Thermography used for analysis and comparison of different cataract surgery procedures based on phacoemulsification.

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Thermography has been employed to analyze and compare three cataract surgery procedures performed in vivo with phacoemulsification, namely, the Sovereign phacoemulsification system with a traditional technique, the Sovereign WhiteStar phacoemulsification system with a traditional technique and the Sovereign WhiteStar phacoemulsification system with a bimanual technique. During the entire surgical procedure, the temperature of the ocular surface was monitored. The temperature values in the area where the phaco probe was inserted in the eye were measured, and the quantities of heat transmitted to the eye in the different procedures were assessed through suitable indices. In this study the highest temperature measured for each procedure during the surgical operation was 44.9 degrees C for the Sovereign phacoemulsification system with a traditional technique, 41 degrees C for the Sovereign WhiteStar phacoemulsification system with a traditional technique and 39.5 degrees C for the Sovereign WhiteStar phacoemulsification system with a bimanual technique, which is also the surgical procedure having the lowest thermal impact on the eye, i.e., the one in which the temperature peaks are lowest in amplitude and the least amount of heat is transmitted to the eye. Thermography, used in this study as a temperature monitoring instrument, has allowed analysis to be effected through a useful and advantageous methodology, totally non-invasive as regards both surgeon and patient, and has been applied in vivo without requiring any change in the surgical procedure.