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# Holmium Laser

## Efficacy and Safety in Treatment of ESWL-Refractory Stones

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### Purpose

The aim of this study was the evaluation of efficacy and safety of stone disintegration procedures using holmium laser in a highly selected group of patients with ESWL-refractory stones.

### Method

27 uretero-renaloscopies were performed with the use of laser stone disintegration (holmium laser AURIGA, WaveLight). Size, location, and composition of stones were evaluated. Results of procedures, complication, and duration of hospital stay were assessed.

### Results

Within the last twelve months 27 out of 362 patients treated by ESWL necessitated stone disintegration with the holmium laser using in 22 of cases rigid and in five cases flexible uretero-renaloscopies.

### Stone Location

- upper calyx 2
- mid calyx 1
- lower calyx 3
- proximal and mid ureter 17 and 4 cases respectively

In 74 percent of the cases stones were composed to more than 80 percent of ca-oxalate monohydrate. The laser energy ranged from 600 to 1400 mJ with an average number of 2589 pulses.

With 25 patients (93 percent) complete disintegration into fragments < 3mm was achieved. In two cases the partial disintegration of stones (19 and 18 mm) was completed by ESWL. A retro-grade migration of the stone was not observed.

Ureter perforation occurred in two cases. In one of them the lesion was attributed directly to the cutting effect of laser. All complications were healed by stent placement for four until six weeks. Postoperatively one patient became fever over 38,5 °C and was cured with antibiotics. There were no severe intra- or postoperative complication. The average postoperative stay in hospital was 1,8 days.

### Conclusions

The holmium laser appears to be an effective and safe tool for endoscopic treatment of stones resistant to ESWL shock wave therapy. Taking into account that in 93 percent of cases the sufficient disintegration even of the hardest ca-oxalate monohydrate stones could be achieved within one single session, we would recommend this method for routine clinical use.

Care should be taken to avoid the direct contact of the laser probe with the ureteral tissue.

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