Journal of Acquired Immune Deficiency Syndromes
2:404–409 © 1989 Raven Press, Ltd., New York

Condom Failure Among Homosexual Men

Susan Golombok, *John Sketchley, and †John Rust

*Department of Psychology, City University, London, *BLAT Centre for Health and Medical Education, and †University of London Institute of Education, London, U.K.*

Summary: Following a postal questionnaire survey of 262 homosexual men carried out to investigate condom use during sexual activity, a sample of 97 men who used condoms during anogenital sex was identified. Thirty-one percent of those who had used a condom during anal intercourse reported at least one incident of condom breakage. When looked at in terms of frequency of individual condom use, it was found that 1 in 27 condoms break during this activity. Examination of the reasons for breakage and a review of the literature indicated that physical stress on the condom is likely to be a major factor in these incidents. Key Words: Homosexual men—Condoms—Anal intercourse.

It is now generally recommended that homosexual men avoid high-risk sexual activities, but if not that they should use a condom during sexual activity to reduce transmission of the human immunodeficiency virus (HIV), particularly during anal intercourse, which is considered to be the highest-risk sexual behavior for HIV infection. However, while some studies show recent changes in sexual behavior and a switch towards safer sex practices (1), it continues to be the case that a large proportion of homosexual men fail to use condoms as a means of protection (2–7).

Why are condoms still proving to be unpopular among homosexual men in spite of the risks of nonuse? One factor may be that condom use for this purpose is relatively new, and thus many of the men are probably inexperienced users. Wigersma and Oud (8), in a study of 17 male homosexual couples in the Netherlands, investigated attitudes to condom use (the condoms were supplied as part of the study), and found that many of the men experienced problems and several of the men also complained of a lack of sensitivity and the unattractive appearance of the condom. Of particular concern were the reported incidents of condom breakage, slippage, and leakage in their study. Such events occurring during anal intercourse would put the participants at risk, and this danger is further compounded generally by the consequent reduction in confidence in condoms as a prophylactic. Ross (9) looked at condom use in a sample of 70 homosexually active men attending an HIV screening clinic in Australia. He found that 14% of the sample reported "a few breaks" and 13% "many breaks." The majority of the sample also reported some reduction in sensitivity. It was suggested that breakage may be related to the condom being too small and effectiveness is directly related to appropriateness of size. Richters et al. (10) carried out an investigation of factors associated with condom breakage rate in an Australian study of 30 male and 4 female prostitutes. They found only 3 breaks in 664 usages (0.5%), two of which were associated with the use of mineral oil. It has been shown that oil-based lubricants seriously damage and weaken the condom (11).

The data on condom breakage reported here was collected as part of a wider investigation that aimed to provide systematic information on a sample of homosexual men about their reasons for not adopt-

Address correspondence and reprint requests to Dr. S. Golombok at Department of Psychology, City University, Northampton Square, London EC1, U.K.

ing condoms as a prophylactic, and to gain information on their experiences with condoms (12).

METHODS

The Overall Sample

A sample of homosexual men from London and the South of England with diverse sexual experiences was obtained through a variety of gay groups and organizations. Several groups participated, ranging from those with a membership of predominantly middle-aged couples to those whose membership comprised young single men. Two of the groups were social in nature and one was political. Hospital clinics and organizations concerned with acquired immune deficiency syndromes (AIDS) also participated. A letter was sent from the Chairman/Director of each organization to each member asking him to take part in the study by completing an enclosed questionnaire. Five hundred twenty questionnaires were distributed in Spring 1988. To ensure anonymity and thus reduce bias in responding, the researchers were not given access to the names of the members, and the respondents were not required to identify themselves. Two hundred sixty-nine men returned completed questionnaires, which represents a response rate of 53%. The actual response rate may have been higher since the address lists were not always up to date, and where both partners in a couple received a questionnaire, only one partner was asked to complete it to maintain independence of sampling.

Of these 269 men, 229 met the criteria for behaviorally active homosexuality, which, for the purpose of the present study, was defined if the respondent identified himself as homosexual and had experienced sexual contact with a man on at least one occasion in the previous 12 months.

The questionnaire was designed to obtain data on number of sexual partners, length of relationships, and frequency of sexual contact in the past year together with detailed information about mutual masturbation, anal intercourse, and oral sex as well as on the use of and problems with condoms during these sexual activities. These data are reported more fully in Golombok et al. (13).

