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The intact nephron hypothesis in reverse: The argument for incremental dialysis

Bricker's "intact nephron hypothesis" argues that as disease progresses, nephrons are lost as units but the surviving nephrons retain their essential functional integrity with tubulo-glomerular feedback. This adaptive process is slow and probably differs by disease states as well as directed for specific solutes or other retained substances. Some adaptations are understood within the basic functioning of the kidney, such as an increase in single nephron glomerular filtration rate, decreased tubular reabsorption, or increased tubular secretion. Later Bricker expanded on the "intact nephron hypothesis" in his "trade-off hypothesis" in which he described some of the adaptations in detail and noted that some adaptations actually carry consequences that may not be advantageous. In other words short term adaptations to accommodate a dysfunction result in adverse effects later. The body of evidence supports both hypotheses. If the progressive loss of kidney function activates compensatory adaptations, then it follows that initiating dialysis may lead to the loss of the stimuli for certain adaptations. The diseased kidney's adaptation to nephron loss, so long in its development, is potentially compromised by sudden dialysis, but may actually remain stimulated when dialysis is gently and incrementally introduced. This might occur in contradistinction to that seen in aggressive salvage dialysis, which may entirely ablate the stimuli for adaptations. In this manner, we can hypothesize the possible mechanism(s) by which incremental dialysis may help preserve residual kidney function. We refer to this concept as the intact nephron hypothesis in reverse.

Biography

Thomas A Golper has been practicing Nephrology since 1978 and since 1999 at Vanderbilt University Medical Center. His career has been committed to the care of dialysis patients and the study of Dialysis Sciences. He is the author of 250 publications and has trained many other academic Nephrologists. He is a Dialysis Editor for *Up To Date*.

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