Introduction and objectives

Endoscopic combined intra-renal surgery (ECIRS) for renal calculi was developed to yield a high one-step stone-free rate. The modified supine position may be a more familiar approach for simultaneous use of flexile ureteroscopy (fURS) and percutaneous nephrolithotomy (PNL). To perform this procedure more easily and less invasively, we introduced endoscopic hybrid therapy in the prone split-leg position with simultaneous use of fURS and minimally invasive PNL (prone-ECIRS). We evaluated the efficiency and effectiveness of prone-ECIRS by retrospectively comparing with the results from minimally invasive PNL (min9-PNL).

Materials and Methods

From May 2010 to December 2011, 39 patients presenting with large calculi at our department were selected for prone-ECIRS (20), mini-PNL (19).

Prone-ECIRS was performed with patients in the prone split-leg position, allowing both antegrade and retrograde access via an 18F mini-percutaneous tract and 12/14F ureteric access sheath, respectively. Holmium YAG laser fibre was used with fURS though retrograde access, and a lithoclast was used with nephroscopy through antegrade access to fragment renal calculi. Mean patient ages for prone-ECIRS, mini-PNL were 57.7 ± 2.0, 50.1 ± 3.6, respectively. Mean sizes of renal calculi removed via prone-ECIRS, mini-PNL were 40.9 ± 4.9, 39.9 ± 2.2, and numbers of staghorn calculi were 11 and 10, respectively.

Results

Mean surgical times for prone-ECIRS, mini-PNL were 157.5 ± 11.9 and 181.9 ± 15.5 min, respectively. The stone-free rate for prone-ECIRS was significantly higher than that of mini-PNL (initial rates: 80 and 37 48%; rates after further treatment: 85 and 53%, respectively). No patient

required blood transfusion among both of two groups.

Conclusion

Prone-ECIRS performed with the patient in the prone split-leg position is a safe, efficient, and versatile procedure that provides an effective option for the management of renal calculi, including staghorn calculi.