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### **Comparison of artificial eye amplitudes with porous polyethylene spherical and quad-motility enucleation implant**

**Objectives:** (1) To compare artificial eye amplitudes in patients who received a porous polyethylene either spherical or quad-motility implant after enucleation. (2) To study the characteristics of artificial eyes fit with the two orbital implants. **Methods:** Prospective randomized trial. A total of 21 patients who underwent enucleation because of an intraocular melanoma were eligible for this study. During the surgery the patients received a porous polyethylene either spherical or quad-motility orbital implant. Six weeks after surgery, the patients were referred to the ocularist to fit the artificial eye and the posterior surface was custom-fitted by an impression technique. Measurements of the amplitude of the artificial eye were obtained with prism and digital photos, which were taken in primary position and the four main extreme gaze positions. The interval between surgery and measurements was from 3 to 4 months in all patients. The software Scion Image analyzed the digital photos. The measurements and the weight of the 21 artificial eyes were obtained and analyzed. Quantitative data of the amplitude of the artificial eyes were allocated in groups and shown as mean and standard deviation. **Results:** There was no difference statistically significant of the artificial eye amplitude analyzed by means of prisms between both orbital implants ( $p > 0.05$  for all directions). There was difference statistically significant in the amplitude of artificial eyes, when analyzed by digital photos, and the spherical implant showed higher artificial eye amplitude downward ( $p = 0.009$ ) among patients older than 55 years old, rightward ( $p = 0.036$ ) and downward ( $p = 0.008$ ) among the 9 right eyes enucleated. Height and length were similar in the 21 artificial eyes but those fit with quad-motility orbital implants were statistically significant thicker ( $p < 0.001$ ) and heavier ( $p = 0.001$ ) than the artificial eyes fit with spherical orbital implants. **Conclusions:** (1) Similar amplitude of movement of the artificial eyes was observed with both spherical and quad-motility orbital implants. (2) Artificial eyes fit with quad-motility orbital implant are significantly thicker and heavier than those fit with spherical orbital implant.