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## Distal Ligament in Human Glans: A Comparative Study of Penile Architecture

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To elucidate the anatomic distal ligament of the human glans penis and associated clinical implications, we compared the structures of the glans penis and corpora cavernosa in dogs, rats, and humans. From May 2001 to March 2003, gross dissection, microscopic examinations, and stains for elastic fibers and collagen subtypes were made in the penises of 11 adult human male cadavers, 7 dogs, and 5 rats. A distal ligament in the human glans penis replaces the os penis that is present in dogs or rats, also termed the baculum, but retains collagen types I and III as common structural and interlocking components, respectively. The intercavernosal septum is complete, and intracavernosal pillars (ICPs) are abundant in dogs, absent in rats, and moderately developed in humans. A tunica with numerous elastic fibers exists to fulfill the requirements of erectile function in humans but not in dogs or rats, since it is essential for establishing tissue strength to serve as a buttress. We may conclude that in dogs and rats, the strong os penis is designed for ready intromission and is associated with a pair of well-developed nonelastic corpora to serve as a buttress for the os penis. These structures are necessary for the rigorous coitus observed in dogs. The less compliant corpus cavernosum is suitable for the flipping action observed in a mating male rat. These specific anatomic designs may provide explanations for the individual requirements for the specific physiologic functions that differ from species to species. Although there is no os in the human glans, a strong equivalent distal ligament is arranged centrally and acts as a supporting trunk for the glans penis. Without this important structure, the glans could be too weak to bear the buckling pressure generated during coitus and too limber to serve as a patent passage for ejaculation, and it could be too difficult to transmit the intracavernosal pressure surge along the entire penis during ejaculation. Given the common histologic nature of the distal ligament, which is associated with the tunica albuginea and serves a similar function as the os penis observed in the dog and the rat, one may ask whether the healing process of a tunica may take as long as that

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required in a bony structure. Further research is required to answer this question.

Key words: Baculum, glans penis, dog, rat, human being

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