So I would like to invite Dr. Rajpal Singh from Jammu to give us some insights on the Luster trial. We have data which is comparing conventional radiotherapy mean 1.8 to 2 gray per fraction, say to a dose of 66 gray versus SBRT. And there SBRT has excellent result in terms of local control as well as survival. So what is SBRT?

Most of the people here know what is SBRT. It is high dose of radiation, desire to treat early lung cancer patients with precision radiotherapy under image guidance and with tumour tracking also. So it is a new age treatment nowadays being done for early lung cancer patients who are medically inoperable.

As all of you know that surgery is a treatment of choice in stage 1 non-small cell lung cancer. So patients who are not operable mean they are medically inoperable or patient doesn't desire to undergo surgery.

Radiation is another treatment of choice in these patients. So CRT is being conventionally radiotherapy, mean 1.2 to 8 gray. 1.8 to 2 gray is being replaced by SBRT in these subset of patient because of improved local control as well as survival. The survival are in the range of 65% to 70% in three years, and local control is around 95%.

So there is no such data which compares hypofractionated radiotherapy versus SBRT. So what is hypofractionated radiotherapy? It is more than conventional radiotherapy but less than SBRT. So it is in between

2 Gray to 8 Gray. So where we are treating a patient with single fraction of 4 Gray or 5 Gray, this hypofractionate term is being utilized. So what is the background of this disease? This is a Canadian trial which is being published in JAMA in 2024 and the accrual for these patients were closed before COVID.

so less number of patients were being acquired in this trial and in canada there is sbrt is not being followed in in these patients they do a hypofractionated treatment of 60 grain 15 fraction mean four gray perfection so as as there's a data for sbrt from other europe and uk trials

for like CHISEL trial or other trials. They also want to start SBRT in their program but they don't have substantial data. They are doing it for 60g/15 fraction, 4g/fraction. So what they did, they compared their patients in between 60g/15 fraction versus SBRT doses.

So the primary objective of the trial was to determine if SBRT is comparable to conventional hypofractionated radiotherapy in terms of local control, survival, as well as toxicity. And secondary objectives are overall survival, disease-free survival, event-free survival, toxicities, radiation treatment-related deaths, quality of life, and cost utility. So this is an open-label, randomized trial done in 20 centers in Canada, where

where medically inoperable stage 1 patients were taken, all the patients who were eligible were T1, T2, A, M0, M0, histologically confirmed or a suspicious growing nodule on serial CT imaging which qualifies for malignant disease, medically inoperable patient labelled by a surgeon or patient preference not to undergo surgery. So these are...

randomized into two group SBRT and conventional hypofractionated therapy in a ratio of two is to one.

where in SBRT for peripheral lesions 48 grain 4 fraction, 12 grain per fraction is being delivered to these patients on alternate day and in central lung disease 60 grain 8 fraction being delivered to these

patients and in conventional fractionation the standard 60 grain 50 fraction is being developed and these are the patients are followed for recurrences toxicity and survival for 5 years for the results.

So around 233 patients were enrolled. As I told you, the accrual for these patients were stopped before COVID. So that is why the power of the study is not that high so that we can derive much results from these. And 154 were randomized to SBRT group and 79 were randomized to conventional hypofractionation group.

so these are the demographic data in which you can see that patients are being randomized according to location of the tumor also and stage of the disease also so these are equally distributed between the two arms and 64 patients were in where have central disease central lung disease and

As you can see that 51% of the patients don't have histological confirmation of the disease. So they are being treated on imaging only. So coming up to survival data, you can see that local control is at three years is 81.2% in conventional hypofractionated arm versus SBRT arm in 87.6%.

which was actually the P ratio was not significant but since I have told you that study was not powered to give you this answer that who is better than other. Event-free survival was 43% versus 49% in favor of SBRT arm and overall survival is in favor of conventional radiotherapy arm.

So as you see that grade 3, 4, 5 toxities, long-term toxities were more in SBRT arm as expected. Going deep into central tumor, you can see that most of the patient who have these long-term toxities were tumors which were central in location. And around 30 patients were out of 64, 30 patients were

we're having ultra central disease which where we need to hypo fractionate more 60 in 8 gray give you toxic rate of around 20% but in these patient we have toxicity in this trial we have toxicity rates of around 12% only so the strength of the trials are it is a radiation treatment quality assurance for very done credential II it is a double-blinded study multicentric study limitation is that as it is a low

have low curlew, slow as well as low curlew. So statistically it is low powered study. Around 50% of the population have no biopsy proven disease. No center radiological review of local control was done. It depends upon the physician who is treating. They have given the guideline that you can-- they will tell us that the patient is having local recurrence. And moreover, two repeated CT scans

to see an increase in size of the disease will give us a diagnosis that local control is violated. Quality of life data is not being published, though it is being collected. It is required for the decision to be taken for what sort of therapy needs to be given to the patients.

Conclusion, SBRT is a potential advantage in peripheral lung disease. Tailor-made approach required as per location of the disease. Hypofractionation has role in ultra-central disease only. BED10 should be more than 100 gray but less than 140 gray. Why? Because above this BED10, in central lung diseases, rate of tox teaser higher in BED10.

these patients more trials are needed for such better better understanding. Thank you