Male Contraception Without Prescription

A Reevaluation of the Condom and Coitus Interruptus

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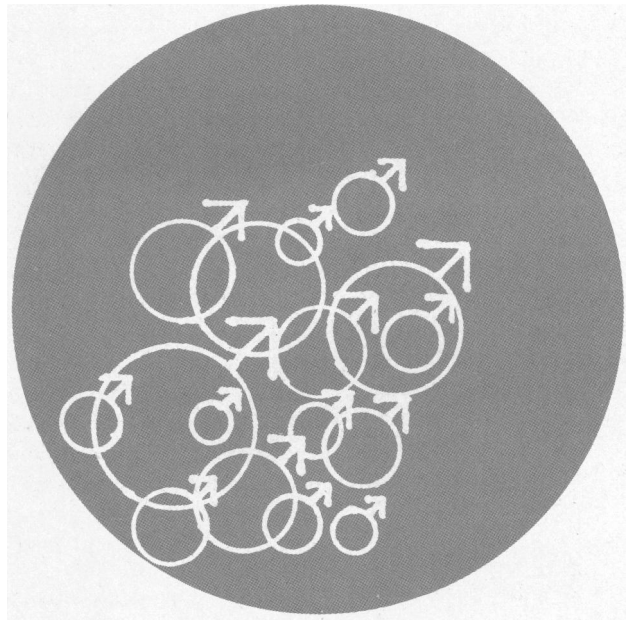

CONTRACEPTIVE METHODS implemented by the male were among the first birth control procedures. Even today these methods have significance for almost every sexually active person during some stage of life, and they constitute the main or only birth control methods practiced by many couples. Therefore physicians, in particular, should know the background, subtleties, strengths, and shortcomings of these nonprescription methods for male use.

The Condom

Often denigrated by being categorized as a "traditional" contraceptive method and accorded only the cursory interest given to historical artifacts, the condom is clearly not a symbol of our times. Because condoms must be used at the time of coitus, in the past they were perhaps too personally and graphically sexual for Western sensibilities. They have also retained the stigma of being associated with promiscuity and venereal disease—an association stamped on them by the military services and the "old morality" and perpetuated until

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recently in the United States by anachronistic State and Federal laws requiring condom labels to indicate that the devices were for disease prevention only. Condoms must be disposed of, and like empty beer cans and cigarette butts, they can be painful reminders of mindless indulgence. Also, condoms do not easily meld into teenage fantasies about sexual opportunity and the unplanned encounter. They are not part of the family physician's repertoire, and by default they do not receive his blessing. Family planning clinics, whose principal clients are women, do not often promote their use, apparently favoring the more sophisticated chemical and surgical methods for birth control. The condom, being basically a contraceptive method for the male, has been upstaged by the emergence of the woman as the agent of contraception. The relative ease with which the female reproductive system lends itself to systemic contraception also has reduced the emphasis on the condom.

Because of all these strikes against them, it has been only with great difficulty that condoms have been brought from behind the pharmacist's barricade and displayed as nonprescription nondrugs, advertised discreetly in a few magazines, and given serious attention by some contraceptive researchers. In the absence of up-to-date information on their usefulness, the textbooks of contraception have continued to pass on the results of one or two limited studies done in the 1930s and 1950s, when materials, testing procedures, and quality controls were so crude and disregard for the consumer was so common as to be unacceptable by present standards. When we compare the figures from these old studies on the effectiveness of condoms with the effectiveness figures from a vast array of up-to-date studies on the pill and IUDs (intrauterine devices), the data in the older studies lose by default.

Actually, the efficacy of the condom is in the same range as that of the IUD. It therefore merits the attention and sanction of the medical profession and of married couples as a highly effective, nonsystemic method of long-range birth control, devoid of side effects, which in some cases can prolong intercourse and prevent premature ejaculation. For sexually active people other than married couples, the condom is readily accessible and has the distinctly separate advantage of affording protection against the transmission of venereal disease.

The Condom as Contraceptive

Our general impressions of the condom's effectiveness as a contraceptive are based largely on surveys and clinical records from the 1930s, 1940s, and 1950s. These studies (*1,2*) were usually of populations in which one-half to two-thirds of the condom users varied that use with other contraceptive methods or with no method at all. The total pregnancy rates per 100 woman years of condom use, given as 6 to 30 pregnancies (Pearl formula), have been repeated in handbook after handbook. Thus, the condom was assigned to an ever-lower rank on the list of effective contraceptive measures, while orally administered drugs, modern intrauterine devices, and surgical sterilization successively emerged to take the spotlight in the birth control movement of the 1960s. Because the condom could not be separated from sexual activity and it was also an effective prophylactic against venereal disease, the condom became firmly associated in the minds of the public with promiscuity, prostitution, and venereal disease.

Moreover, during the early 1960s, when the condom was held in such low regard that there was no support for its reevaluation as a contraceptive device, contraceptive measures for females were attracting the attention of social scientists in the field of family planning. During this period, however, several things happened to condoms that affected both method effectiveness and use effectiveness.

1. The Food and Drug Administration (FDA) had become involved in the quality control of condoms under the Federal Food, Drug, and Cosmetic Act of 1938. The first formal regulatory program was introduced in 1949, and when it was revised in 1957, stricter limitations were placed on defects. These programs resulted in statistically based sampling methods and the testing of samples by water filling. The tolerance for defective condoms was lowered from 5 percent in the 1940s to 1 percent in 1957. In 1968, FDA tolerance levels were decreased still further to allow the seizure of shipments with more than 0.25 percent defective units.

