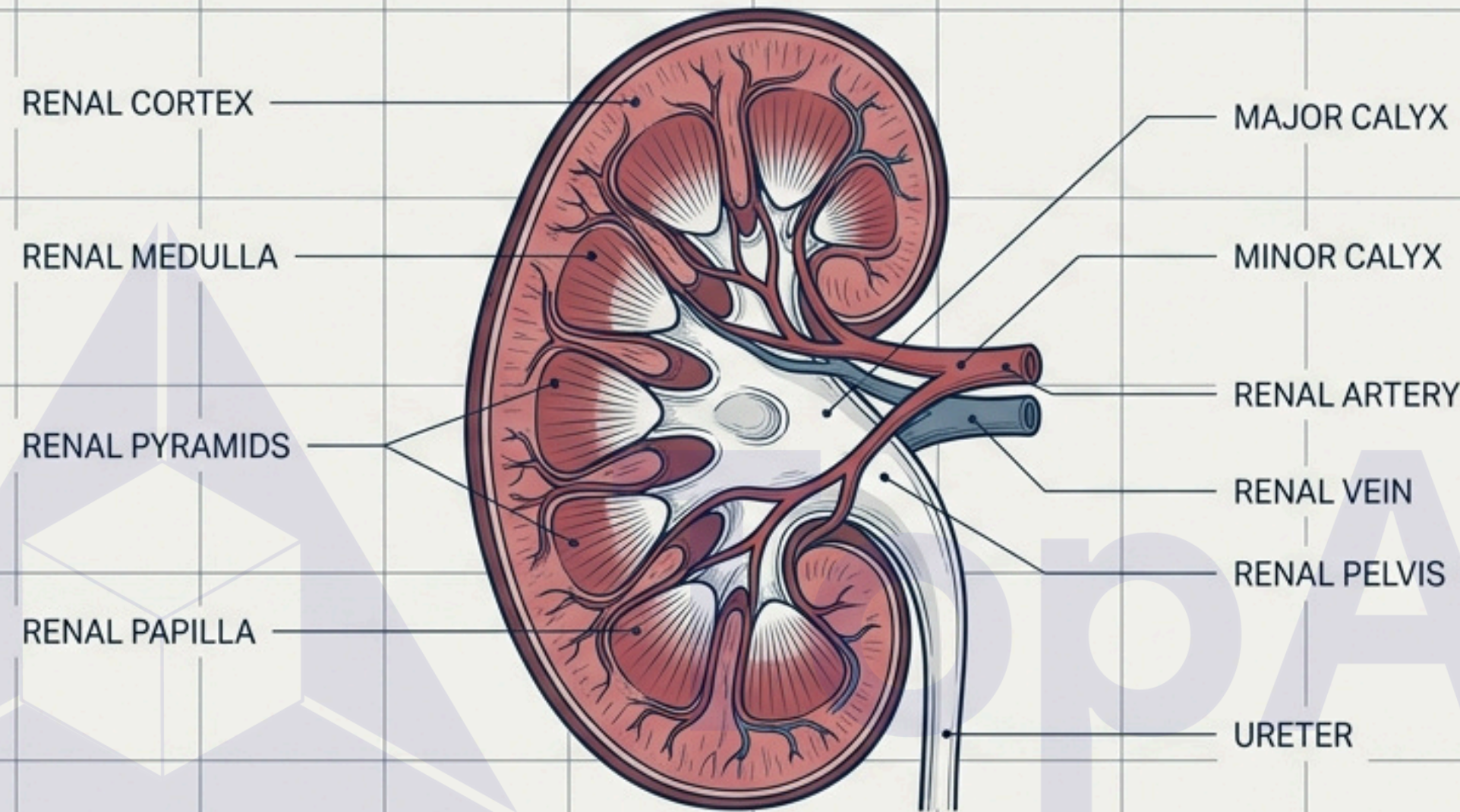
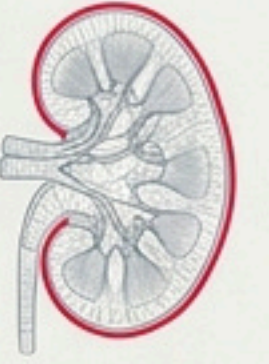




