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## **Low Pre-transplant Intact Parathyroid Hormone Is A Risk Factor for Bone Loss after Kidney Transplantation**

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**Objectives:** Pre-existing renal osteodystrophy is known to be a major contributor to bone loss after kidney transplantation (KT). Unlike pre-transplant hyperparathyroidism, the effect of low low-turnover bone disease on bone loss after kidney transplantation was scarcely reported. Therefore, we hypothesized that low pre-transplant parathyroid hormone (PTH) level, which is characterized in low-turnover bone disease, is significantly associated with loss of bone mineral density (BMD) in kidney recipients.

**Methods:** In this retrospective study, a total of 353 patients who underwent KT at Yonsei University Health System from January 2010 to March 2016 were enrolled and were followed up to December 2017. BMD was measured by dual-energy X-ray absorptiometry. Patients were divided into two groups based on a pre-transplant PTH level; low (<150pg/mL) and normal to high ( $\geq$ 150pg/mL) levels of PTH groups according to K/DOQI guideline 2003. Linear mixed-effects models were used to identify changes over time in irregularly repeatedly measured BMD.

### **Results:**

The median levels of PTH were 88.2pg/mL in the low PTH group and 312.4pg/mL in the normal to high PTH group. There was no significant difference in baseline BMD between the two groups. In addition, there was no significant correlation of baseline BMD with pre-transplant PTH levels. The BMD in KT subjects decreased in the first 12 months and stabilized after one year. The changes in BMD after KT tended to be more aggravated in the low PTH group compared to those in normal to high PTH group. During the follow-up period up to 60 months, the decline rate of BMD in low PTH group was significantly faster than that of the normal to high PTH group. Overall, these differences still remained after adjusting for multiple confounders.

### **Conclusions:**

Present study suggested that pre-existing hypoparathyroidism as well as hyperparathyroidism has a detrimental effect on bone density after KT.