Characteristics of the Subsample

Ninety-seven of the men in the sample had used condoms during anal intercourse, 27 only insertively, 23 only receptively, and 47 both insertively and receptively. The mean age of these men was 37.44 years, with a standard deviation of 14.26 years. Fifty-four of the men described themselves as professional middle class (e.g., teachers, academics, social workers, charity workers, clergymen, and nurses). Nine were retired, 12 were skilled manual workers, 7 were students, 9 were prostitutes or rent boys, and 6 were unemployed or other.

For these 97 men, the average number of sexual relationships with different partners during the past year was 41.36 (SD = 91.23, maximum = 380). This value was, however, heavily inflated by the nine prostitutes in the sample. If these are left out, the mean number of relationships in the past year was 14.44 (SD = 24.91). These data are somewhat skewed, with 10 of the men having only 1 homosexual relationship in the last year, the median value being 3, and the number with more than 10 such relationships being 36. Only 26 of the men had not had a single "one night stand" in the last year, while a further 30 had had more than 10. For subjects other than prostitutes (who were generally rather young), there was no significant correlation between age and the number of sexual relationships within the past year ($r = -0.15$, n.s.). The median frequency for sexual activity was between two and three times per week.

Questionnaire Items on Condom Breakage, Slippage and Leakage

Data on condom breakage were obtained from several questionnaire items. Subjects were asked how often in the past year their condom had broken during insertion of their penis during anal intercourse. They were also asked how often their partner's condom had broken while they (the subject) had been the recipient of anal intercourse. The response categories for both questions were "never," "once," "2–3 times," "4–5 times," "6–10 times," "11–15 times," or "16–20 times." The same question pair was also asked with respect to condom slippage and condom leakage. Subjects were also asked for any suspected reasons for breakage, slippage, or leakage, using the following item: "In the past year if you have ever had the experience of your condom or your partner's condom breaking please put a ring around any of the following situations which you think may have contributed towards this." The situations were as follows: "There

was powerful thrusting during anal intercourse," "The anus was very tight," "No extra lubricant was used," "Extra lubricant was used," "Insufficient lubrication was supplied with the condom," "The instructions for using the condom were not clear," "I did not read the instructions," "I did not understand the instructions," "I did not follow the instructions," "The condom was not put on carefully," "The condom broke while putting it on," "The condom had a hole in it," "The condom was too loose," "The same condom was used on more than one occasion without ejaculation (taking off and putting on again)," "The same condom was used on more than one occasion after ejaculation (taking off and putting on again)," "There was more than one ejaculation into the same condom without taking it off," "More than one condom was used at once," "The condom was too tight," "The condom was torn with fingernails," "The condom was torn with jewelry," and "Anal intercourse continued for a long time." Similar appropriate events were listed as possible reasons for slippage or leakage. Subjects were also asked for brand information on the condoms they used (in order of preference), and also whether any experience of condom breakage, slippage, or leakage was, in their opinion, associated with a particular brand. Finally, subjects were asked about their experience with lubricant use. They were asked how often they used an additional lubricant during both receptive and insertive anal intercourse (response categories were "never," "once," "2–5 times," "6–10 times," "11–20 times," "21–30 times," "31–40 times," "41–50 times," and "more than 50 times"). They were also asked which brands of lubricant they had used in the past year in order of preference, separately for anal intercourse with and without a condom, and which lubricant they had been using at any time they had experienced condom breakage, slippage, or leakage during the past year. Questions were also asked about the changing of condoms during a session of lovemaking, and the use of two condoms at once.

RESULTS

Condom Breakage

Thirty subjects reported that they had experienced one or more breakages while using a condom during anal intercourse in the past year. This represents 31% of the 97 men in the sample with some experience with condom use (by either partner) during anal sex. Of these 30 subjects, 19 reported breakages during anal sex on more than one occasion during the past year, and 3 subjects reported more than 10. Of those reporting breakages, six had used condoms on less than 10 occasions in the past year, and, of these, three had used them on less than 4 occasions. Thus, the majority of breakages were reported by men with some experience of condom use.