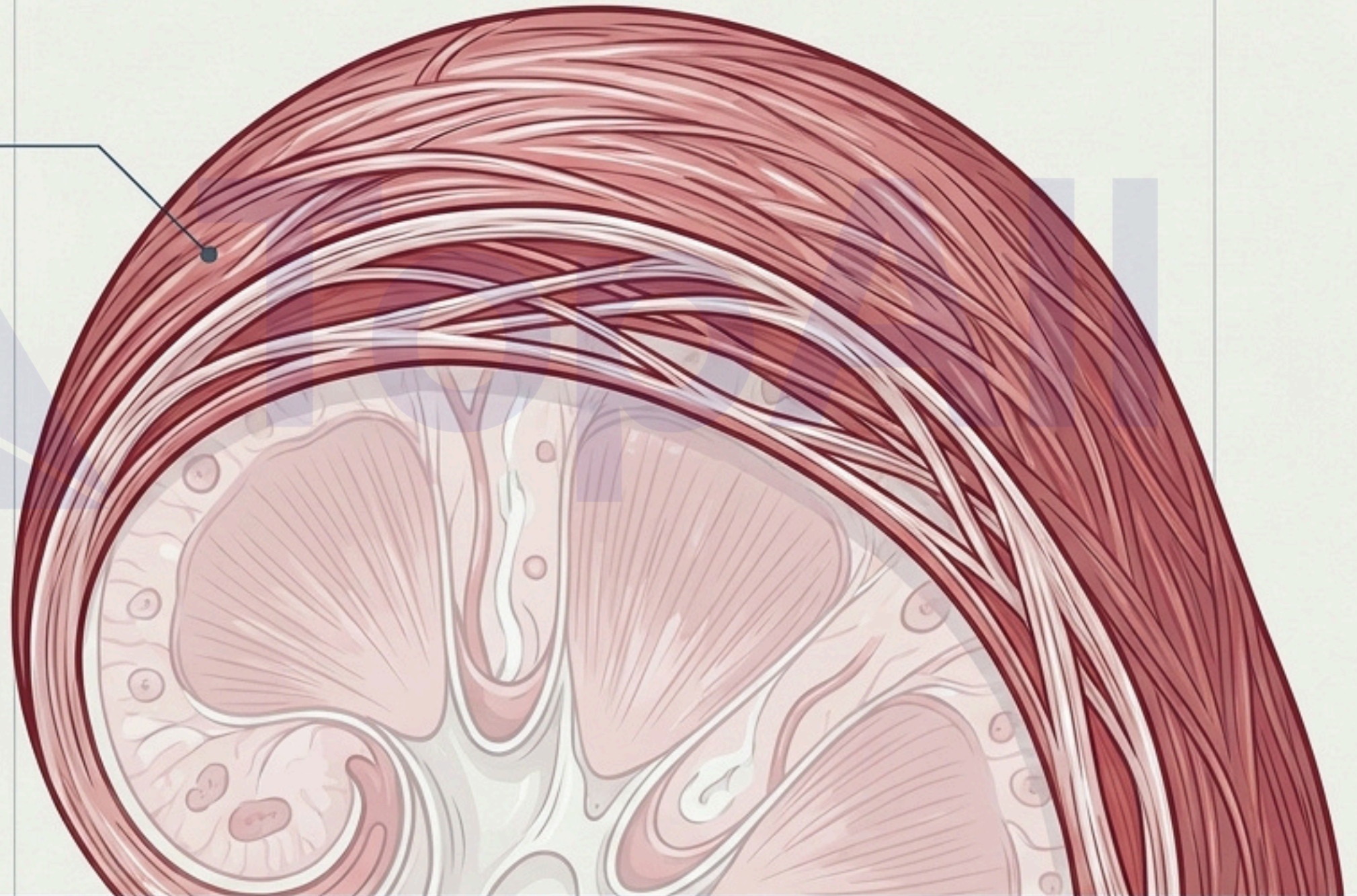
Cortex, Medulla and Pyramids

The Internal Architecture of the Human Kidney



The Tough Capsule

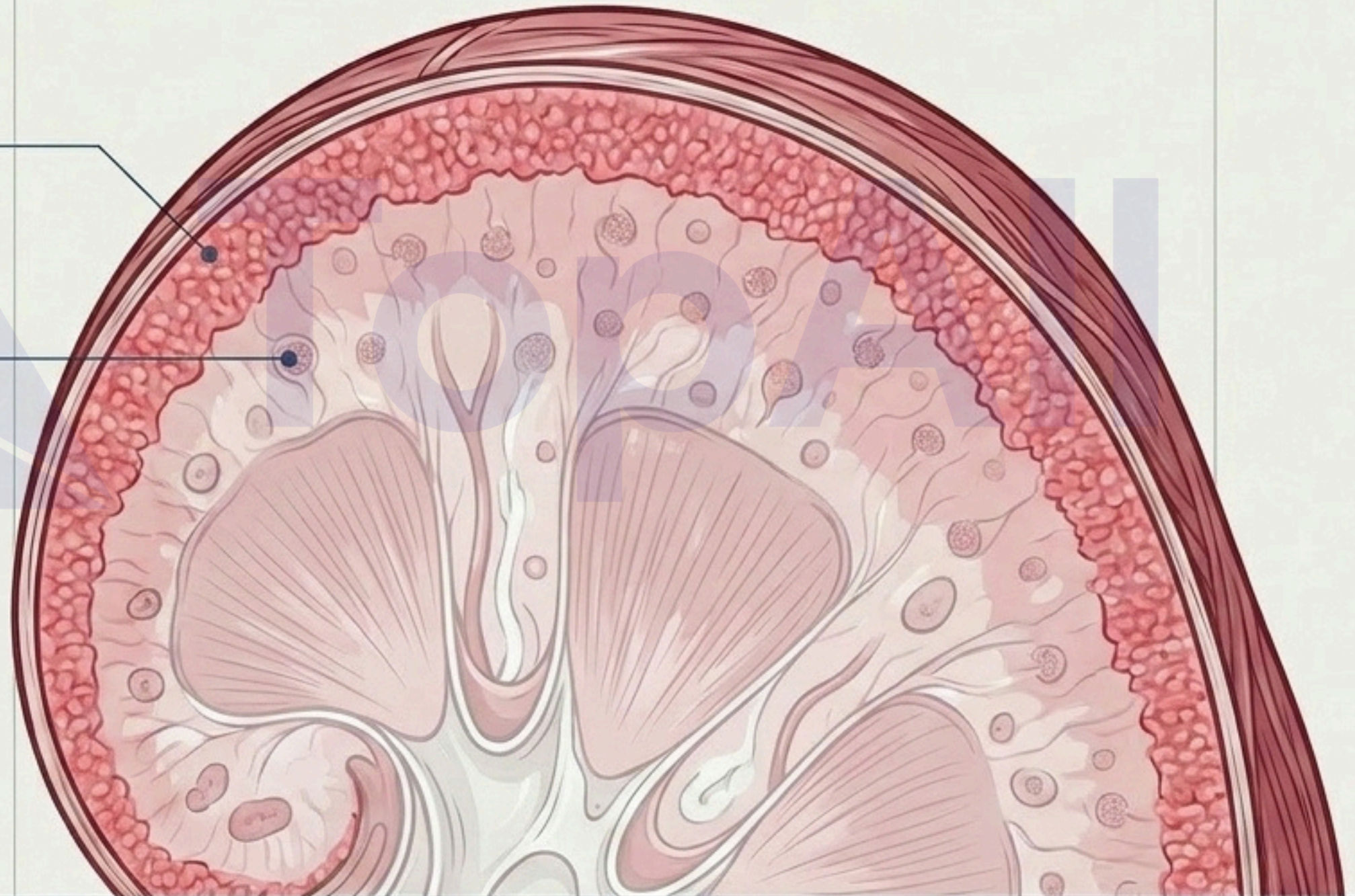
The outermost boundary of the kidney is formed by a tough, fibrous capsule. This resilient layer acts as a structural shield, protecting the delicate internal architecture and maintaining the organ's distinct bean-like shape.





