

## CORRESPONDENCE

# Re: Sensory innervation of the human male prepuce— Meissner's corpuscles predominate

We read with interest the recent paper by Garcia-Mesa et al. (2021), which raises some interesting questions about the innervation of the prepuce. Bazett et al. (1932) found only two Meissner's capsules per square centimetre, which they considered insufficient to account for their measured fine-touch sensitivity of the prepuce. However, they were studying foreskins removed in infant circumcisions, while measuring touch sensitivity in adults. What Garcia-Mesa et al have shown is that the density of Meissner's corpuscles is highly dynamic, being low in infancy and reaching a peak in adolescence, then declining.


These results parallel those of Jiang et al. (2006) (Figure 1). Although the actual numbers are not a close match, the error bars in Garcia-Mesa et al. (2021) are large and the trend is the same. The decline in older years is substantial. (Note that circumcisions are not normally carried out before age 3 years in China so there are no neonatal figures.)

Also of interest is that Jiang et al. found differences between phimotic and redundant prepuces. In particular, the post-adolescent decline in the density of Meissner's corpuscles *did not happen in patients suffering from phimosis*. This leads us to propose a biological explanation for this observation. The juvenile penis has no sexual function, but this changes with the onset of adolescence. The increase in touch sensitivity at this time induces the teenager to pay more attention to his penis, in preparation for intercourse. Once

he has overcome juvenile phimosis the biological imperative is for the focus of his attention to shift to the glans penis, and the tactile sensitivity of the prepuce therefore decreases. Note that among primates, juvenile phimosis is unique to humans (Cox, 1995) so this must be a specifically human adaptation.

**CONFLICT OF INTEREST**

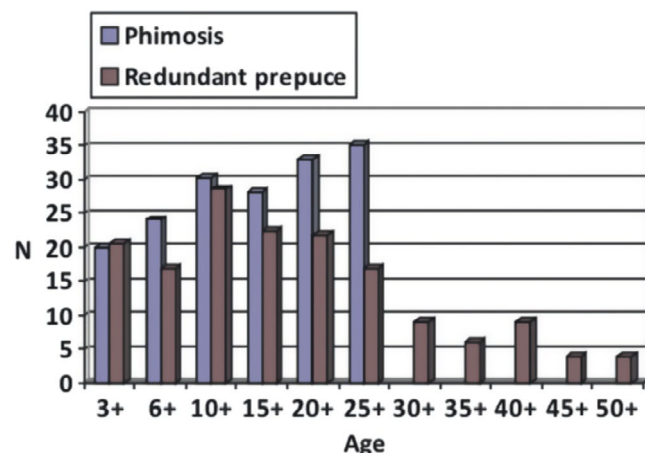
The authors are Members of the Circumcision Academy of Australia, a not-for-profit, government registered, medical society that provides accurate, evidence-based information on male circumcision to parents, practitioners and others, as well as contact details of doctors who perform the procedure in Australia and New Zealand.

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**FIGURE 1** Density of Meissner's corpuscles in the prepuce as a function of age in patients circumcised for phimosis and redundant prepuce (Graph from Cox et al., 2015). Data derived from Jiang et al. (2006)

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- Bazett, H.C., McGlone, B., Williams, R.G. & Lufkin, H.M. (1932) Depth, distribution and probable identification in the prepuce of sensory end-organs concerned in sensations of temperature and touch; thermometric conductivity. *Archives of Neurology & Psychiatry*, 27(3), 489–517. Available from: <https://doi.org/10.1001/archneurpsyc/1932/02230150003001>
- Cox, G. (1995) De virginibus puerisque - the function of the human foreskin considered from an evolutionary perspective. *Medical Hypotheses*, 45, 617–621. Available from: [https://doi.org/10.1016/0306-9877\(95\)90248-1](https://doi.org/10.1016/0306-9877(95)90248-1)
- Cox, G., Krieger, J.N. & Morris, B.J. (2015) Histological correlates of penile sexual sensation: does circumcision make a difference? *Sexual Medicine*, 2, 76–85. Available from: <https://doi.org/10.1002/sm2.67>

Garcia-Mesa, Y., Garcia-Piqueras, J., Cobo, R., Martin-Cruces, J., Suazo, I., Garcia-Suarez, O. et al. (2021) Sensory innervation of the human male prepuce – Meissner's corpuscles predominate. *Journal of Anatomy*, 239(4), 892–902. Available from: <https://doi.org/10.1111/joa.13481>

Jiang, H.-Y., Guo, D., Tan, M.-B., Xu, S.-M. & Wang, G.-X. (2006) Observations on Meissner's corpuscle in prepuces of different ages. *Chinese Journal of Urology*, 27, 707–709.