The optimal treatment approach for oligometastatic non-small cell lung cancer is unclear, and its diagnosis is frustratingly subjective.

Some patients with oligometastatic disease experience prolonged remission (or even cure) after local therapy.

Other patients harbor micrometastatic disease, below the limit of detection of current imaging techniques.

We have previously shown that post-radiation therapy (RT) plasma circulating tumor DNA (ctDNA) is powerfully prognostic in localized NSCLC.

The sub-cohort was defined as those patients who underwent a liquid biopsy ctDNA test prior to receiving radiation therapy (RT), plasma circulating tumor DNA (ctDNA) is powerfully prognostic in localized NSCLC.

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CTDNA levels demonstrated significant risk correlations, with the maximum pre-RT ctDNA VAF associated with increased risk of both disease progression (p=0.0084) [Figure 2A] and death (p=0.0073) [Figure 2B]. These findings were corroborated by multivariate Cox proportional hazards modeling for PFS (p=0.04, HR=4.71, CI=1.42–13.34) and OS (p=0.005, HR=5.64, CI=1.63–16.79) [Figure 3]. Notably, multivariate modeling did not show significant impacts of other clinical parameters, including gender, age at diagnosis, smoking status, squamous histology, and number of metastatic sites. Additionally, the ctDNA mutational burden was significantly associated with risk for both PFS (p=0.006, HR=1.17, CI=1.06–1.27) and OS (p=0.003, HR=1.16, CI=1.04–1.26) [Figure 4].

Conclusions
Pre-therapy ctDNA may be a useful tool for shared decision-making in oligometastatic NSCLC when deciding between radiation therapy versus systemic therapy, and provides an opportunity to objectively redefine oligometastatic disease.