The Outer Cortex

Immediately beneath the capsule lies the cortex. This is a continuous outer zone of tissue. Functionally, it is the primary filtration deck, housing the dense network of Malpighian corpuscles, along with the proximal and distal convoluted tubules (PCT and DCT) of the nephrons.





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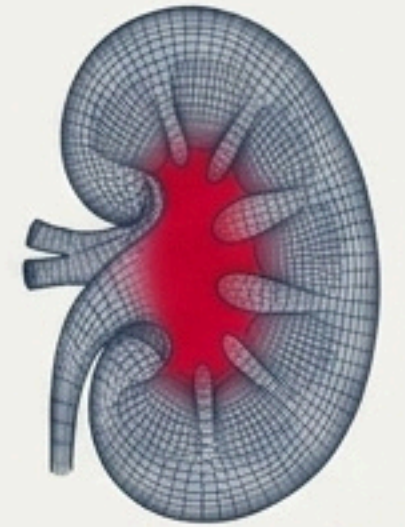
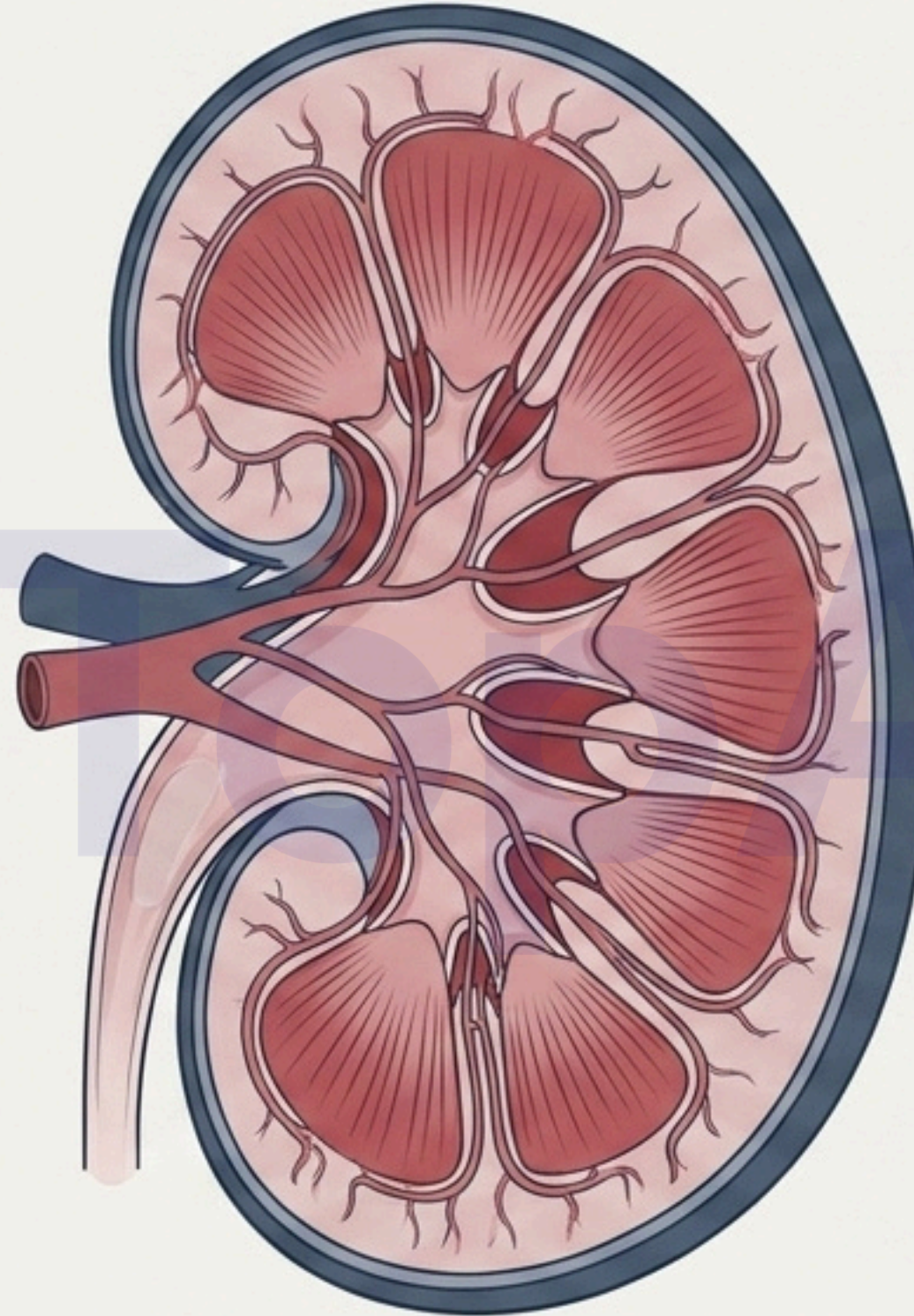
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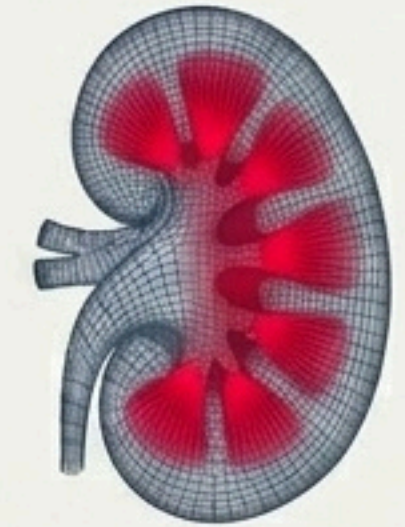
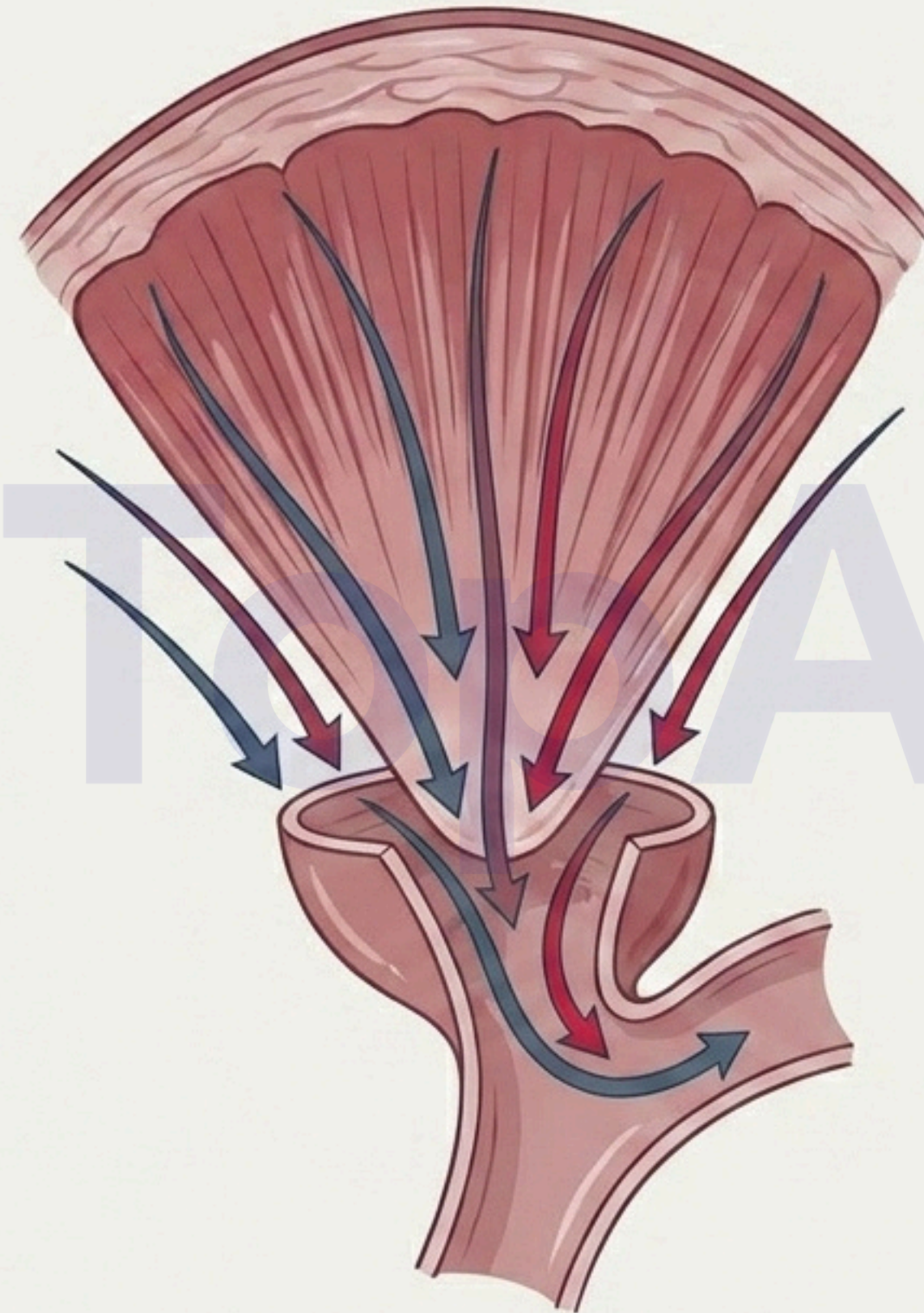
The Inner Medulla

