical plate is fused to the alveolar bone proper. **This is also true over the radicular buccal bone of the maxillary posteriors.**

**Note:** The alveolar bone proper is the **only essential part** of the bone socket. The supporting alveolar bone is **not always** present.