The breakage rate for each individual was calculated by dividing the number of breakages by the number of sessions of anal intercourse and multiplying by 100, we found that the mean breakage rate for the whole sample of 97 condom users was 4.73% (SD = 11.33, but note that this type of data approximates a Poisson distribution, so that this is an estimate of the lambda statistic). However, it could be argued that data from subjects who had only used a condom on less than five occasions in a year were suspect since they may not have been familiar enough with the proper procedure. Furthermore, those respondents reporting more than 50 sessions may not be so able to recall exact incidents, and the data were additionally imprecise since the "more than 50" category was difficult to quantify in terms of a midpoint. We therefore recalculated the breakage rate for only those individuals with between 5 and 50 condom usages within the past year. This gave a breakage percentage of 5.27% (SD = 9.51, N = 44). As a check to establish any bias that this exclusion procedure may have introduced into the figure, the correlation between breakage rate and number of sessions was calculated for the whole sample. This came to a nonsignificant −0.05, confirming that no bias had been introduced.

TABLE 1. *A cross-tabulation relating the number of subjects reporting particular frequencies of condom use and their reported frequencies of condom breaks in the past year*

	Number of subjects reporting particular frequencies of condom use in the past year						
	1	2–5	6–10	11–20	21–50	> 50	Total
Reported number of breaks							
None	12	23	8	11	9	4	67
1	0	2	1	3	2	3	11
2–5	0	1	2	1	6	3	13
5–10	0	0	0	0	0	2	2
10+	0	0	0	0	1	3	4
Total	12	26	11	15	18	15	97

Reasons for breakage were asked for. Over one-half of the 30 subjects gave "powerful thrusting during anal intercourse" as a reason. The next most popular reason was "no extra lubrication used" (given by nine subjects) followed by "anal intercourse continuing for a long time" (given by eight subjects), "very tight anus" (given by seven subjects), "condom too tight" (given by seven subjects), "condom torn with fingernails" (given by seven subjects), "condom broke while putting it on" (given by five subjects), "extra lubrication used" (given by four subjects), and "insufficient lubrication supplied with condom" (given by four subjects).

Correlations were calculated between the duration of anal sex and reported breakage rate. These were 0.16 (N.S.) for insertive anal intercourse and 0.25 (N.S.) for receptive anal intercourse. While these are nonsignificant, they are in the expected direction. Also, some individual subjects reported that breakage was occasionally due to anal intercourse continuing for too long.

Almost all of those who engaged in anal intercourse used an additional lubricant, and continued to do so when condoms were used. Nineteen of the 28 men (68%) who reported breakage and who answered this question used K.Y. Jelly, a water-based lubricant, as did 38 (81%) of the 47 men who did not report breakage (χ^2 not significant). The use of Baby Oil, Massage Oil, and Vaseline (oil-based lubricants that have been shown to weaken the condom) appears at a comparable rate in both samples, and differences in use of these lubricants between those who experienced breakage and those who did not are nonsignificant. In spite of this, some of the instances of breakage were very likely due to oil-based lubricants. Indeed, some of the men gave this as a reason for breakage—generally, the men in the sample seemed to be aware of this problem.

Using the frequency of use of an additional lubricant as the dependent variable, a comparison between those condom users who reported breakage and those who did not showed no statistically significant difference once frequency of anal intercourse had been covaried out of the analysis (ANCOVA).

Some of the breakages did seem to result from inexperience, or inappropriate use. For this reason, breakage rates were recalculated following elimination of these effects by removing instances where subjects reported or indicated (a) the use of an oil-based lubricant, (b) tearing while putting on, or (c) breakages due to fingernails or jewelry. The overall breakage rate following this elimination was 2.88% (SD = 7.86%) on 91 subjects. Again, this was calculated for only those subjects with between 5 and 50 reported condom usages, giving a corrected breakage rate of 3.67% (SD = 7.03%). The correlation with number of condom usages and breakage rate was again calculated and found to be −0.04, which was not statistically significant.

In summary, for the best estimate of breakage rate, subjects with experience of more than 5 and less than 50 condom usages per year were looked at, where breakage, if it occurred, was not reported to be due to nails, jewelry, oil-based lubricants, or tearing while putting on. There were 42 such subjects who between them reported 818 condom usages and 30 breakages. This gives a breakage rate of 3.67%, which is equivalent to 1 in 27. This group gave several reasons for breakage, of which "powerful thrusting" was the most common (seven reports), followed by "intercourse carried on for a long time" (three), "no additional lubrication used" (three), and "anus too tight" (two). No significant relationships were found between breakage and the brand of condom used.

