AbstractID: 10589 Title: Preplanning of Suture Coordinates for Episcleral Plaque Therapy

Purpose: Episcleral plaques are attached to the eye by sutures which affix eyelets to the sclera. Historically, plaque position was determined by transilluminating the eye to cast a shadow of the tumor onto the sclera, outlining this shadow, and subsequently deciding where to suture the eyelets. 3D modeling enables scleral coordinates for each eyelet to be determined prior to surgery.

Methods: The retinal diagram is a polar map of the retinal surface in which the posterior pole is located at the center of the map surrounded by radial spokes representing meridians and concentric rings of lattitude which terminate at the limbus which is the border of the cornea and sclera. Eyelet coordinates on an equivalent scleral diagram can be expressed using a meridian, a chord distance from the limbus along that meridian, and the chord distance between the eyelets. It is common to express diagram meridians as clock hours so coordinates for a plaque with two eyelets might be something like: eyelet #1 along the 12:40 o'clock meridian, 9.1 mm from the limbus, eyelet #2 along the 2:10 meridian 9.4 mm from the limbus, and 9.2 mm between the eyelets.

Results: Over 300 patients have been treated at USC using calculated suture coordinates. Only in a handful of cases involving anterior tumors for which fundus photography was impossible was it necessary to empirically adjust coordinates. Admittedly subjective observation suggests that plaque placement to within about 8 degrees circumferentially and 0.5 mm radially of the planned position is routinely achievable. Examples will be presented.

Conclusion: When the tumor location can be accurately determined from fundus photography, the placement of a plaque and its suture eyelets can be accurately preplanned.

Conflict of Interest: Software which implements this technology is licensed by BEBIG GmbH for distribution under the name Plaque Simulator.