

ABSTRACT

It has been hypothesized that increased HIV acquisition in uncircumcised men may relate to a more thinly keratinized inner foreskin. However, published data are contradictory and potentially confounded by medical indications for circumcision. We tested the hypothesis that the inner foreskin was more thinly keratinized than the outer foreskin using tissues from 19 healthy, HIV-uninfected men undergoing routine prophylactic circumcision in Rakai, Uganda. Sections from 3 foreskin anatomic sites (inner, outer, and frenar band) were snap-frozen separately. Two independent laboratories each separately stained, imaged, and measured keratin thicknesses in a blinded fashion. There was no significant difference in keratin thickness between the inner (mean=14.67±7.48 μm) and outer (mean=13.30±8.49 μm) foreskin, or between the inner foreskin and the frenar band (mean=16.91±12.42 μm). While the frenar band showed the greatest intra-individual heterogeneity in keratin thickness, there was substantial inter-individual variation seen in all regions. Measurements made by the two laboratories showed high correlation ($r=0.741$, 95% CI, 0.533-0.864). We conclude that, despite inter- and intra-individual variability, keratin thickness was similar in the inner and outer foreskin of healthy Ugandan men, and that reduced keratin thickness is not likely to make the inner foreskin more susceptible to HIV acquisition.