Does Circumcision Make a Difference to the Sexual Experience of Gay Men? Findings from the Health in Men (HIM) Cohort

Limin Mao, MD, PhD,* David J. Templeton, MBChB,†‡ June Crawford, PhD,* John Imrie, PhD,*
Garrett P. Prestage, PhD,† Andrew E. Grulich, MBBS, PhD,† Basil Donovan, MBBS, MD,†
John M. Kaldor, PhD,† and Susan C. Kippax, PhD*

*National Centre in HIV Social Research, University of New South Wales, Sydney, Australia; †National Centre in HIV
Epidemiology and Clinical Research, University of New South Wales, Sydney, Australia; ‡Sexual Health Service, Sydney
South West Area Health Service, Sydney, Australia

A B S T R A C T

Introduction. The relevance of circumcision in preventing male-to-male sexual transmission of HIV is poorly understood, in particular because any potential beneficial effect could be diminished by the impact of circumcision on sexual behavior.
Aim. We examined the impact of circumcision on sexual experience.
Methods. Univariate and multivariate logistic regressions were performed on data from 1,426 HIV-negative homosexually active men.
Main Outcome Measures. We compared the sexual behaviors and preferences of circumcised with uncircumcised men, and men who were circumcised at infancy with those who were circumcised after infancy.
Results. Overall, 66% of men (N = 939) in the cohort were circumcised. After adjusting for age and ethnicity, we found no differences between circumcised and uncircumcised men in any insertive or receptive anal intercourse, difficulty using condoms, or sexual difficulties (e.g., loss of libido). Among the circumcised men, we compared those circumcised at infancy (N = 854) with those circumcised after infancy (N = 81). The majority cited phimosis (i.e., an inability to fully retract the foreskin) and parents' decision as the main reasons for circumcision after infancy. After adjusting for age and ethnicity, the men circumcised after infancy were more likely to practice any receptive anal sex (88% vs. 75%, $P < 0.05$) and to experience erection difficulties (52% vs. 47%, $P < 0.05$), but less likely to practice any insertive anal sex (79% vs. 87%, $P < 0.05$) and to experience premature ejaculation (15% vs. 23%, $P < 0.05$) than those circumcised at infancy.
Conclusions. Our data suggest that overall circumcision status does not affect the HIV-negative gay men's anal sexual behaviors, experience of condom use, or likelihood of sexual difficulties. However, there is some suggestion of differences in sexual practices and preferences among circumcised gay men depending on the age at circumcision. In particular, gay men circumcised later are more likely to engage in and prefer receptive anal intercourse. **Mao L, Templeton DJ, Crawford J, Imrie J, Prestage GP, Grulich AE, Donovan B, Kaldor JM, and Kippax SC. Does circumcision make a difference to the sexual experience of gay men? Findings from the health in men (HIM) cohort. J Sex Med 2008;5:2557–2561.**

Key Words. Male Circumcision; Gay Men; Sexual Health

Introduction

Data from a number of observational studies and three recent randomized trials in Africa have provided compelling evidence on the efficacy of male circumcision in reducing HIV transmis-

sion through female-to-male vaginal intercourse [1–4]. However, its effectiveness in the real world is yet to be tested, and policy makers need to consider all of the consequences of male circumcision at the individual and societal level [5,6]. If circumcision has a negative impact on sexual behavior, the

uptake of circumcision is likely to be small. Some studies documented that among both heterosexual and homosexual men, regardless of age at circumcision, male circumcision could have adverse sexual and psychological consequences [7–10].

Aim and Main Outcome Measures

As gay men commonly engage in both insertive and receptive anal intercourse [11], they provide a particularly appropriate group to study the role of circumcision on sexual experience. We hypothesized that penile insensitivity or erectile dysfunction or problems with condoms resulting from circumcision would lead gay men to preferentially assume the receptive role in anal intercourse.

We compared (i) circumcised gay men with uncircumcised gay men, and (ii) gay men who circumcised at infancy with gay men who circumcised after infancy in terms of a number of anal intercourse practices (insertive vs. receptive, protected vs. unprotected); experience of condom use (breakage or slippage, and erection difficulties associated with condom use); and sexual difficulties (other erection difficulties, premature ejaculation, or sexual dissatisfaction).

