Neoadjuvant Management of Invasive Malignant Nodules: From Targeted Therapy to Interventional Radiology

Young Joo Park
Department of Internal Medicine
Seoul National University College of Medicine

The management of locally advanced, initially inoperable malignant thyroid nodules has shifted significantly with the advent of potent systemic therapies. Furthermore, the potential role of advanced interventional techniques is also being proposed as a complementary strategy**.**

Recent clinical data highlight the success of Tyrosine Kinase Inhibitors, specifically BRAF/MEK inhibitors, in converting inoperable tumors to resectable cases. Notably, in Anaplastic Thyroid Cancer (ATC), the combination of targeted therapy and Immune Checkpoint Inhibitors has enabled curative-intent surgery, leading to markedly prolonged survival and incorporation into guidelines. In non-ATC advanced thyroid cancer, neoadjuvant trials are increasing with the goal of not only resection but also functional preservation of critical structures like the larynx and vocal cords. While agnostic therapies show the most dramatic results, multi-kinase inhibitors also demonstrate promising potential.

In addition, although systematic research results have not yet been widely reported, interventional radiology has been recognized for offering complementary benefits. Selective embolization of thyroid arteries (SETA) is utilized to reduce intraoperative bleeding risks and can contribute to tumor volume reduction. Radiofrequency ablation (RFA) is also being explored for tumor debulking and functional preservation. Future paradigms may involve the synergy of interventional radiology and systemic therapy, such as combining SETA or RFA with TKIs to enhance local control. This includes investigating localized drug delivery systems to achieve effective local (tumoral) delivery of TKIs or other chemotherapeutic agents via SETA. This session will introduce these multidisciplinary advancements and the future potential of integrated neoadjuvant management.