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### Ex vivo confocal microscopy performs real-time assessment of renal biopsy in non-neoplastic diseases

Jesús Z Villarreal, J Pérez-Anker, S Puig, G Pellacani, M Solé, J Malveyh, Luis F Quintana, A García-Herrera. *J Nephrol* . 2021 Jun;34(3):689-697. doi: 10.1007/s40620-020-00844-8. Epub 2020 Sep 2.

#### ABSTRACT

**Background:** Ex vivo confocal microscopy is a technique for tissue examination, which generates images of fresh samples with an optical resolution comparable to those obtained by conventional pathology. The objective of this study was to evaluate the feasibility of using ex vivo confocal microscopy in fusion mode (reflectance and fluorescence) and the H&E-like digital staining that is obtained for the analysis of non-neoplastic kidney biopsies. **Methods:** Twenty-four renal samples acquired from autopsies were scanned in a 4th generation ex vivo confocal microscopy device. The imaging process was completed in an average of three minutes. **Results:** Confocal images correlated very well to the corresponding conventional histological sections, both in normal tissue and in chronic lesions (glomerulosclerosis, fibrosis and tubular atrophy). The ex vivo confocal microscopy protocol did not add artifacts to the sample for the ulterior study with light microscopy, nor to the histochemical or immunohistochemical studies. **Conclusion:** The ease and speed of grayscale and fluorescence image acquisition, together with the quality of the H&E-like digitally stained images obtained with this approach, suggest that this technique shows promise for use in clinical nephrology and renal transplantation. **Keywords:** Ex vivo confocal microscopy; Fluorescence confocal microscopy; Fusion confocal microscopy; Reflectance confocal microscopy; Renal biopsy.