

Intraoperative Parathyroid Hormone Fall as Predictor Marker of Hypocalcemia after Parathyroidectomy

*Lauma Putnina*¹, *Tomass Liepins*¹, *Rita Niciporuka*^{2,3},
Arturs Ozolins^{2,3}, *Zenons Narbuts*^{2,3}

¹ *Rīga Stradiņš University, Faculty of Medicine, Latvia*

² *Rīga Stradiņš University, Department of Surgery, Latvia*

³ *Pauls Stradins Clinical University Hospital, Surgery Clinic*

Introduction. Key words. Primary hyperparathyroidism, serum calcium, parathyroid hormone, hypocalcemia. Primary hyperparathyroidism (PHPT) is the unregulated overproduction of parathyroid hormone (PTH) resulting in abnormal calcium homeostasis. The 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. Prediction of postoperative hypocalcemia is essential to evade possible complications.

Aim, Materials and Methods. Aim. The study was designed to determine intraoperative parathyroid hormone (IoPTH) drop after PTX and and associate it with postoperative calcium level. Materials and methods. A full retrospective case-control study was performed on 225 patients with PHPT operation since 2011 till October 2015. IoPTH was measured three times – preoperatively, before the pathological parathyroid gland was mobilized and, 20 minutes after the gland was excised respectively. The operation to be considered successful if IoPTH decreases by more than 50 % 20 minutes after excision comparing to the initial highest IoPTH level. The level of serum calcium (Ca) was taken the day after surgery. The descriptive statistics were used to summarize the data.

Results. Study included 30 male (13.5 %) and 195 female (86.5%) patients. The mean age was 59 years (19–80 years). Preoperatively 208 (92.4 %) of PHPT patients had hypercalcemia mean serum Ca level was 2.94 mmol/L. In 17 (7.6 %) Ca level were lower than 2.55 mmol/L (mean 2.31 mmol/L). In 216 cases (96.8 %) PTH level decrease was greater than > 50 % and decrease was in range from 52 to 99% (mean value 78.0%). While only 9 patients IoPTH level was measure below 50 % (mean 30 % respectively) – unsuccessful operation. Postoperative hypocalcemia (Ca < 2.15 mmol/L) occurred in 44 (20.4 %) cases (mean value 2.03 mmol/L). In those patients mean ioPTH decrease was more than > 80%.

Conclusions. The ioPTH assay revealed to be an important prognostic tool for parathyroid surgery success in patients with PHPT. IoPTH decrease greater than > 80% was associated with higher risk of postoperative hypocalcemia.