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# Ultrasound-guided renal puncture and tract dilatation versus fluoroscopy-guided percutaneous nephrolithotomy (PCNL) - radiation and safety

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**Institutions:**

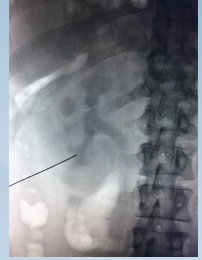
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**Objective:**

- To compare the radiation dosage and time for ultrasound-guided puncture with fluoroscopy-guided puncture, and their safety profile

**Patients & Methods:**

- Review of perioperative data in 2024 in a single centre
- 2 different puncture techniques
  - Fluoroscopy-guided puncture and dilatation up to Fr24
  - Ultrasound-guided puncture with Fr18 tract dilation -> use of fluoroscopy at the end to check for residual stones
- Primary outcome:** Radiation dosage and time
- Secondary outcomes:** operation time, embolization, transfusion rate, hemoglobin drop, postoperative fever  $\geq 38^{\circ}\text{C}$ , urosepsis, ICU admission, overall complication, length of stay and immediate stone-free rate



**Results:**

- 134 PCNL performed, 12 cases excluded (lack of data of radiation exposure)

Outcomes	USG-guided puncture 79 (65%)	Fluoroscopy-guided puncture 43 (35%)	
Median radiation dosage	0.0285 mGym2 IQR 0.0143-0.0778	0.7024 mGym2 IQR 0.3724-1.18153	p < 0.001
Median radiation time	15 seconds IQR 9-29	343 seconds IQR 236-581	p < 0.001
Operation time	87.4 ± 40.9 minutes	101.2 ± 40.4 minutes	p = 0.969
Transfusion rate	3.8%	11.6%	p = 0.095
Hemoglobin drop	0.27 g/dL	0.57 g/dL	p = 0.332
Postoperative fever	13.9%	16.7%	p = 0.687
Urosepsis	15.2%	14.3%	p = 0.894
Embolization rate	2.5%	2.3%	p = 0.944
ICU admission rate	8.9%	2.3%	p = 0.14
Clavien-Dindo grade 2 or above complications	17.8%	19.1%	p = 0.066
Median length of stay	1 day	4 days	
Immediate stone-free rate	76.7%	57.9%	p = 0.038

**Conclusion:** Ultrasound-guided renal puncture -> lower radiation, comparable safety profile