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Testosterone pellet surface area relates to effectiveness more than dose

This study evaluates the relationship between testosterone pellet surface area versus total dose and resultant serum testosterone levels over a three-month period in men undergoing subcutaneous hormone therapy. Traditional paradigms have emphasized total milligram dosing as the primary determinant of therapeutic effect. However, this investigation challenges that assumption by examining the pharmacokinetic impact of pellet surface area on hormone diffusion and bioavailability.

Men presenting with symptomatic hypogonadism and baseline testosterone levels between 350–600 ng/dL were treated with subcutaneous pellets and followed longitudinally. Outcomes demonstrate that increased surface area, independent of total dose, correlates more consistently with sustained therapeutic serum testosterone levels. These findings suggest that tissue interface dynamics and diffusion characteristics play a critical role in hormone delivery efficiency.

The implications are significant: optimizing pellet geometry and placement technique may allow for reduced total dosing while maintaining or improving clinical outcomes. This paradigm shift supports a move toward more precise, physiology-driven hormone replacement strategies, with potential benefits including improved safety, reduced side effects, and enhanced patient compliance in aging male populations.

Biography

Dr. Charles P. Virden, M.D., is a double board-certified plastic surgeon and anti-aging medicine specialist with over 30 years of clinical experience, having treated more than 40,000 patients. He is the CEO of VitalTE Life Sciences and an innovator in hormone therapy delivery, holding multiple patents for medical devices and procedural methods that enhance safety, efficacy, and patient experience. His work focuses on optimizing drug delivery dynamics, including tissue preservation and surface area optimization in pellet therapy. Outside of medicine, he maintains humility through an ongoing, humbling effort to improve his pickleball game.