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Volumetric overload shocks in the pathoetiology of the transurethral resection prostatectomy syndrome and acute dilution hyponatremia

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The transurethral prostatectomy syndrome (TURS) is defined as severe vascular hypotension reaction that complicates endoscopic surgery as a result of massive irrigating fluid absorption causing severe acute dilution hyponatremia (HN) of <120 mmol/l. The vascular shock is usually mistaken for one of the recognized shocks and volumetric overload shock type 1 (VOS1) is overlooked making volumetric overload shock type 2 (VOS2) unrecognizable. In adults VOS1 is induced by the infusion of 3.5-5 liters of sodium-free fluids and is known as TURS or HN shock. VOS2 is induced by 12-14 liters of sodium-based fluids and is known as the adult respiratory distress syndrome. The most effective treatment for VOS1 and VOS2 is hypertonic sodium of 5%NaCl or 8.4% sodium bicarbonate. The literature on TURS is reviewed and the underlying pathoetiology is discussed. As Starling's law for the capillary-interstitial fluid transfer, which underlies the principles of fluid therapy, proved wrong an alternative mechanism was found by studying the hydrodynamics of the porous orifice (G) tube akin to capillary. Incorporating the G tube in a chamber (C), representing the interstitial space surrounding a capillary, demonstrated a rapid dynamic magnetic field-like fluid circulation between the C and G tube lumen. The G-C phenomenon is autonomous having both filtration and absorption forces making a true replacement for Starling's law in every tissue and organ of the body.

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