Methods and Data Analyses

The Health in Men (HIM) study was an open community-derived cohort of HIV-negative homosexually active men who underwent a biannual structured interview (up to 2 hours) and annual testing for HIV and other infections. This report focuses on baseline data for men recruited between 2001 and 2004. After excluding one man who reported a reconstructed foreskin, the remaining 1,426 men were categorized as either circumcised (further divided into those who were circumcised at infancy or those who were circumcised after infancy) or uncircumcised, based on self-report. For the purpose of this article, all dependent variables except for age were dichotomized. Because of the declining rates of male circumcision in Australia and the strong association of circumcision with ethnicity [12], multiple logistic regressions were adjusted for age and ethnicity.

Results

Of the 1,426 men, 939 (65.8%) were circumcised, mostly as infants (N = 854, 90.9%). Compared with the uncircumcised men, the circumcised men

were significantly older (mean 38 vs. 34 years) and more likely to have an Anglo-Australian ethnic background [12]. Circumcised and uncircumcised men did not differ significantly in education, occupation, level of gay social engagement (data not shown), or reported number of regular (median = 1) and casual (median = 6) male sexual partners in the 6 months prior to the interview. Nor did these two groups differ significantly in religious affiliation, although all 17 men of Jewish or Muslim background were circumcised [12].

Among men who reported any anal intercourse in the 6-month period (N = 1307, 91.7%), we examined whether they engaged in an insertive-only, a receptive-only, or both positions (versatile). There was no difference between men who were circumcised (N = 862, of which 13.7% were receptive-only position, 25.9% were insertive-only position, and 60.4% were versatile) or uncircumcised (N = 445, of which 12.8% were receptive-only position, 24.3% were insertive-only position, and 62.9% were versatile).

Based on the 1,426 men, after adjustment for age and ethnicity, there were no significant relationships between circumcision status and any of the outcome variables that assessed the experience of anal intercourse (Table 1).

In further analyses, we compared the 854 men who reported circumcision at infancy with the 81 men who reported circumcision after infancy (four cases were further excluded because of missing data). The men in the latter group were significantly younger (mean 34 vs. 38 years, $P < 0.001$) and less likely to have an Anglo-Australian background ($P < 0.001$). At the univariate level, circumcision after infancy was not associated with religious affiliation, or in this particular gay cohort, with genital piercing.

We also examined the reported practices of engaging in an insertive-only, a receptive-only, or both positions among those who had any anal intercourse in the previous 6-month period (N = 859, 91.9%). Compared with men who were circumcised at infancy (N = 783), men circumcised later (N = 76) were more likely to be receptive-only (26.3% vs. 12.5%) and less likely to be insertive-only during anal intercourse (14.5% vs. 27.1%, $P = 0.001$). We then examined the nominated preferences among men who preferred an insertive, a receptive, or versatile roles during anal intercourse (N = 887, 93.1%). Those circumcised after infancy (N = 75) were more likely to prefer a receptive role (32.0% vs. 19.1%) and less likely to prefer an insertive role during anal intercourse

Table 1 Anal intercourse, experience of condom use, and sexual difficulties in the 6 months prior to baseline survey among circumcised and uncircumcised gay men (N = 1,426)

	Circumcised (N = 939) n (%)	Uncircumcised (N = 487) n (%)	OR (95% CI)	AOR* (95% CI)	P
Any insertive anal intercourse	807 (85.9)	407 (83.6)	1.20 (0.89–1.63)	1.30 (0.95–1.78)	0.11
Any receptive anal intercourse	714 (76.0)	374 (76.8)	0.96 (0.74–1.24)	1.12 (0.85–1.46)	0.43
Always used condoms for insertive anal intercourse	95 (10.1)	45 (9.2)	1.11 (0.76–1.61)	1.09 (0.74–1.60)	0.67
Any unprotected receptive anal intercourse	447 (47.6)	232 (47.6)	1.00 (0.80–1.24)	1.07 (0.85–1.35)	0.54
Difficulties associated with condom use (condom breakage/slippage, unable to maintain an erection)	488 (52.0)	245 (50.3)	1.07 (0.86–1.33)	1.01 (0.80–1.26)	0.96
Other erection difficulties	445 (47.4)	191 (39.2)	1.40 (1.12–1.74)[†]	1.20 (0.95–1.52)	0.12
Premature ejaculation	207 (22.1)	97 (19.9)	1.14 (0.87–1.49)	1.22 (0.92–1.61)	0.17
Sexual dissatisfaction (e.g., loss of libido)	444 (47.3)	219 (45.0)	1.10 (0.88–1.37)	1.03 (0.82–1.29)	0.84

Items are not mutually exclusive.
*Adjusted for age and ethnicity.
[†]P = 0.003 (the only significant comparison at the univariate level).
OR = odds ratio; AOR = adjusted odds ratio; CI = confidence intervals.