Deep within the kidney is the medulla. Unlike the unbroken layer of the cortex, the medulla is a divided, complex inner zone. It is the site where the long Loops of Henle and vasa recta dip down to concentrate the filtrate.



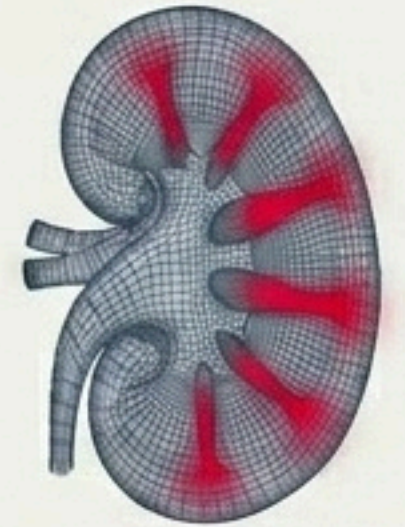
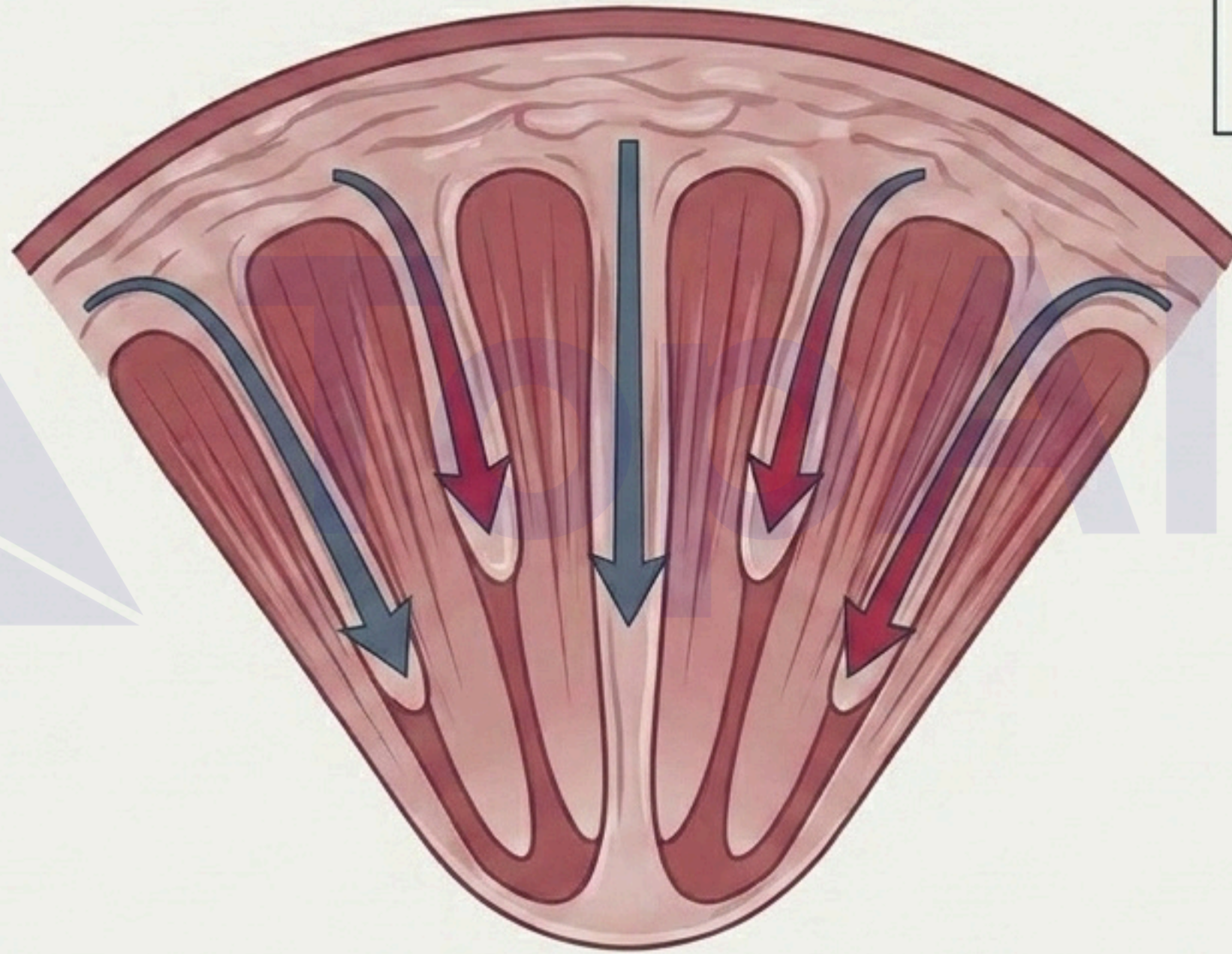
Medullary Pyramids and Calyces

The medulla is divided into distinct conical masses known as medullary pyramids. Their triangular shape is highly functional, acting as biological funnels that channel the newly formed urine down into receiving, cup-like projections called calyces.

