AbstractID: 1802 Title: Application of Sr-90 for Prevention of Adhesions: A Preliminary Treatment Model

In recent years, a resurgence in the use of Sr-90 has occurred, primarily due to its use in intracoronary brachytherapy. Sr-90 has also been employed in the ophthalmologic community for postoperative irradiation of pterygia. Due to these successes and other advantageous results of irradiating benign tumors and diseases, a new function for the Sr-90 ophthalmologic applicator has been hypothesized: the use of β-radiation for the prevention of adhesions. Adhesions are formed when the peritoneum suffers damage, releasing fibrin which accumulates on the injured surface. It is likely that radiation could reduce the growth factor and prevent the development of adhesions.

As part of this study, a polystyrene phantom has been created to model the depth dose curve for Sr-90. Preliminary measurements have been made using GafChromic film and thermoluminescent dosimeters. We developed an equation for determining the dose deposited with depth. Our results compare favorably with actual measured values for clinically relevant depths. This model / equation will then be applied to keloids to determine the necessary treatment parameters and the efficacy of the treatment model. We believe this new treatment method will realize improvements in the preclusion of keloids following surface surgical incisions, and in addition will prove useful in the prevention of adhesions following internal surgical incisions.