**Long-Term Survival Comparison of Stereotactic Radiation Therapy Versus Surgery for Elderly Patients with Clinical Stage T1-T2 Non-Small Cell Lung Cancer**

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**Purpose/Objective(s):** There are several matched-paired analysis reports of comparing the survival between Stereotactic Body Radiation Therapy (SBRT) and surgical resection. Most of them were with sample sizes less than 100 patients. This study aimed to compare the long-term overall survival (OS) after SBRT and surgery from a single medical center with surgery performed with the same group of surgeons.

**Materials/Methods:** We used our cancer registry of 2005-2015. Patients with clinical staged T1 and T2 N0 diseases treated with either primary surgery or SBRT. Only patients elder than 65 years, and treated in two major hospitals with surgery performed by the same group of surgeons were included. The log rank p-value was used for overall survival comparison between the groups. Cox regression was used for univariate test for age, gender, race, smoking history, alcohol use, primary site location, laterality, T stage, and histology grade. Variables with p <0.05 from univariate analysis were then used for propensity score based matching to compare the effect of surgery or SBRT on overall survival.

**Results:** A total 1244 patients with clinically staged T1-T2 N0 NSCLC, 774 patients were elder than 65 years matched: 508 surgery and 266 SBRT. The median age was 73 years (range: 65-96 years), 50% were male, and 67% had T1 disease. Median follow-up was 60 months. Age (p<0.001), gender (p=0.007), primary lobar location (p<0.001), histology, grade (p<0.001) and treatment modality of surgery versus SBRT (P<0.001) were all significantly associated with OS under univariate analysis. The median OS and survival rates at one-, three- and five years were 81 months (95%CI:66-92), 85%, 70% and 58% after surgery, and 37 months (95%CI:28-46), 83%, 50% and 29% after SBRT, respectively (log-rank p<0.001). Intrathoracic tumor progress-free survival will be reported during the meeting.

**Conclusion:** This matched analysis, representing the largest one in the literature, demonstrated that patients treated with surgery have significantly better long-term survival than that of SBRT in elderly patients. This result varies from some of previous reports showing similar survival between SBRT and surgery. Prospective randomized study is needed to validate this finding.