

Real-time target tracking applied to improve fragmentation of renal stones in extra-corporeal lithotripsy

M. Orkisz¹, M. Bourlion², G. Gimenez¹, T.A. Flam³

¹ CREATIS, CNRS Research Unit #5515 affiliated to INSERM, Lyon, France

² TECHNOMED Medical Systems, Vaulx en Velin, France

³ Hôpital Cochin, Paris, France

Received: 28 April 1998 / Accepted: 10 September 1998

Abstract. In extra-corporeal shock wave lithotripsy (ESWL), focused acoustic waves are used to fragment urinary stones. The success of the treatment depends on coincidence between the stone position and the point of convergence of the waves. However, the stone may move during the treatment. We developed a software called Echotrack which performs a real-time tracking of the stone in ultrasound images and automatically adjusts the position of the generator of shock waves. Clinical tests carried out in 65 patients showed that the Echotrack is able to track the stones as long as they are visible in the images. The number of shocks necessary to fragment the stones is reduced by 40%.

Key words: Medical imaging – Extra-corporeal shock-wave lithotripsy – Urinary calculi – Image processing – Target tracking