The evolution of a revolution

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SWL represents the only non invasive treatment modality for urolithiasis apart from conservative stone management and plays a major role in stone therapy due to its efficacy, low rate of side effects and comfortable completion without need of general anesthesia.

Many efforts have been made in the last years, to maximize stone comminution and to reduce the shock wave related tissue traumatization.

Regarding lithotripter technology, the manufacturers introduced improvements in shock wave generation, imaging modalities for stone localization, patient positioning and friendliness of use. Based on a better understanding of disintegration mechanisms, there is a general trend to shock wave sources with bigger focal geometry, which allow the application of higher shock wave energy without exceeding critical values of energy flux density and peak pressure. The control of cavitation for improved stone fragmentation and reduction of tissue injury is only realized in experimental shock wave systems until now.

Proper use of the lithotripsy system and correct application of shock waves are crucial aspects for the SWL outcome regarding efficacy and safety. All users should be aware, that SWL is a complex technology with potential risks and that they must have basic knowledge of the underlying physics as well as of characteristics and features of the used lithotripsy system. Sufficient analgesia, fixation of the patient, proper coupling of the shock wave system and a slow shock wave administration rate (60 shock waves per min.) are important measures to ensure a good stone disintegration. Patient adapted selection of shock wave parameters, pretreatment with low shock wave energy and renoprotective drugs like calcium channel blockers or antioxidants seem to be beneficial for a reduction of tissue traumatisation.

Stonefree rate after SWL can be improved with supporting measures like physical therapy (percussion, diuresis, inversion) and short term medical therapy (medical expulsive therapy) with á1–receptor blockers or calcium channel blockers.

CHRISTIAN G CHAUSYY treated after 6 years of intensive pre–clinical research at the University of Munich on February 7th 1980 the first patient worldwide with ESWL. From 1984–1986 he was Professor of Urology and Head of the Stone Center at UCLA, left this tenure position in 1986 to become Chairman of the Department of Urology Klinikum Harlaching in Munich. 1996 he had started the use of HIFU for the treatment of localized Prostate Cancer. Since 2010 he is President elect of the Endourological Society and is currently holding a position as Consultant Professor at the Department of Urology, University of Regensburg and as Clinical Professor of Urology at the Keck School of Medicine, USC.