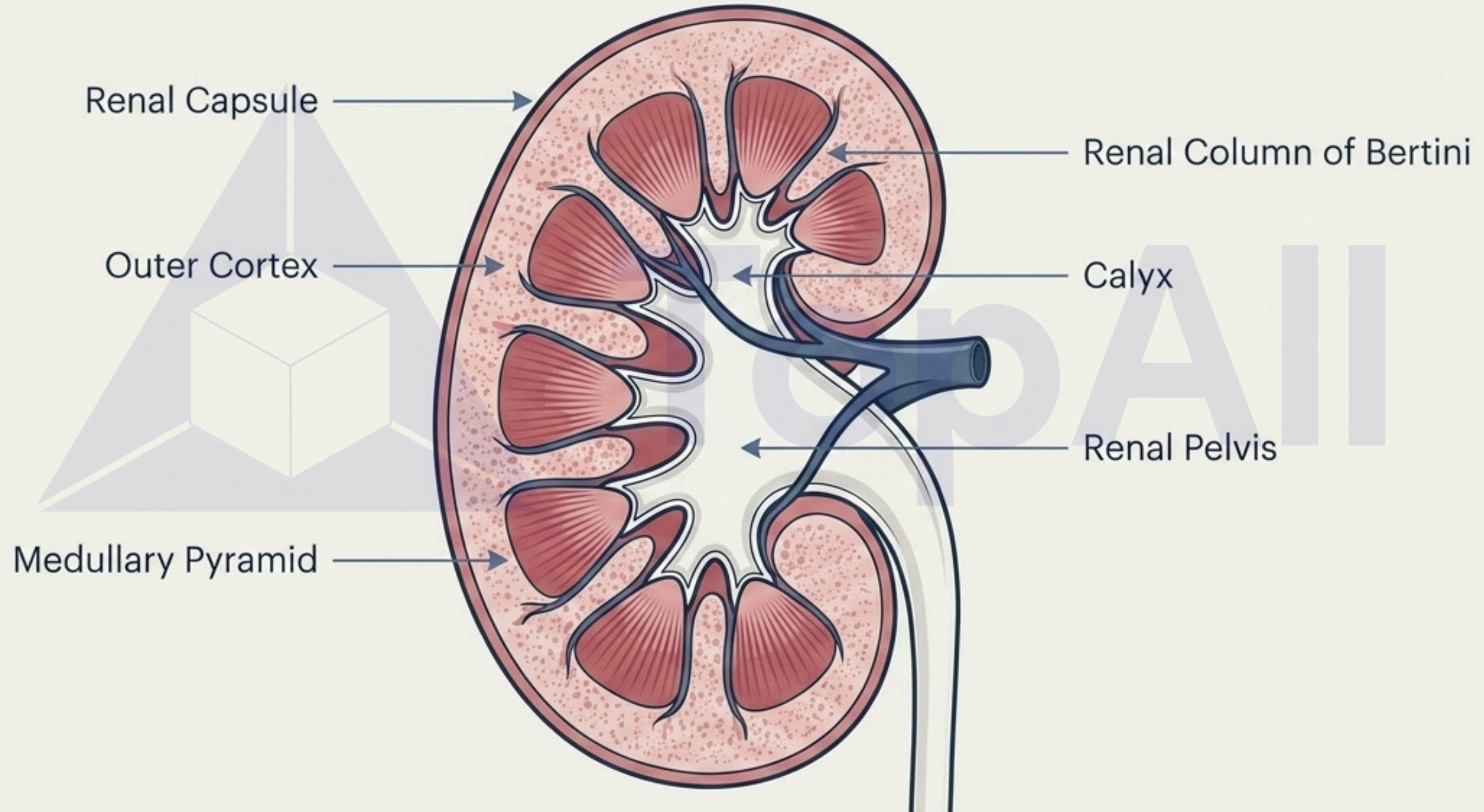


Renal Columns of Bertini

The cortex and medulla are not perfectly isolated rings. The cortical tissue actively extends inward, projecting down between the medullary pyramids. These dividing interstitial struts are known as the Renal Columns, or Columns of Bertini, providing architectural support to the inner zones.



The Complete Architecture



Key Takeaway: Zonal Comparison

Dimensions	Outer Cortex	Inner Medulla
Structure	continuous outer layer	divided into conical masses (pyramids)
Nephron Components	Contains Malpighian corpuscles, PCT, and DCT	Contains Loops of Henle and vasa recta
Osmolarity	Isotonic (approx 300 mOsmolL ⁻¹)	Highly concentrated gradient (up to 1200 mOsmolL ⁻¹)



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