

Assessment of Intraoperative Parathyroid Hormone Level Decrease and Serum Parathyroid Hormone Reference Range after Parathyroidectomy

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Introduction. Primary hyperparathyroidism (PHPT) is the unregulated overproduction of parathormone (PTH) resulting in abnormal calcium homeostasis. Clinical presentation of parathyroid carcinoma and parathyroid adenoma is usually related to symptoms caused by the effects of markedly elevated serum PTH and hypercalcemia. To improve the success rate of parathyroidectomy (PTX) the intraoperative parathyroid hormone (IoPTH) level is monitored.

Aim, Materials and Methods. The study was designed to determine whether there is a significant relationship between intraoperative parathyroid hormone (IoPTH) fall and PTH level after PTX.

A full retrospective case-control study was performed on 225 patients with PHPT operation between 2011 and October 2015. IoPTH was measured three times: preoperatively, before the pathological parathyroid gland was mobilized, and 20 minutes after the gland was excised. For the operation to be considered successful, the IoPTH measurement after 20 minutes would have to decrease by more than 50 % compared to the initial highest IoPTH level. Patients were divided into two groups according to the cut-off value of IoPTH fall: (HF) > 80 % and (LF) ≤ 80 %. The descriptive statistics were used to summarize the data.

Results. The study included 30 male (13.5 %) and 195 female (86.5 %) patients. The mean age was 59 years (19–80). Preoperatively 224 (99.6 %) of PHPT patients PTH level was out of reference range (12.0–72 pg/ml) (mean value 642.4 pg/ml). In 216 cases (96.8 %) PTH level decrease was greater than > 50 % (mean value 78.0 %). There was found statistically significant association between IoPTH level decrease ≤ 80 % and PTH hormone being out of normal level range (12–72 pg/ml) after PTX ($p < 0.001$).

Conclusions. The PTH assay revealed to be an important prognostic tool for parathyroid surgery success in patients with PHPT. IoPTH decrease less than 80 % associates with abnormal PTH level after PTX.