

Predictors of bone mineral density improvement after parathyroidectomy for secondary hyperparathyroidism: a retrospective single-center analysis

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Manabu Okada, M.D., Ph.D.¹, Yoshihiro Tominaga, M.D., Ph.D.¹, Toshihide Tomosugi, M.D.¹, Takahisa Hiramitsu, M.D., Ph.D.¹, Toshihiro Ichimori, M.D.¹, Tetsuhiko Sato, M.D., Ph.D.

Corresponding author: Manabu Okada, M.D., Ph.D.

Department of Transplantation and Endocrine Surgery,

Nagoya Daini Red Cross Hospital, 2-9 Myoken-cho,

Showa-ku, Nagoya, Japan 4668650

Tel: 81-528321121 Fax: 81-528321130 E-mail: ubanam@nagoya2.jrc.or.jp

ESM 2 Linear regression analysis for log post-PTx BMD-to-pre-PTx BMD ratio in the lumbar spine

	Univariate				Multivariate				R2 = 0.34
Log post-PTx BMD-to-pre-PTx BMD ratio	ERC (95% CI)	SE	T value	P value	ERC (95% CI)	SE	T value	P value	
Age (years, reference to < 50 years)									
50–59	0.01 (-0.04 – 0.07)	0.02	0.46	.647	-0.02 (-0.07 – 0.03)	0.03	-0.77	.444	
60–69	0.00 (-0.05 – 0.06)	0.03	0.15	.880	-0.05 (-0.11 – 0.01)	0.03	-1.70	.091	
≥ 70	0.00 (-0.08 – 0.08)	0.04	0.68	.965	-0.09 (-0.18 – -0.01)	0.04	-2.18	.031	
Male sex	0.00 (-0.04 – 0.05)	0.02	0.21	.834	0.03 (0.00 – 0.07)	0.02	1.73	.085	
Peritoneal dialysis	0.04 (-0.06 – 0.13)	0.05	0.78	.436	0.04 (-0.06 – 0.13)	0.05	0.80	.426	
Dialysis vintage (months)	0.00 (0.00 – 0.00)	0	-0.98	.329	0.00 (0.00 – 0.00)	0.00	-0.41	.681	
BMI (kg/m ²)	0.00 (-0.01 – 0.00)	0	-0.59	.559	0.00 (-0.01 – 0.00)	0.00	-0.84	.404	
Diabetes	0.02 (-0.04 – 0.08)	0.03	0.75	.454	0.02 (-0.04 – 0.08)	0.03	0.53	.624	
Pre-PTx Alb (g/dL)	0.02 (-0.08 – 0.03)	0.03	-0.81	.416	0.00 (-0.06 – 0.06)	0.03	-0.09	.930	
Pre-PTx Ca (mg/dL)	-0.04 (-0.06 – -0.02)	0.01	-3.35	<.001	-0.04 (-0.06 – -0.01)	0.01	-2.98	.003	
Pre-PTx P (mg/dL)	0.00 (-0.01 – 0.01)	0.01	-0.23	.822	0.00 (-0.01 – 0.01)	0.01	-0.05	.957	
Log pre-PTx i-PTH (pg/mL)	0.01 (-0.02 – 0.04)	0.02	0.57	.566	-0.03 (-0.07 – 0.00)	0.02	-1.76	.080	
Log pre-PTx BAP (µg/L)	0.06 (0.03 – 0.09)	0.02	3.91	<.001	0.06 (0.02 – 0.09)	0.02	3.26	.001	
Pre-PTx BMD at lumbar spine(g/cm ²)	-0.34 (-0.50 – -0.17)	0.08	-4.10	<.001	-0.42 (-0.57 – -0.27)	0.08	-5.60	<.001	
Cinacalcet HCL (mg/day, reference to 0 mg/day)									
<50	0.03 (-0.05 – 0.10)	0.04	0.67	.504	-0.01 (-0.07 – 0.04)	0.03	-0.54	.591	
≥50	0.06 (-0.01 – 0.12)	0.03	1.64	.103	-0.03 (-0.08 – 0.02)	0.03	-1.03	.304	
Vitamin D receptor activator	-0.01 (-0.06 – 0.04)	0.02	-0.56	.578	-0.02 (-0.08 – 0.04)	0.03	-0.78	.439	
Bisphosphonate	0.09 (-0.07 – 0.24)	0.08	1.08	.280	0.07 (-0.07 – 0.22)	0.07	0.98	.327	
Corticosteroid	-0.01 (-0.07 – 0.05)	0.03	-0.48	.635	-0.12 (-0.20 – -0.03)	0.04	-2.79	.006	

The ratio of post-PTx BMD to pre-PTx BMD (post-/pre-PTx BMD ratio) was calculated as follows:

Post-/pre-PTx BMD ratio = post-PTx BMC (g/cm²)/pre-PTx BMD (g/cm²)

In the multivariate linear regression, 4 outliers from Log BAP and 5 outliers from Log post-/pre-PTx BMD ratio at lumbar spine were excluded using the Smirnov-Grubbs test to get the data closer to a normal distribution.

Alb, albumin; BAP, bone-specific alkaline phosphatase; BMD, bone mineral density; BMI, body mass index; Ca, Calcium; 95% CI, 95% confidence interval; Cinacalcet HCl, cinacalcet hydrochloride; ERC, Estimated regression coefficient; i-PTH, intact parathyroid hormone; Log, logarithm; P, phosphorus; PTx, parathyroidectomy