Effect of Vitamin D on Bone and Its Relation to Parathyroid Hormone Activity

- Vitamin D plays important roles in both, bone absorption (resorption), and bone deposition.

- The administration of **extreme quantities** of vitamin D causes **absorption of bone**. In the absence of vitamin D, the effect of PTH in causing bone absorption is greatly reduced or even prevented.

- Vitamin D **in smaller quantities** promotes **bone calcification**. One of the ways in which it does this is to increase calcium and phosphate absorption from the intestines. However, even in the absence of such increase, it enhances the mineralization of bone through another mechanism of effect that is still not well known.

Guyton and Hall textbook

(Page 962 in the 12th edition)

USMLE Forum

Vitamin D effects on bone; Resorption or what?

Vitamin D at normal physiologic levels act on intestinal mucosa and the renal distal tubule to increase the absorption of Calcium. This Calcium will then be available for use in mineralizing new bone formation.

Therefore, when you have Vitamin D deficiency you will develop rickets (in children) or osteopenia (in adults).

The issue, is that if you have too much of Vitamin D (Vitamin D excess) then at that time it will work on the nuclear receptors in the osteoblasts and promote bone resorption.

Therefore, both deficiency and excess of Vitamin D can cause osteopenia and bone resorption.

Women with osteoporosis are advised to take Vitamin D in moderate amounts (the recommended daily allowance) but if they take too much that will for sure be counterproductive.