

Extracorporeal Lithotripsy using In Line and On Line fluoroscopy with the Integra Lithotripter

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INTRODUCTION AND OBJECTIVES:

The objective was to evaluate the safety and effectiveness of this new electromagnetic lithotripter by DirexGroup. The aim was to verify whether the vertical orientation of the shockwave source and the On Line/In Line automatic fluoroscopy makes patient positioning fast and reliable.



This is a special and unique architecture as can be seen in Fig.1

This assures the shockwave travels exactly through the fluoroscopy path which is shown on the fluoroscopy screen.

Another aim was to verify whether the vertical short distance between the source and stone, improves the treatment efficiency.

METHODS:

From December 2012 to May 2013, we performed a total of 150 extracorporeal shockwave lithotripsy (ESWL) procedures on 138 patients for renal and ureteral stones, using In Line/On Line fluoroscopy and also ultrasonographic localization.

The stones were localized easily in 91%, and with difficulty in 9%.

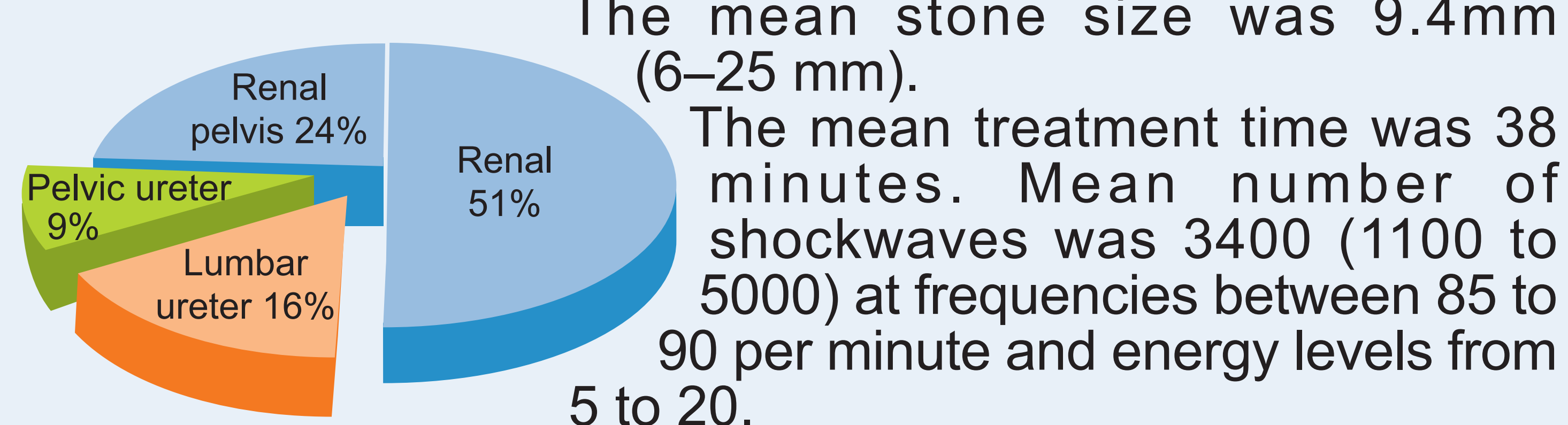
We treated 93 men and 45 women.

Distribution Men/Women



Location of stones was as follows

STONE LOCATION



The mean stone size was 9.4mm (6–25 mm).

The mean treatment time was 38 minutes. Mean number of shockwaves was 3400 (1100 to 5000) at frequencies between 85 to 90 per minute and energy levels from 5 to 20.

ESWL was performed without any local, regional or general anesthesia.

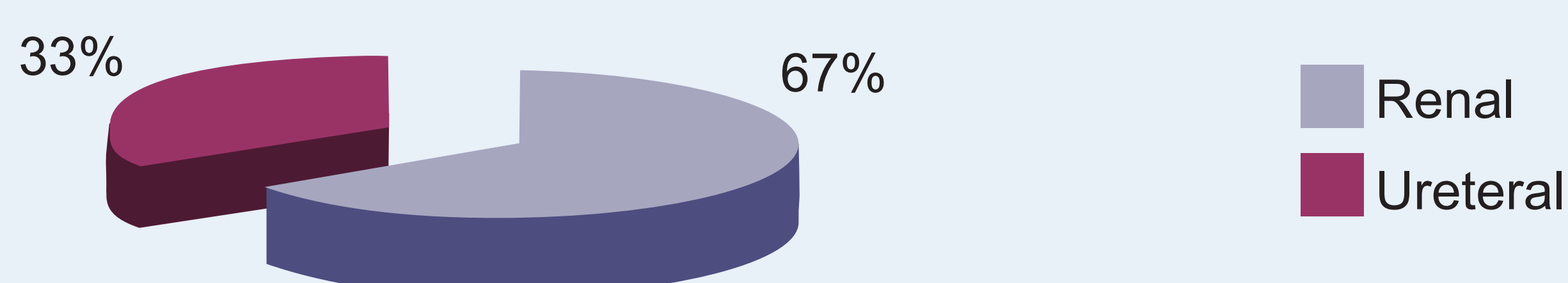
Premedication in 134 patients was: Ketorolac 30mg + Paracetamol 1 gr.

