EARLY POSTOPERATIVE PTH ASSAY AS A PREDICTOR OF HYPOCALCEMIA AFTER TOTAL THYROIDECTOMY A PROSPECTIVE STUDY

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Introduction

Postoperative hypocalcemia represents a significant concern for total thyroidectomy patients and can greatly affect their quality of life by prolonging hospital stays and leading to frequent readmissions. Post-surgical hypocalcemia variably changes based on several factors, including surgical technique, patient characteristics, and the adopted definition of hypocalcemia. The absence of uniform protocols for assessing the risk of postoperative hypocalcemia causes a lack of efficacy in current management strategies. Preservation and identification of the parathyroid gland are integral to preventing postoperative hypocalcemia. A confluence of surgical techniques, methods, and devices is integrated to provide a better surgical outcome. Early detection and management of hypocalcemia through postoperative PTH measurement improve patient care by stratifying risk. Standardizing early PTH assessment ensures consistent, evidence-based care, optimizes resources, reduces treatment variability, and improves outcomes and healthcare efficiency.

Aim of the work

The aim of this work is to assess the value of early measurement of parathyroid hormone (PTH) postoperatively in patients undergoing total thyroidectomy.

Patients

The study was conducted on 30 patients admitted to the Otorhinolaryngology Department (ENT), Alexandria Main University Hospital for isolated total thyroidectomy or total thyroidectomy as a part of a total laryngectomy procedure during the period from November 2023 until September 2024.

Methods

The current study entailed preoperative assessment, including patient history, clinical examination, laboratory assessment for thyroid function and preoperative calcium level, radiological investigations and FNAC. The postoperative assessment entailed identifying signs and symptoms of clinical hypocalcemia and the correlation of these findings with the incidence predicted by serum parathyroid hormone (PTH) levels measured at 2 and 24 after surgery.

The aim was to evaluate the predictive value of the PTH level at 2 hours postoperatively in relation to the incidence of hypocalcemia, specifically regarding its sensitivity, specificity, and negative predictive value. Postoperative PTH was assessed using COBAS E411 analyzer. Ionized calcium was assessed with CornelyAFT-800 electrolyte analyzer.

Results

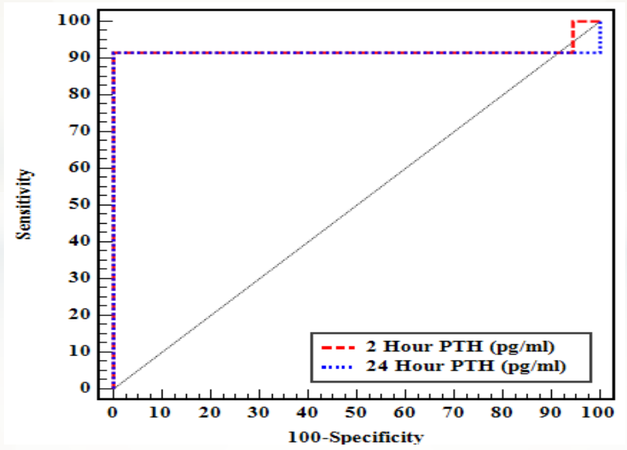

Figure (1): demonstrates the prognostic performance of postoperative PTH in predicting the incidence of hypocalcemia at 2 and 24 postoperatively.

Table (1) demonstrates the prognostic performance of postoperative PTH in predicting the incidence of hypocalcemia at 2 and 24 postoperatively.

PTH (pg/ml)	AUC	p	95% C. I	Cut off	Sensitivity	Specificity	PPV	NPV
2 Hour	0.921	<0.001*	0.773 – 1.000	≤16.5	91.67	88.89	84.6	94.1
24 Hour	0.917	<0.001*	0.760 – 1.000	≤16.6	91.67	88.89	84.6	94.1

Conclusion

A 2-hour postoperative serum PTH measurement is as accurate as a 24-hour serum PTH measurement in predicting postoperative hypocalcemia. This will allow for early identification of high-risk patients, grant timely intervention to decrease postoperative morbidity for total laryngectomy surgery patients with adjuvant total thyroidectomy, and allow early discharge, cost reduction, and increased quality of life for isolated total thyroidectomy patients.

At least two parathyroid glands should be identified and preserved during these procedures to prevent permanent postoperative hypocalcemia.