

Electroconductive Lithotripsy: Principles, Experimental Data, and First Clinical Results of the Sonolith 4000*

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ABSTRACT

The electroconductive lithotripter (ECL) is a new concept for shockwave generation in which a highly conductive solution channels the discharge between the anode and cathode. In vitro experiments showed a linear relation between the voltage setting and the pressure at F2. In vitro stone disintegration studies showed a considerable reduction in shockwave pressure variability, improved energy transfer to the stone, and a unique linear relation between fragmentation and electrode voltage without a saturation effect. This new concept has been used clinically in the Sonolith 4000 lithotripter. In 142 evaluable treatments with a 3-month follow-up, the overall stone-free rate was 82%, and the retreatment rate in stone-free patients was 10%. For stones equal or less than 10 mm, the 3-month stone-free rate, retreatment rate, and secondary procedure rate were 85%, 5%, and 0%, respectively. For stones between 11 and 20 mm, these figures were 83%, 4%, and 2%, respectively. The efficiency quotient was found to be 81% for stones equal or less than 10 mm and 78% for stones between 11 and 20 mm. These clinical results confirm the improvements in efficacy observed in vitro with very satisfactory tolerance.