

ABSTRACT

TITLE: An observational study of the posterior thyroid anatomy – the critical zone of dissection in thyroidectomy

AIM AND OBJECTIVES: To study the anatomical relationship of critical structures at the posterior surface of the thyroid and evaluate their role in post-operative complications.

METHODOLOGY: A total of 115 patients who underwent total thyroidectomy were recruited during the period of January 2017 to August 2017 in the Department of Endocrine Surgery at CMC Hospital.

RESULTS AND CONCLUSION: 115 patients who underwent total thyroidectomy were studied. There were 30 males and 85 females. The pathology was papillary cancer in 45 patients, nodular hyperplasia in 27. Tubercle of zuckerkandl (TZ) was grade 1 in the majority on both sides (44/47). The right TZ was significantly larger (p value < 0.001) and more likely to be involved by disease (48.1% vs 33.7%). The RLN was most commonly found to be postero-medial to the TZ (84% on the right side and 85.3% on the left side). The branching of the nerve was symmetrical with one extra-laryngeal branch seen 15% and 2 branches in 12 (10%) patients bilaterally respectively. The RLN was superficial to the ligament of berry (LOB) in the

majority, 95.5% on the right and 92.6% on the left, the remaining were traversing through. There were 4 patients who had temporary RLN palsy but no significant correlation with risk factors could be determined.

The left superior parathyroid was visualized most frequently– 88.6%, and the left inferior the least to be visualized – 53.9%.

Decoy fat - the presence of misleading fatty tissue separate from the superior parathyroid gland which may increase the risk of parathyroid excision. 62% patients had decoy fat on the right side and 49% on the left. We also studied the location of the parathyroid - vascular pedicle complex (PVPV) being ‘on thyroid’ or ‘off thyroid’ which had not been studied earlier. In 38.8% patients, the right inferior PVPC was “on thyroid. There was a significant association (p value 0.02) of PVPC being “on thyroid” (24.5%) in the left inferior parathyroid and hypocalcemia. Moreover, the left inferior parathyroid was the least visualized (53.9%) in this study. There was also a significant association (p value 0.01) of PVPC being on thyroid (18.8%) in the right superior parathyroid and acute parathyroid insufficiency. In our study, autotransplantation was done in 16.5% of patients. There was a significant association (p value = 0.003) between autotransplantation done in the right superior parathyroid gland and hypocalcemia. The incidence of transient hypocalcemia was 11.3%. Familiarity with the nuances of posterior thyroid anatomy should decrease the chances of injury to nerves and parathyroids though this study could not demonstrate significance in view of the low risk of complications. Two new anatomical features to aid in safety of dissection were identified.