

## 39. Precise detection of thermal profile based on ir thermography during prosthetic preparation of dental implants

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Preparation of a dental implant support is often needed to attain a proper appearance profile for a decisive restoration which may compromise osseointegration through the production of heat. It was aimed to measure the thermal profile during implant support preparation with different volumes of water irrigation using an implant system. The prepared implants were grouped as per the water flow rate used which were: 35 ml/min(w35), 20 ml/min (w20), and without water irrigation (w0). Thermocouples were positioned at the most chaplet and most stinging threads. A high-speed dental handpiece was used to prepare the supports. The operation of support preparation continued until the implant temperature reached 500c. The surface temperature of the implant was measured by fluke ir thermal imaging camera. The most chaplet thread of group w0 took about 5 seconds to reach the defined temperature of 500c. Once the operation was stopped at 500c, the temperature was further increased to maximum value which was verified by the surface temperature measured by invasive method using ir camera. It was observed that none of the implants in the water irrigation groups reached 500c. The time needed to reach maximum temperature was significantly shorter for group w0 than other groups. A strong positive correlation was found between chaplet and stinging recordings. There was a great effect of water irrigation on the thermal profile during prosthetic preparation of dental implants. Rapid increase in temperature could be controlled in an excellent manner through correlation of temperatures at chaplet and stinging thread with surface temperature.

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