

## ***The Role of Molecular Markers in Determining the Extent of Surgery in Thyroglossal Cyst Carcinoma***

**Background.** The aim of the study was to assess the role of molecular markers in determining the extent of surgery in thyroglossal cyst carcinoma (TCC).

**Materials.** Between 1994 and 2016 thirty-seven cases of TCC were operated in an academic tertiary referral center in Italy. Sistrunk's procedure along with a total thyroidectomy was the surgical strategy applied routinely in all cases based on the authors' published experience. Of these, 15 (40%) cases of TCC did not demonstrate metastasis to the thyroid. These cases were retrospectively reviewed and tested for the presence of one of the most commonly encountered mutations in differentiated thyroid cancer: BRAF, N-RAS, and H-RAS. The primary outcome of interest was the correlation between mutational marker positivity and the stage of the primary tumor. Therefore, its implication on the extent of surgery required.

**Results.** All 15 cases were papillary carcinomas (PTC): classical variant (n=10), follicular variant (n=3), and microcarcinoma (n=2). These were found in 12 females and 3 males (4:1) with an average age of 55 years (range: 38-76 years). The average tumor size was 17 mm (range: 2-40 mm). According to the AJCC-TNM staging system these represented: stage I (n=3), stage II (n=1), and stage III (n=11). Cancerous invasion of pericyclic soft tissue and/or hyoid bone placed the lesion in stage III. BRAF 600E was the only mutational marker identified in 7/15 (47%) of TCC cases, and all were stage III necessitating the need for radioactive iodine ablation (RIA) therapy and thus a total thyroidectomy. The mutation negative cases were: stage I (n=3), stage II (n=1), and stage III (n=4). Mutation positivity correlated significantly with extracystic cancerous extension [1.0 (7/7) vs. 0.5 (4/8); p value =0.03].

**Conclusion.** BRAF 600E positivity seems to be predictive of local aggressiveness and implies the need for a total thyroidectomy and RIA therapy.