Thrombocytopenia and Thrombocytosis as Predictive Factors for Post-Operative Complications Following Laryngectomy

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Objective: To determine association between thrombocytopenia, normal platelet count, and thrombocytosis with postoperative outcomes following laryngectomy.

Methods: The 2005-2018 National Surgical Quality Improvement Program (NSQIP) database was queried for all patients undergoing laryngectomy. Cases were grouped based on the following platelet values: Normal (150,000-450,000µL), Thrombocytopenia ($\leq$ 150,000µL), Thrombocytosis ($\geq$ 450,000µL). Univariable and multivariate analyses were performed to determine association of each group with postoperative outcomes.

Study Design: Retrospective database study.

Setting: The data originates from more than 600 participating hospitals throughout the country.

Patients: Adult patients (18 years and older) undergoing laryngectomy were included in the study. Only patients with accurately documented demographic, comorbid, and complication data were included. Further inclusion criteria were established to account for only preoperative laboratory testing of platelet values within 30 days of operation. A total of 2,639 patients (79.8% male, 20.2% female) met inclusion criteria. 138 patients had thrombocytopenia (study), 125 patients had thrombocytosis (study), and 1930 patients had a normal platelet count (control).

Interventions— No interventions were administered, as this is a retrospective study.

Main Outcome Measure(s) – The primary outcome measures consist of patient comorbidities and postoperative complications that are associated with platelet levels. These factors include patients' age, race, gender, comorbidities, surgical complications, and medical complications.

Results: A total of 2,193 patients met inclusion criteria, of which 991 patients (37.6%) experienced complications. 2,193 patients (83.1%) had valid preoperative platelet values and were labeled as thrombocytopenia (n=138, 6.29%), thrombocytosis (n=125, 5.70%), and normal (n=1930, 88.0%). Univariate analysis demonstrated significant associations between platelet count and postoperative complications. Patients with thrombocytosis had longer operative time (493.78 vs 413.70 min, $p<0.01$). Adjusting for confounding variables, multivariate regression analysis demonstrated significant association between thrombocytosis and any postoperative complication (OR: 1.874 (1.289-2.725), p=0.01). Specifically, thrombocytosis was significantly associated with bleeding transfusion (OR: 2.138 (1.441-3.172), $p<0.01$).

Conclusions: Our study indicates that patients with thrombocytosis are at risk of developing postoperative complications following laryngectomy.