(22.7% vs. 32.1%, P = 0.02) than those circumcised at infancy (N = 812).

Based on the 935 men, after controlling for age and ethnicity, men reporting circumcision after infancy were more likely to have any receptive anal intercourse and less likely to have any insertive anal intercourse than men reporting circumcision at infancy. The men in the former group were also more likely to experience erection difficulties and less likely to experience premature ejaculation (Table 2).

At a supplementary follow-up interview, we obtained more details with regard to reasons for circumcision from 40 (49.4%) out of the 81 men who were circumcised after infancy. Of the 40 men, 15 (37.5%) were circumcised at or after the age of 16. Based on a multiple-choice question, the most cited reasons for circumcision after infancy were phimosis (i.e., an inability to fully retract the

foreskin, N = 17) or parents' decision (N = 16). Eight (20.0%) out of the 40 men reported complications after circumcision such as penile pain, major bend, or heavy scarring. A subanalysis excluding these eight men produced similar results to those shown in Table 2 (data not shown).

Discussion

Current literature on changes in sexual practices or function after adult male circumcision is scarce, inconclusive, and almost exclusively based on relatively small samples of heterosexual men only [8,9]. Our data suggest the possibility that circumcision after infancy has complications that could affect sexual behaviors. Alternatively, it is likely that the reasons for such a procedure could be an important explanatory variable. Apart from cultural or religious reasons, one of the most frequent

Table 2 Anal intercourse, experience of condom use, and sexual difficulties in the 6 months prior to baseline survey among gay men who were circumcised at infancy and after infancy (N = 935)

	After infancy (N = 81) n (%)	At infancy (N = 854) n (%)	OR (95% CI)	AOR* (95% CI)	P
Any insertive anal intercourse	64 (79.0)	740 (86.7)	0.58 (0.33–1.03)	0.51 (0.28–0.94)	0.03
Any receptive anal intercourse	71 (87.7)	640 (74.9)	2.37 (1.20–4.69)[†]	2.12 (1.05–4.27)	0.04
Always used condoms for insertive anal intercourse	7 (8.6)	88 (10.3)	0.82 (0.37–1.84)	0.86 (0.38–1.99)	0.73
Any unprotected receptive anal intercourse	41 (50.6)	403 (47.2)	1.15 (0.73–1.81)	1.10 (0.69–1.78)	0.68
Difficulties associated with condom use (condom breakage/slippage, unable to maintain an erection)	36 (44.4)	451 (52.8)	0.72 (0.45–1.13)	0.73 (0.45–1.17)	0.19
Other erection difficulties	42 (51.9)	401 (47.0)	1.22 (0.77–1.92)	1.66 (1.02–2.70)	0.04
Premature ejaculation	12 (14.8)	195 (22.8)	0.59 (0.31–1.11)	0.46 (0.24–0.89)	0.02
Sexual dissatisfaction (e.g., loss of libido)	40 (49.4)	402 (47.1)	1.10 (0.70–1.73)	1.14 (0.71–1.84)	0.58

Items are not mutually exclusive.
*Adjusted for age and ethnicity.
[†]P = 0.01 (the only significant comparison at the univariate level).
OR = odds ratio; AOR = adjusted odds ratio; CI = confidence intervals.

clinical indications for adult male circumcision is phimosis [8]. This was also the most frequent clinical reason for circumcision after infancy in our study. It is therefore possible that the differences in sexual behaviors between those circumcised at infancy and those circumcised after infancy in our study were confounded by conditions and preferences existing prior to the procedure. Penile pathology, such as phimosis, for example, could be associated with the differences in sexual behaviors rather than adult male circumcision *per se*. However, the small number of men who were circumcised after infancy and the absence of systematic data on penile pathology overall resulted in a limited power to examine the differences between men circumcised before and after infancy.

Our findings demonstrate that studies in this field need to separate men circumcised routinely as infants from men circumcised after infancy, which frequently occurs because of penile pathology. An important next step for future studies is to explore predisposing factors for circumcision after infancy and to examine whether these preexisting conditions or the actual circumcision procedure affect sexual experience. To our knowledge, this is the first study to provide evidence among a large cohort of sexually active gay men in a developed country that circumcision status is unlikely to have a substantial impact on male-to-male sexual behaviors.

