

Surface Dose Analysis for Dynamic Wedge vs. Fixed Wedge Using TLD's

Abstract

Thermoluminescent Dosimeters (TLD's) were used to compare the surface doses of fixed wedge versus dynamic wedge techniques. Some dosimetric characteristics were found from this study: 1) For both low (6 MV) and high (15 MV) energy beams, dynamic wedge fields have comparable surface doses as open fields. However, at larger wedge angles and/or field sizes, dynamic wedges generate more surface doses; 2) For fixed wedge, surface dose decreases as the wedge angle increases for both low and high energy beams. Opposite phenomena were found for dynamic wedges at both low and high energy beams; 3) Dynamic wedge techniques always have higher surface doses than fixed wedge techniques (up to 25% for 6MV x-ray and up to 32% for 15MV x-ray, respectively) For treatment techniques requiring higher surface doses(e.g. tangential breast fields), dynamic wedge maybe a good alternative. Especially in chest wall irradiation, in which independent jaws are often used. Head and neck treatments will also benefit from dynamic wedge by using an "optimal" wedge angle to compensate for the sloping skin surface, and providing more uniform dose distribution within the target volume using dynamic wedge pair fields.