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Preoperative vitamin D deficiency predicts poor outcomes following thyroidectomy

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Purpose of Study: Postoperative hypocalcemia is common after total thyroidectomy. Prior data from our institution suggests that preoperative Vitamin D deficiency (VDD) is associated with an increased risk of postoperative hypocalcemia and a prolonged length of stay (LOS) after total thyroidectomy. We here expand the previous study by employing a large, multi-institutional, de-identified database of Electronic Health Records (EHR). We hypothesize that patients with pre-operative VDD are more likely to suffer from postoperative hypocalcemia and prolonged hospitalization.

Methods: Using Cerner Health Facts (a consolidated, relational database of EHR from 60,000,000 patients), we identified 923 patients who underwent total or subtotal thyroidectomy between 2010 and 2016 using ICD9 codes. Patients were excluded if they did not have a vitamin D level obtained within 12 months of surgery, or if they underwent parathyroidectomy or partial thyroidectomy. Four hundred and twenty-one patients who met criteria were analyzed. Vitamin D deficiency was defined as a 25-hydroxyvitamin D $\leq$20 ng/ml. Post-op lab values were obtained within 10 days of thyroidectomy.

Summary of Results: VDD patients (n=232) were older (p=0.03) and more likely to be Non-Hispanic Caucasian (p=0.03) as compared to Non-VDD patients (n=189). As shown in the Table, total and corrected post-op calcium levels were lower in the VDD group. VDD patients had a longer LOS ($p<0.05$) and were more likely to require post-op intubation or tracheostomy ($p<0.01$).

Conclusions: Pre-operative vitamin D deficiency is associated with an increased risk of postoperative hypocalcemia, airway instability, and prolonged LOS in patients receiving total thyroidectomy. Vitamin D replacement before thyroidectomy may improve postsurgical outcomes in VDD patients

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