Condom Slippage

Twenty-seven of those subjects who used condoms reported condom slippage, representing about one-quarter (28%) of the sample of condom users. The reasons given for slippage were varied. Powerful thrusting is the most frequent reason (nine reports) followed by "anus too tight" (five reports). Thirteen reported slippage on one occasion only. The five prostitutes in the sample who reported slippage gave incidences of 3, 8, 15, 18, and 30 times per year. The remaining individuals reported a median slippage of three. The best estimate of slippage rate, taken from those men who reported between 5 and 50 condom usages per year, was 3.8%. When those slippages due to not putting on the condom properly and to use of the same condom more than once are eliminated, the slippage rate is 3.6%. This is based on data from 44 subjects who used condoms on between 5 and 50 occasions in the past year, excluding misuse.

Condom Leakage

Condom leakage was reported by only two men. One reported leakage "sometimes" around the

base of the shaft due to "production of copious amounts of pre-seminal lubricant," and the other reported about eight occasions of leakage, due to the condom being too loose.

Multiple Condom Use

Multiple condom use was infrequent. For anal sex, two men had used two condoms together on between two to five occasions and another reported that he had done so on one occasion only. None of these men reported any incidents of condom breakage. Thirty-one men reported that they had changed condoms during a session of lovemaking, the median number of occasions during the year in which this had happened being two to five times (19 men). For seven men, this had only happened once, and for seven men this occurred on ten occasions or more.

DISCUSSION

The results seem to be in agreement with those of Wigersma and Oud (8) and Ross (9) in finding a marked incidence of breakage in condoms used by homosexual men during anal intercourse. A direct comparison with breakage rates in these two studies is not possible, owing to the difference in the way in which the data were collected and analyzed. However, Ross does report that of his 70 subjects, 10 reported one break and 9 reported "many" breaks. This can be compared with the equivalent data from our study, where 11 of the 97 subjects reported one break and 19 reported more than one break. A χ^2 test of independence of these data was very clearly not significant ($\chi^2 = 1.58$), indicating that the figures are indeed comparable. Wigersma and Oud, using only 17 subjects, found a mean breakage rate of 10.5%, which was significantly higher on a comparison of frequencies with our study ($\chi^2 = 15.76, p < 0.001$). However, they also varied condom thickness and quantity of lubricant parameters within their study. Although they do not report any statistical analysis, the tabulated data seem to indicate clearly a connection between high breakage rate, quantity of additional lubricant, and, in particular, membrane thickness, the thinner condoms being more liable to break. They also point out that, because of the high level of friction during anogenital intercourse, condoms for this purpose should be stronger than normal.

Richters et al. (10) reported a study by Tindall et al. [unpublished report cited by Richters et al. (10)] that found a breakage rate of 6%. No further particulars of this study are given. However, the authors describe a study of their own carried out on a population of male and female prostitutes in Sydney in which only 3 of 664 condoms used in anal intercourse broke, giving a breakage rate of 0.5%. They added that in two of these three cases of breakage, mineral oil had been used with the condom. Voeller et al. (13) also report that a large number of breakages are associated with the use of emulsion oils when the wearers are under the misapprehension that these are water-based.

In the present study, there was no evidence that a significant number of breakages were associated with the use of oil-based lubricants. It is possible that the use of these lubricants may have been underreported, either through ignorance or through embarassment at revealing former ignorance. On the other hand, all attempts to adjust for factors associated with the occasional use of these lubricants had no effect on the data; those using the well-established K.Y. Jelly reporting the same number of breakages as those using other lubricants. Further, the findings of the Wigersma and Oud study do seem to indicate that breakages occur independently of the use of lubricants, and also implicate membrane thickness as a factor. Additionally, the information given by the subjects in our study on the suspected reason for breakage does show a cluster of factors associated with stress on the condom (powerful thrusting, anus too tight, intercourse continuing for a long time, etc.).

