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The Ratio of Second to Fourth Digit Length in Azoospermic Males Undergoing Surgical Sperm Retrieval: Predictive Value for Sperm Retrieval and on Subsequent Fertilization and Pregnancy Rates in IVF/ICSI Cycles

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The differentiation of the urogenital system and the appendicular skeleton in vertebrates is under the control of Homeobox (*Hox*) genes. It has been shown that this common control of digit and gonad differentiation has connected the pattern of digit formation to spermatogenesis and prenatal hormone concentrations in males. We wished to establish whether digit patterns, particularly the ratio between the lengths of the second and fourth digit in males (2D : 4D), was related to spermatogenesis and, more specifically, the presence of spermatozoa in testicular biopsies from azoospermic men undergoing surgical sperm retrieval. Forty-four men were recruited, of whom 16 were diagnosed with nonobstructive azoospermia and 4 with congenital bilateral absence of the vas deferens, and 24 previously fertile men were azoospermic after previous vasectomy. Our results show that men with previous fertility or of an acquired form of azoospermia had significantly lower 2D : 4D ratios than men with nonobstructive azoospermia. In nonobstructive azoospermia, there was a significantly lower 2D : 4D ratio on the left side in men who had successful retrieval than those with unsuccessful retrieval. For these men who had a successful retrieval, none had a 2D : 4D ratio more than 1 on the left side, whereas 4 of 7 men in whom sperm was not found had a 2D : 4D ratio greater than 1. On successful sperm retrieval, subsequent fertilization and clinical pregnancy rates were unaffected by 2D : 4D ratios.

Key words: Hox genes, finger length, azoospermia, surgical sperm retrieval

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