Design of the Dual Stone Locating System on an Extracorporeal Shock Wave Lithotriptor

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Abstract: Extracorporeal Shock Wave Lithotriptors are very popular for the treatment of urinary stones all over the world. They depend basically upon either X-ray fluoroscopy or ultrasound scans to detect the stones before therapy begins. To increase the effectiveness of treatment this study took advantage of both X-ray and ultrasound to develop a dual stone locating system with image processing modules. Its functions include the initial stone locating mode with stone detection by fluorescent images and the follow-up automatic stone tracking mode made by constant ultrasound scanning. The authors have integrated both apparatus and present the operating principles for both modes. The system used two in vitro experiments to justify its abilities of stone location in all procedures.

Keywords: X-ray; ultrasound; image processing; Extracorporeal Shock Wave Lithotriptor; stone location; stone tracking