A factor that may have biased the results of the present study is the inclusion of subjects from hospital clinics concerned with AIDS who may have been more likely to report breakages. An analysis of variance of the breakage ratio between the various organizations, however, yielded no significance difference in the reportage of breakage rates ($F = 0.67, p > 0.5$). We also have no evidence on how respondents to our questionnaire may differ from nonrespondents. However, there is no obvious reason why this form of bias should affect our estimates of breakage rate. The questionnaire was long and detailed, and was not primarily about condom breakage, so that it seems unlikely that either the presence or absence of special experience with condom breakage should bias the potential subject either for or against participation. There was further evidence of a high level of involvement of subjects

in the questionnaire task generally from the care with which almost all subjects responded to open-ended questions. Evidence on the internal reliability of the questionnaire was obtained from correlations between responses to logically related questions. These showed a high level of consistency in responding.

Taking the four studies cited here together with the present data, we find breakage rates of 10.5% [Wigersma and Oud (8), based on 17 subjects], two studies found reporting rates of about 4.0% [the present study and Ross (9), based on 97 and 70 subjects, respectively], and one study reporting a rate of less than 0.5% based on 30 subjects [Richters et al. (10)]. The higher figure of the Wigersma and Oud study may be associated with the thinness of the membrane in one of the condoms used. The lower figure reported by Richters et al. seems to stand out as atypical. Although they do not give details of the membrane thickness of the condoms used in the study, they do describe them as "fresh and of good quality." However, they do point out that commercial sex may be of shorter duration than "amateur" sex, and report anecdotal evidence that condoms visibly deteriorate with prolonged sexual intercourse—one of the factors implicated in breakage by the participants in our study.

All of these findings clearly give some cause for concern, particularly since some men may be using condoms following a specific recognition of risk. We found that, even when those cases of breakage that may be due to misuse are excluded, 1 in 27 condoms break and 1 in 28 slip off. Our examination of the reasons for breakage indicate that physical stress on the condom is a prime contender as the leading factor in reported condom breakage during anal sex.

Acknowlegment: We are grateful to London International Group PLC for their support in carrying out this study.

REFERENCES

1. Johnson AM. Social and behavioural aspects of the HIV epidemic—a review. *J R Statist Soc Ser A* 1988;151:99–114.
2. McKusick L, Hartsman W, Coates TJ. AIDS and sexual behavior reported by gay men in San Francisco. *Am J Publ Health* 1985;75:493–6.
3. McKusick L, Coates TJ, Wiley J, et al. Prevention of HIV infection among gay and bisexual men.: analysis of two longitudinal studies. Paper presented at the Third International Conference on AIDS, Washington, D.C., 1987.
4. Martin JL. The impact of AIDS on gay male sexual behavior patterns in New York City. *Am J Publ Health* 1987;77:578–81.
5. Fox R, Ostrow D, Valdesseri R, et al. Changes in sexual activities among participants in the Ten Multicenter AIDS Cohort Study. Paper presented at the Third International Conference on AIDS, Washington, D.C., 1987.
6. Valdesseri RO, Lyter D, Callahan C, et al. Condom use in a cohort of gay and bisexual men. Paper presented at the Third International Conference on AIDS, Washington, D.C., 1987.
7. Carne CA, Weller I, Johnson AM, et al. Prevalence of antibodies to human immunodeficiency virus, gonorrhoea rates and changing sexual behaviour in homosexual men in London. *Lancet* 1987;1:656–8.
8. Wigersma L, Oud R. Safety and acceptability of condoms for use by homosexual men as a prophylactic against transmission of HIV during anogenital sexual intercourse. *Br Med J* 1987;295:94.
9. Ross MW. Problems associated with condom use in homosexual men. *Am J Publ Health* 1987;77:877.
10. Richters J, Donovan B, Gerofi J, Watson L. Low condom breakage rates in commercial sex. *Lancet* 1988;2:1487–8.
11. White N, Taylor K. Lyszkowski A, Tullett J, Morris C. Dangers of lubricants used with condoms. *Nature (Lond)* 1988;335:19.
12. Golombok S. Sketchley J, Rust J. Condom use among homosexual men. *AIDS Care* 1989;1:27–33.
13. Voeller B, Coulson AH, Bernstein CS, Nakamura RM. Mineral oil lubricants cause rapid deterioration of latex condoms. *Contraception* 1989;39:95–102.