In this issue of the European Journal of Cardiothoracic Surgery, Dr Baisi et al. [1] from Milan have summarized some of the literature regarding the use of thermal ablation for pulmonary tumours. They have also described some of their own personal experience with 26 cases. Their primary discussion has focused on the use of radiofrequency ablation, and to a lesser extent, on microwave ablation. They have, however, omitted discussion of other ablative technologies such as cryoablation and irreversible electroporation [2, 3]. Although these other technologies have been reported to a lesser extent, the myriad of different approaches to thermal ablation attests to the ever-changing selection of available treatments for high-risk operable and medically inoperable patients with lung cancer. Although most reports of ablation involve the use of percutaneous approaches, a group from Japan has reported the use of a bronchoscopic approach to ablation [4]. As experience with technologies such as electromagnetic navigation evolve, the fusion of these techniques may lead to a future where small cancers are diagnosed and then treated by bronchoscopy alone.

On the other hand, the use of thermal ablation has declined, particularly in academic medical centres. There are a number of reasons for this. The primary reason has been the implementation of stereotactic body radiation therapy (SBRT) programmes in many hospitals, and the excellent results from several phase I and II trials for lung cancer [5]. Radiofrequency ablation (RFA) for the most part has been performed in the community setting, primarily by interventional radiologists. Unlike surgeons or radiation oncologists, radiologists do not generally evaluate patients pre-treatment, or participate in the long-term follow-up, and are generally not stakeholders in multidisciplinary tumour board discussions. For this reason, thermal ablation studies have involved smaller numbers of patients, tended to consist of a mixture of patients with primary and secondary lung tumours, and have generally involved shorter follow-up periods. On the other hand, the benefits of SBRT have been overstated when compared with both surgery and thermal ablation. With respect to surgery, it has been stated that local control rates are excellent and approach that of lobectomy, which is simply not true as the definitions of local control have been different for surgical and SBRT studies [6]. For ablation, it has been commented that SBRT is safer and associated with a lower morbidity rate. Although the rate of pneumothorax is high with RFA, the actual incidence of grade 3 and higher adverse events, using Common Terminology Criteria Definitions, is lower than that reported for SBRT [5, 7].

Another issue when comparing these three general approaches (surgery, thermal ablation, and SBRT) is that studies have generally involved dissimilar risk patient groups. A recent propensity-matched analysis compared preoperative risk factors in patients from three cooperative group studies involving sublobar resection, SBRT or RFA [8]. Interestingly, SBRT patients had the best, and the RFA patients had the most impaired baseline pulmonary function. Differences with inclusion criteria, and end-point definition between single-arm studies for different treatment modalities, support the need for randomized trials to compare these different approaches for lung cancer. Currently, a phase III study is underway in the USA comparing SBRT with sublobar resection for high-risk operable patients with lung cancer [9]. Further prospective studies are also needed to evaluate the optimal approach, and patient selection for thermal ablation.

REFERENCES