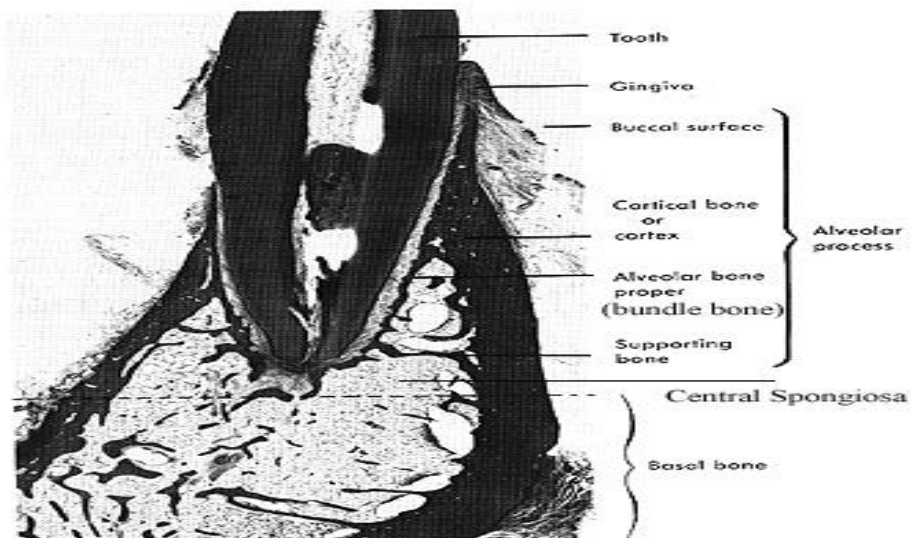


Alveolar Process

The *alveolar process* is that bony portion of the maxilla and mandible where the teeth are embedded and by which tooth roots are supported. The alveolar crest is found 1.5-2.0 mm below the level of the CEJ.

Chemical composition

Bone consists of **65% inorganic** as a hydroxyapatite crystals and **35% organic** as **mainly collagen** and ground substance glycoprotein and proteoglycan and small amount of protein.

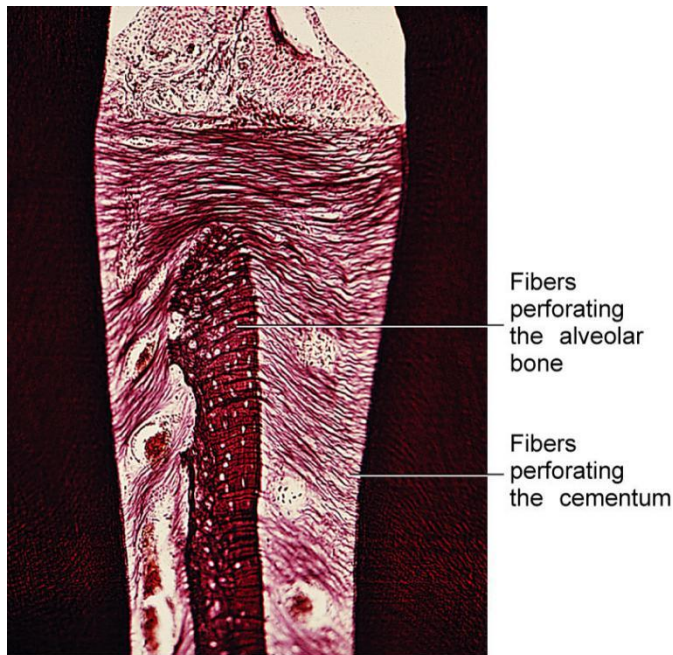


Alveolar bone composed of

1. Alveolar bone proper(bone lining the alveolus (bundle bone))
2. Supporting alveolar bone

- a) outer cortical plates
- b) a central spongiosa

Alveolar bone proper: lines the tooth. Contains Sharpey's fibers embedded into it. Because alveolar process is regularly penetrated by **collagen fiber bundles**, it is also called **bundle bone**. It appears more radiodense(**radio-opaque**) than surrounding supporting bone in X-rays called **lamina dura**.



