

AbstractID: 9338 Title: Optimization and evaluation of accuracy of harvesting backscattering electrons technique

Purpose: The applicability of harvesting backscattering electron for treatment of superficial small lesions of skin, oral cavity and rectum as described by Das *et al.*, IJROBP, **33**, 695,1995 requires additional modification for the scattering angle optimization. The scattering angle by positioning the external scattering foil relative the irradiated surface is studied for scattering angle optimization for harvesting backscattering electrons.

Method and Materials: Backscatter electrons were achieved from the primary electron beams of 6 MeV from a Varian accelerator. The chamber response as a function of lead foil as well as a chamber position angle was studied. The primary electrons were scattered off lead foil placed 120 cm from the source. A parallel plate ion chamber was placed 20 cm from foil.

Results: Backscatter electrons have wide angular spread. The dose profile versus scattering angle showed a plateau that peaks around 30-60 degree. The chamber response was dependent on the lead angle with dose variation of 10-20% from chamber angle. It was found that the orientation of the chamber was optimum at 45-60 deg. This provides opportunity to optimize and harvest electrons for clinical use.

Conclusion: The dose uniformity could be achieved for lead orientation angle from 30 to 60 deg. The prescription dose to 80 or 90% isodose can compensate the angular dependence of targeting point (chamber position), that will decrease influence of small variations in targeting area orientation. There is a maximum in delivered dose in the dependence of the foil orientation for a given position of targeting area. Although there are individual trend in the dependence of the chamber response of the lead position for each chamber position. However, the optimal angle of 60 deg for lead foil can be recommended. Additional work using Monte Carlo simulation for the optimization of foil angle is being carried out.