

# Early measure of postoperative iPTH and corrected calcium as predictors of future hypoparathyroidism: Which, when and why?

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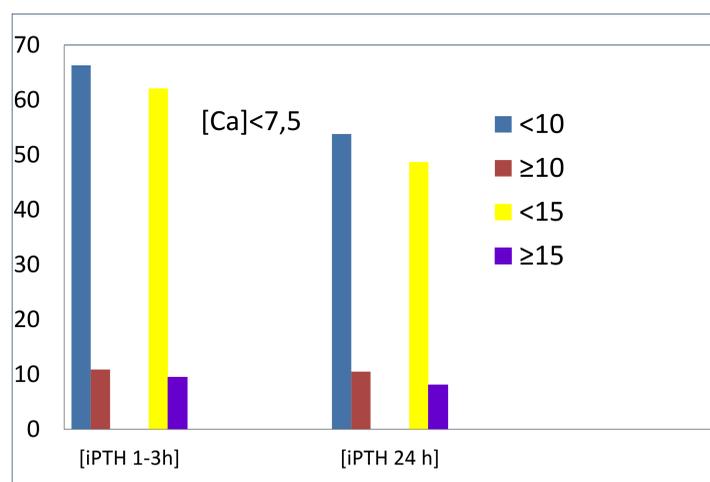
Intraoperative parathyroid hormone assay (ioPTH) has been validated as a useful tool predicting postoperative hypocalcemia after thyroid surgery and has been proposed as a guide to early discharge from hospital. Its value to predict risk of future hypoparathyroidism (hypoPT) has not been studied in detail. We evaluate this aspect in our recent surgical series.

**Material and methods** – We include 748 patients who underwent total thyroidectomy from 2005 to 2011. They were evaluated more than one year after surgery. Permanent hypoPT (PhypoPT) is defined by [iPTH]<15 pg/ml without treatment one year passed after surgery. [iPTH] between 5-15 pg/ml were defined as partial deficiency, whereas less than 5 pg/ml were considered total deficiency. Cases with spontaneous recovering of parathyroid function after a period of [iPTH]<15 were named as transient hypoPT (ThypoPT). We analyze the correlation between [iPTH] measured 24 hours after surgery, [iPTH24h], and future parathyroid function. We also analyze the correlation between [iPTH] measured immediately, 1 to 3 hours after surgery, [iPTH1-3h], corrected calcium monitored 6 hours postoperatively, [Ca6h], and subsequent parathyroid status.

**Results** - 502 patients had measurements of [iPTH24h], 305 of them also had previous [iPTH1-3h]. Globally, 377 patients never showed [iPTH]<15 pg/ml. Forty of the remainder (125) suffered from PhypoPT, half of them total deficiencies (>5), and 85 transient forms, resolved in the first month after surgery in 56% of them.

	No hypoPT	Permanent hypoPT	Transient hypoPT	All hypoPT	p *
n	377	40	85	125	
[iPTH1-3h]	34.9 (28)	0.22 (1.2)	4.04 (8.9)	3.1 (7.9)	<.001
[iPTH24h]	39.1(23.5)	0.87 (2.5)	4.44 (8.3)	3.54 (3.5)	<.001
[Ca6h]	8.63 (0.49) [6.57-10,4]	8.18 (0.57) [6.71-9.42]	8.24 (0.66) [5.35-10]	8.22 (0,64)	< 0,001

TABLE – Mean (SD) and [range] of the 3 parameters: both iPTH and calcium. \*p: statistical signification between “No HypoPT” and “All hypoPT”.



Postoperative hypocalcemia, defined as corrected plasmatic calcium < 7,5 mg/dl, presented in 183 of 647 patients (24,5%); in 66.3% of patients with [iPTH24h] < 10 pg/ml, vs 10.9% of them with [iPTH24h] ≥ 10 pg/ml (OR: 3.48 [IC:2,6-4,64]. The OR for postoperative hypocalcaemia with [iPTH1-3h]<10 pg/ml was 3,89 [IC: 2,48 – 6.10]. These ORs were 4,08[IC:2.93-5.68] and 4.57[IC:2.68-7.81] when considering a limit of 15 pg/ml. [iPTH24h]>15 pg/ml was present in 5% of patients with hypoPTH and [iPTH1-3h]>15pg/ml in 9.5%, all ThypoPT. Mean [Ca6h] was significantly different between patients who suffer hypoPT and not (8,63 vs 8.22; p<0.001).

**Conclusions** – Our series, as others published, confirms usefulness of perioperative [PTH] as predictor of postoperative hypocalcemia and future hypoPT, but we don't find an exact level or timing for its measurement.