# Comparative Analysis of CT-Guided vs Fluoroscopic-Guided Bone Marrow Biopsies: Assessment of Radiation Exposure, Procedure Time, and Sampling Adequacy

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## Background

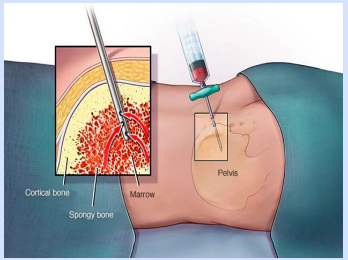
- To evaluate the effectiveness of CT-guided versus fluoroscopic-guided bone marrow biopsies (BMB) by comparing radiation exposure, procedure time, and sampling adequacy to determine the most safe and effective method.

## Methods

- Retrospective study of 84 patients who underwent CT- and fluoro-guided BMB at a single institution from January to August 2024.
- Radiation exposure was documented with intraprocedural Kerma and Dose Area Products, and total procedure times were calculated.
- Post-biopsy surgical pathology reports were analyzed to determine adequate diagnostic yield.
- Statistical analysis performed using Fisher's exact and student t-test to compare procedural outcomes.

## Results

- 59 fluoroscopic-guided and 25 CT-guided BMB were included.
- Mean radiation dose for fluoro-guided biopsies (311.6 ± 548.9 Gy-cm$^2$) was significantly lower than that of CT-guided biopsies (714.9 ± 456.17 Gy-cm$^2$, $p = 0.002$).
- Adequate diagnostic yield for fluoroscopic-guided BMB (72.4%) and CT-guided BMB (66.7%) were similar ($p = 0.74$).
- Mean procedural time was 18.2 ± 7.4 minutes for fluoro-guided BMB and 31.7 ± 16.8 minutes for CT-guided BMB ($p < 0.001$).
- Little to no correlation exists between patient age or BMI with radiation exposure.




## Conclusion

- Patients undergoing fluoroscopic-guided BMB have significantly lower radiation exposure than those undergoing CT-guided BMB.
- CT-guided BMB were associated with longer procedure times and similar diagnostic yield to fluoroscopic-guided BMB.
- A limitation of this study is the relatively low sample size which reduces the power and generalizability of the results.

## References

- Tomasian, Anderanik, et al. "Fluoroscopy-Guided Bone Marrow Aspiration and Biopsy: Technical Note." Diagnostic and Interventional Radiology (Ankara, Turkey), U.S. National Library of Medicine, Mar. 2021, pmc.ncbi.nlm.nih.gov/articles/PMC7963383/.
- Bone Marrow Biopsies: Is Ct, Fluoroscopy, or No Imaging Guidance the Most Cost-Effective Strategy? - Academic Radiology, www.academicradiology.org/article/S1076-6332(24)00019-9/abstract.