So alveolar bone proper has 3 names

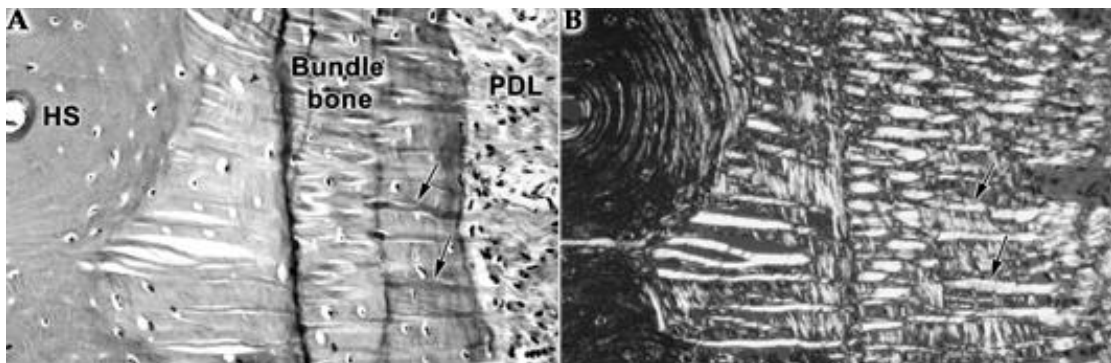
1. **Bundle bone (due to penetrated of collagen fibers as sharpy's fiber)**
2. **Cribriform plate as perforated transmit nerves and vessels**
3. **Lamina dura (in radiograph only) appear radiopaque because of more mineral around fiber.**



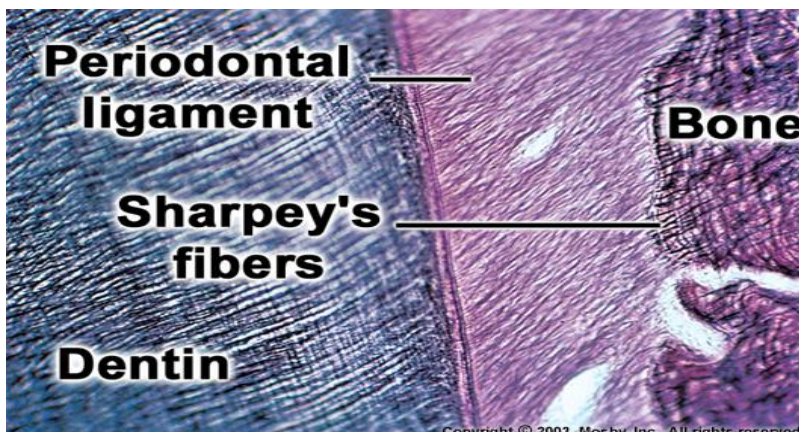
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Supporting Compact Bone

Similar to compact bone anywhere else (Haversian bone) Extends both on the lingual (palatal) and buccal side **Contains haversian and Volkman's canals** (they both form a continuous channel of nutrient canals).



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Bone cells

- 1. Osteoblasts** are mononucleated cells reside on bone surface and responsible for bone formation.
- 2. Osteocytes** are osteoblast cells that trapped in bone matrix that they secreted ,occupied in space known as [lacunae](#).
- 3. Osteoprogenitor** cells are undifferentiated cells found on or near all free surface of bone.
- 4. Osteoclast cells** are a resorptive cell is a large multinucleated cell
 - Found in pits in the bone surface which are called resorption bays, or [Howship's lacunae](#)
 - The surface of an osteoclasts which is in contact with bone has a **ruffled border and rich with acid phosphates enzyme.**
 - **Resorption occurs in two stages:**

The **mineral is removed** at bone margins and then exposed **organic matrix disintegrates**. The osteoclasts demineralise the inorganic part as well as disintegrates the organic matrix.

- ❖ **Woven bone**, (also known as *fibrous bone*) which is characterized by a haphazard organization of collagen fibers occurs initially in **all fetal** bones and In adults after [fractures](#)
- ❖ **Resorption and regeneration of alveolar bone**

This process can occur during orthodontic movement of teeth. Bone is resorbed on the side of pressure and opposed on the site of tension.

