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Alexander Randall may have had it right after all

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Several theories exist regarding the pathogenesis of urinary calculi, and the early incipient events leading to calculus formation remain the most controversial. The authors detail a theory by which microscopic Randall plaques (RP) lead to calcium oxalate calculi in idiopathic calcium oxalate stone formers (1). Outlined is a process by which RP form in the basement membrane of the loops of Henle and spread through the interstitium through mineral deposition in an organic matrix, eventually eroding through the urothelium. Once exposed to the urinary milieu, precipitation of minerals and organic substances occurs based on urinary constituents. The process leading to RP formation is not yet fully defined, but one must consider an alternative theory based on a more vascular process. In short, formation may be RP due to a process similar to how atherosclerotic lesions form in arteries as the vasa recta that surround the tubules

have turbulent flow, relative hypoxia, and hyperosmolarity which is an ideal environment for vascular injury and a calcifying process. The early events leading to RP and calcium oxalate stone formation has yet to be determined, but is likely multifactorial and represents an area of research fit for collaboration beyond our fellow urologic colleagues.

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