Only 4 patients needed neuroleptoanalgesia while inserting a double J catheter, which was done on the Integra Table. We controlled strictly the arterial blood pressure during the entire treatment to reduce probability of Perirenal Hematoma.

RESULTS:

The followup at 2 months showed the following results: we treated 92 renal stones (66.7%) and 46 ureteral stones (33.3%).

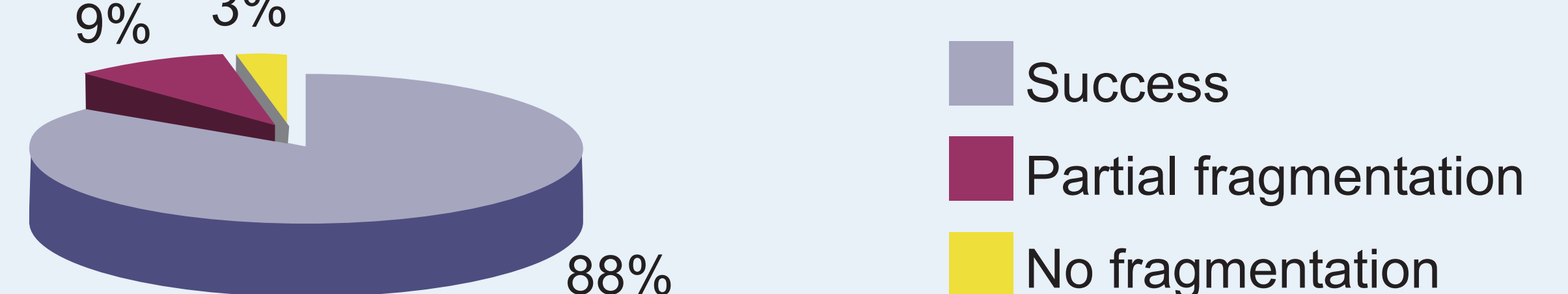
Distribution Renal/Ureteral



RENAL STONES:

Success (stone free or fragment less than 4 mm): 88%
 Partial fragmentation (4–10mm): 9%
 No fragmentation: 3%

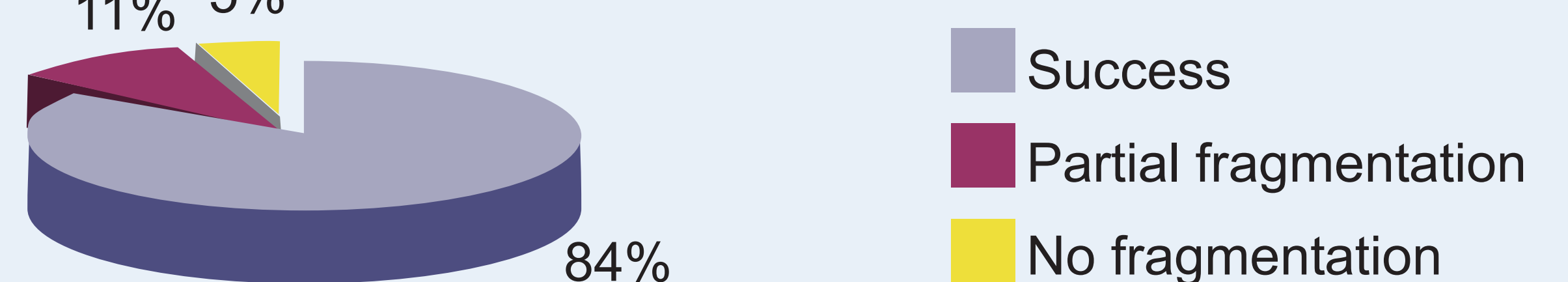
Renal Treatment Success



URETERAL STONES:

