

**Purpose:** To compare three different methods of IMRT planning for breast treatment.

**Method and Material:** Breast IMRT plans are conducted for several Patients using Pinnacle PHILIPS system. Three IMRT methods have been utilized; the first is Forward Planning (FP) technique using segment weight optimization for selected set of objectives such as GTV, PTV, lung, heart, etc. The second method is Inverse planning (IP) technique using Direct Machine Parameters Optimization (DMPO) with same objectives used in FP plus an extra segment to account for flash .The third is IP technique using DMPO with same objectives used in FP plus an extra objective called “Flash Planning Target (FPT)” defined by expanding the PTV by 2.5-3.0 cm in the interior direction of the breast depending on the required amount of flash. The “FTP” objective is defined as a uniform dose with 80% or higher of the prescribed dose with an extremely minimum dose in the order of  $1E-15$ . “FPT” objective is included in the DMPO to generate sufficient flash (due to breathing parameter) which could not have happen without including this objective in the IP optimization. Comparing all methods, IP technique using the two DMPO methods will allow having a Flash for most of the treatment without defining segments and they will give better coverage of the breast from the superior and inferior direction with better controlling the dose to the surrounding organs.

**Results:** Using the “FPT” objective along with DMPO techniques provide the open segment higher percentages for each beam with some other segments generated by Pinnacle not by the planner are superior over FP method.

**Conclusion:** Inverse planning techniques using DMPO technique mentioned above will give a better coverage of the breast from the superior and inferior direction with better controlling the dose to the surrounding healthy tissues.