Conclusions

Our data demonstrate that circumcision status in a large cohort of highly sexually active, HIV-negative gay men is *not* associated with the practice or experience of anal intercourse. However, in both the univariate and multivariate analyses, men who were circumcised after infancy were more likely to report any receptive anal intercourse than men who were circumcised at infancy.

Interestingly, men who were circumcised later were as likely to report any *unprotected* receptive anal intercourse as men circumcised at infancy. Therefore, later circumcision may not necessarily place men at a higher risk of HIV infection than infant circumcision. The two groups also differed in the likelihood of experiencing erection difficulties not associated with condom use and premature ejaculation.

Acknowledgments

Corresponding Author: Limin Mao, MD, PhD, Level 2 Webster Building, National Centre in HIV Social Research, University of New South Wales, Sydney, New South Wales 2052, Australia. Tel: +61-2-93854500; Fax: +61-2-93856455; E-mail: limin.mao@unsw.edu.au

Conflict of Interest: None declared.

Statement of Authorship

Category 1

(a) Conception and Design
Susan C. Kippax; Andrew E. Grulich; Garrett P. Prestage; John M. Kaldor; Limin Mao
(b) Acquisition of Data
Limin Mao; June Crawford; Garrett P. Prestage
(c) Analysis and Interpretation of Data
Limin Mao; David J. Templeton; June Crawford

Category 2

(a) Drafting the Article
Limin Mao; David J. Templeton; Andrew E. Grulich; Susan C. Kippax; Basil Donovan
(b) Revising It for Intellectual Content
June Crawford; John M. Kaldor; Garrett P. Prestage; John Imrie

Category 3

(a) Final Approval of the Completed Article
Limin Mao; David J. Templeton; June Crawford; John Imrie; Garrett P. Prestage; Andrew E. Grulich; Basil Donovan; John M. Kaldor; Susan C. Kippax

References

1 Gray RH, Kigozi G, Serwadda D, Makumbi F, Watya S, Nalugoda F, Kiwanuka N, Moulton LH, Chaudhary MA, Chen MZ, Sewankambo NK, Wabwire-Mangen F, Bacon MC, Williams CF, Opendi P, Reynolds SJ, Laeyendecker O, Quinn TC, Wawer MJ. Male circumcision for HIV prevention in men in Rakai, Uganda: A randomised trial. Lancet 2007;369:657–66.

2 Bailey RC, Moses S, Parker CB, Agot K, Maclean I, Krieger JN, Williams CF, Campbell RT, Ndinya-Achola JO. Male circumcision of HIV prevention in young men in Kisumu, Kenya: A randomised controlled trial. Lancet 2007;369:643–56.

3 Auvert B, Taljaard D, Lagarde E, Sobngwi-Tambekou J, Sitta R, Puren A. Randomised, controlled intervention of male circumcision for reduction of HIV infection risk: The ANRS 1265 trial. PLoS Med 2005;2:e298.

4 Weiss HA, Quigley MA, Hayes RJ. Male circumcision and risk of HIV infection in sub-Saharan Africa: A systematic review and meta-analysis. AIDS 2000;14:2361–70.

5 Imrie J, Elford J, Kippax S, Hart GJ. Biomedical HIV prevention—and social science. Lancet 2007;370:10–1.

6 Dowsett G, Couch M. Male circumcision and HIV prevention: Is there really enough of the right kind of evidence? Reprod Health Matters 2007;15:33–44.

7 Boyle GJ, Bensley GA. Adverse sexual and psychological effects of male infant circumcision. Psychol Rep 2001;88:1105–6.

8 Fink KS, Carson CC, DeVellis RF. Adult circumcision outcomes study: Effect on erectile function, penile sensitivity, sexual activity and satisfaction. J Urol 2002;167:2113–6.

9 Kim DS, Pang MG. The effect of male circumcision on sexuality. BJU Int 2006;99:619–22.

10 Payne K, Thaler L, Kukkonen T, Carrier S, Binik Y. Sensation and sexual arousal in circumcised and uncircumcised men. J Sex Med 2007;4:667–74.

11 Smith G. Heterosexual and homosexual anal intercourse: An international perspective. Venereology 2002;12:28–37.

12 Templeton DJ, Mao L, Prestage G, Kaldor JM, Kippax S, Grulich AE. Demographic predictors of circumcision status in a community-based sample of homosexual men in Sydney, Australia. Sex Health 2006;3:191–3.