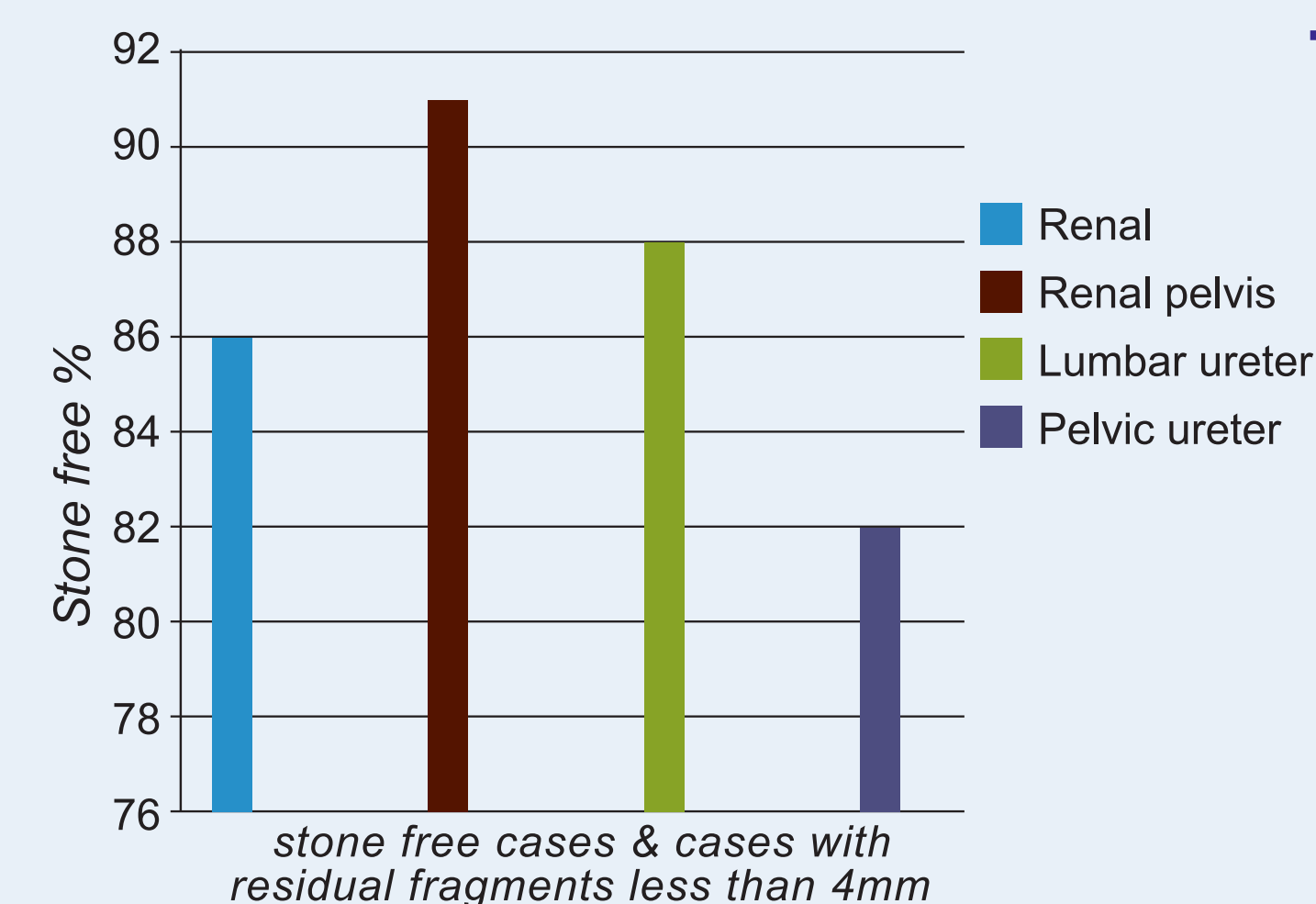
Success: 84%
 Partial fragmentation: 11%
 No fragmentation: 5%

Ureteral Treatment Success



We emphasize specially the success of 82% in low ureter which we perform in prone position. **Average success rate: 87%.** 12 patients (8.7%) underwent 2 sessions.

OVERALL SUCCESS:



BEFORE TREATMENT



AFTER TREATMENT



2500 SHOCK 12- 14 KV

MORBIDITY:

Morbidity was low:

- 2% of the patients suffered ureteral obstruction,
- 2% had fever
- 12% renal colic
- 1 patient (0.72%) had sub capsular hematoma.

Most of the patients had mild hematuria which resolved spontaneously.

No patient suffered renal failure nor changes in its laboratory test.

All of the patients were treated on an outpatient basis.

CONCLUSIONS:

After treating our first 138 patients with the Integra lithotripter, we conclude that the In Line/On Line fluoroscopy leads to fast and reliable localization and the shorter distance to the stone may have contributed to the high success rate of 87% with only 8.7% retreatment.

Therefore the treatment with the Integra lithotripter seems Safe and Effective.

These treatment results, performed without anesthesia and with minimal adverse effects are very encouraging.