

Implementation of an Outpatient Major Surgery Programme in Mini-Percutaneous Nephrolithotomy

Authors: *Ermengol Moretó,¹ Sergi Colom,¹

José María Cuadrado,¹ Núria De Fuentes,¹

Manel Castells,¹ Francesc Vigués¹

1. Bellvitge University Hospital, Hospitalet de Llobregat, Barcelona, Spain

*Correspondence to emoretto@bellvitgehospital.cat

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BACKGROUND AND AIMS

Percutaneous nephrolithotomy (PCNL) has traditionally been associated with a hospital stay of several days. In recent years, some international centres have reported successful outcomes with outpatient PCNL in selected cases, demonstrating its safety.¹⁻⁶ This study presents the authors' experience and results with mini-PCNL in an outpatient surgery setting in a total of 74 cases.

MATERIALS AND METHODS

A specific protocol was developed in collaboration with anaesthesiology and nursing teams, adapted to the characteristics of the procedure, hospital infrastructure, and target population. From April 2021–December 2024, a total of 74 patients eligible for mini-PCNL or anterograde ureteroscopy meeting inclusion criteria were recruited. Exclusion criteria included age >75 years, unstable American Society of Anesthesiologists (ASA) Physical Status (PS) III or IV, non-steroidal anti-inflammatory drugs allergy, coagulation disorders, untreated positive urine cultures, and the presence of encrusted or calcified ureteral stents. A retrospective analysis was performed on demographic data, perioperative variables, complications, need for re-evaluation or re-intervention, and stone-free rate.

RESULTS

A total of 74 patients underwent surgery, with a median age of 59 years: 42 males (56.7%) and 32 females (43.2%). The median stone size was 15 mm (range: 10–30 mm), predominantly located in the renal pelvis (39.2%), followed by the lower calyx (29.7%), middle calyx (12.2%), upper ureter (6.8%), and upper calyx (5.4%). Single stones were treated in 54.0% of cases, two stones in 37.8% of cases, and three stones in 8.1% of cases. A single percutaneous access was used in 98% of cases (one case required dual access). The access tract sizes were 14 Ch (56%), 16 Ch (34%), and 21 Ch (10%). All patients were positioned in the Galdakao-modified supine position. Tract dilation was performed using Alken telescopic dilators for 14 Ch access or one-shot dilators for 17 and 21 Ch access. Lithotripsy was performed using a Holmium laser in 97% of cases, with a Thulium laser used in two patients.

The median operative time was 80 minutes (interquartile range: 61–100), with no intraoperative complications. A ureteral JJ stent was placed in 98% of cases, while one patient required a nephrostomy tube due to ureteral stricture pending reconstructive surgery. Out of a total of 74 patients, 68 patients (92%) were discharged home on the same day as an outpatient surgery, after a 6–8 hour observation period. The remaining six patients were hospitalised: four for inadequate pain control, one for dizziness, and one for haematuria, all classified as Clavien-Dindo I and discharged within 24 hours postoperatively. One patient presented with haematuria 10 days postoperatively without requiring transfusion or angioembolisation. Two patients consulted due to JJ stent-related discomfort, while another two required hospitalisations due to fever. The median time to JJ stent removal was 15 days. The overall stone-free rate was 79%, with four cases (6%) requiring re-intervention via retrograde intrarenal surgery or extracorporeal shock wave lithotripsy for residual stone fragments.

CONCLUSION

The authors' experience with mini-PCNL in an outpatient setting demonstrates favourable safety and patient satisfaction outcomes in selected cases, with satisfactory surgical results. These findings encourage further implementation of the outpatient surgery programme in the authors' centre.

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