Does regular zoledronic acid change the bone turnover of the jaw in men with metastatic prostate cancer: a possible clue to the pathogenesis of bisphosphonate related osteonecrosis of the jaw?

To find out whether the most popular pathogenesis hypothesis of the bisphosphonate (BP) related osteonecrosis of the jaw (BRONJ) is comprehensible: (1) is there a higher bone remodeling in the jaw compared with other skeletal sites? (2) Is the bone turnover (BT) of the jaw overly altered after BP intake? (3) Are there gender- or entity-specific differences in BT before and after BP intake?

Bone scintigraphies of 42 patients with prostate cancer were retrospectively analyzed (n = 21 with BP intake; n = 21 no BP). All patients received bone scintigraphy prior to the therapy and in the course of the treatment (after 12 and 24 months). Data were quantitatively analyzed using six predetermined regions of interest and compared with a breast cancer cohort. The mandible revealed a similar BT as the femur and a significant lower BT compared with the maxilla. All investigated bone regions showed no significant changes under BP administration. Inter-gender differences revealed significantly lower BT values for the prostate cancer compared with the female breast cancer cohort, changes over the course of time could not be found. The finding that the mandible revealed a significant lower BT than the maxilla and the fact that 2/3 of the BRONJ
cases occur in the mandible are inconsistent with the investigated hypothesis. Furthermore, the BT in the jawbone is not overly suppressed by BP. Thus, it seems implausible that a high BT and its over-suppression play the key role in the pathomechanism of BRONJ.