Pre-operative Calcium and Vitamin D Supplementation in Total Thyroidectomy

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ABSTRACT

Hypocalcemia is a well-known and potentially dangerous complication of total thyroidectomy. It can be defined either biochemically (e.g., serum calcium <8.0 mg/dL) or clinically (e.g., numbness, paresthesias, Chvostek’s sign, etc.). It may also be categorized as temporary or permanent. In temporary hypocalcemia, serum calcium reaches a nadir around 24 hrs and often returns to normal by 7 days. Permanent hypocalcemia is due to permanent hypoparathyroidism, and is less frequent, 2-8%, compared to temporary hypocalcemia, 2-46%.1,2 Hypocalcemia may lead to serious patient risks such as hypotension, tetany, seizure, and arrhythmia. It also significantly adds to healthcare costs as a result of need for repletion, repeated lab testing, and increased hospital stays, among other factors.

Thus, prevention of post-thyroidectomy hypocalcemia is important. This may be accomplished by parathyroid preservation, intra-operative PTH monitoring, and post-operative supplementation with or without pre-operative supplementation. Studies have shown that post-operative supplementation consisting of Ca++ + Vit D is more effective in preventing hypocalcemia than supplementation with Ca++ alone.3,4 Additionally, pre-op serum levels of Vit D have been shown to be predictive of post-op hypocalcemia after thyroidectomy.3

The goal of this study is to determine the effectiveness of pre-operative Ca++ + Vit D supplementation in reducing hypocalcemia following total thyroidectomy.

METHODS

A retrospective chart review was performed analyzing all patients undergoing total thyroidectomy by a single surgeon between Jan 2008 and Dec 2011. Data collected included: age, gender, diagnosis, procedure performed, pre- and post-operative calcium levels, presence of symptomatic hypocalcemia, IV calcium repletion, length of stay, and readmissions. Patients undergoing subtotal or completion thyroidectomy were excluded.

RESULTS

A total of 65 patients met inclusion criteria. They were divided into 2 groups – those who received pre-op supplementation with Ca++ + Vit D for 5 days prior to surgery vs. those who did NOT receive any pre-op supplementation. BOTH groups received routine post-op supplementation with Ca++ + Vit D, as well as IV calcium repletion if serum calcium <8.0 mg/dL or they were symptomatically hypocalcemic.

<table>
<thead>
<tr>
<th>Patients</th>
<th>Pre-op supplement</th>
<th>No pre-op supplement</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total # pts</td>
<td>33</td>
<td>32</td>
<td>0.211</td>
</tr>
<tr>
<td>Male</td>
<td>11 (33%)</td>
<td>16 (50%)</td>
<td>0.211</td>
</tr>
<tr>
<td>Female</td>
<td>22 (67%)</td>
<td>16 (50%)</td>
<td>0.211</td>
</tr>
<tr>
<td>Avg age</td>
<td>52</td>
<td>47</td>
<td>0.22</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>29 (88%)</td>
<td>26 (81%)</td>
<td>0.811</td>
</tr>
<tr>
<td>Malignant</td>
<td>4 (12%)</td>
<td>6 (19%)</td>
<td>0.811</td>
</tr>
<tr>
<td>Central ND</td>
<td>15 (45%)</td>
<td>16 (50%)</td>
<td>0.811</td>
</tr>
<tr>
<td>Lateral ND</td>
<td>11 (33%)</td>
<td>12 (38%)</td>
<td>0.811</td>
</tr>
</tbody>
</table>

Table 1. Patient demographics, diagnoses, and procedures. ND = neck dissection.

CONCLUSIONS

Pre-operative Ca++ + Vit D supplementation prior to total thyroidectomy results in:
•Increased post-op serum calcium levels
•Less IV calcium repletion needed post-op
•Less symptomatic hypocalcemia
•Significantly decreased length of stay
•Decreased readmissions
•Decreased costs

REFERENCES