2. Manufacturers mechanized and automated the dipping process, controlling flows, viscosity, and the pH of the latex so that a much more uniform product of higher quality was produced.

3. Automatic drying in a dust-free and temperature- and humidity-controlled environment was introduced, so that in the better grades of condoms, pinholes caused by dust settling on the drying latex were virtually eliminated (*3*).

4. When automatic electronic testing of each condom became a part of the production process in the 1950s, quality control was significantly improved. Upon recommendation of the Food and Drug Administration, water or air inflation tests also are now performed on samples.

5. The introduction of semi-dry silicone lubrication around 1960 increased the appeal of the lubricated condom, since this material enhanced sensitivity and reduced the probability of tearing.

6. Sealed foil packages, which slowed the degradation of the latex, gave condoms a shelf life of up to 5 years.

7. In the United Kingdom in 1964, the British Standards Institute published a set of quality standards for condoms and began

Table 1. Effectiveness of the condom in 4 recent British studies

Author of study and year of publication	People surveyed	Years method used to nearest year	Total failures	Method failures	Total failure rate per 100 years	Method failure rate per 100 years
Peel (6), 1969	Group of highly fertile couples in Hull.	127	4	1	3.1	0.8
Peel (7), 1972	Couples married in Hull, 1965–66.	308	12	5	3.9	1.6
John (8), 1973	National Health Service patients of Shepshed practice.	248	12	1	4.8	0.4
Glass, Vessey, and Wiggins (9), 1974	Married patients of British Family Planning Clinic who used oral contraceptives diaphragm, or IUD before study.	1,543	62	..	4.0	..
Aggregate of above studies		2,226	90	7	4.0	1.0

giving products conforming to them its seal of approval.

The Food and Drug Administration estimated that 75 percent of the condoms produced in the United States in 1939 were defective; between 1942 and 1960, this proportion declined to 4 percent (*3*) and in 1961, to between 0.4 and 0.7 percent (*4*). Between 1969 and 1972, even with the new, more stringent standards that permitted the FDA to seize condom shipments containing more than 0.24 percent of defective units, the proportion of questionable shipments was only one-third that for the previous 3-year period (*3*). Obviously, the much quoted estimate of condom breakage of 1 in 150 to 1 in 300 (*1*), based on studies carried out in the 1940s, is unlikely to have much meaning for U.S. and British condom users today.

The contraceptive effectiveness of the modern condom is probably best represented by the rate of 2.6 failures per 100 woman years that was found among couples with completed families (*5*) and the results of a few British studies carried out in the last 5 years. The four most recent of these British studies have used diverse approaches:

1. A longitudinal study of highly fertile couples (4 pregnancies in the previous 6 years) who used condoms exclusively (*6*).

2. A 5-year followup study, beginning at marriage, of contraceptive use by urban couples (*7*).

3. A study of contraceptive usage in a small town medical practice (*8*).

4. A large study of married patients of family planning clinics who had substituted the condom for the pill, diaphragm, or IUD (*9*).

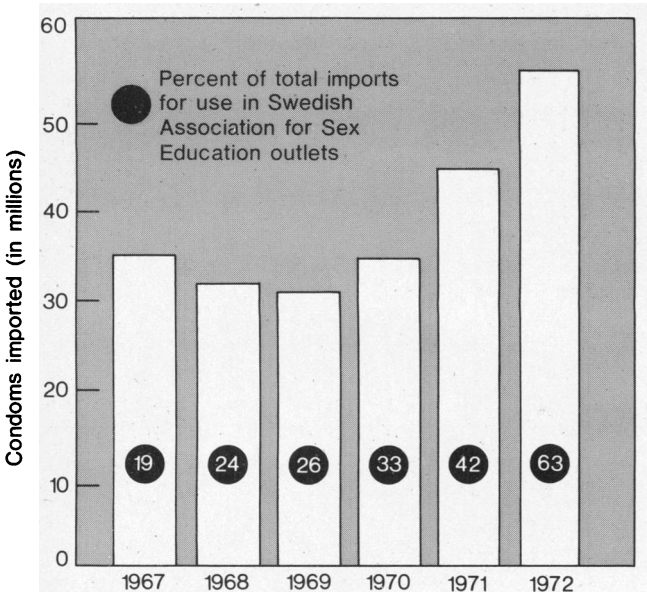
The results of these studies (table 1) suggest combined use plus method failure rates of 3.1 to 4.8 per 100 woman years and rates based on method alone of only 0.4 to 1.6 per 100 woman years. In contrast, for even the most successful intrauterine devices, pregnancy rates of 1.5 to 3.0 per 100 women in the first year of use were reported (*10*), and among women using combined progestin and estrogen oral contraceptives, the failure rate from pills missed during the dosage cycle was 1 pregnancy per 100 woman years (*11*). These figures on contraceptive effectiveness, which reflect the experience of well-motivated people, compare well with the figures on the theoretical effectiveness of the condom (table 1). Presumably, even with the best of intentions, it is easier to forget an occasional pill than to forget a condom on the occasion! For poorly motivated or otherwise ineffective users of contraception, the failure rate with either the pill or condom can soar to levels on the order of 11 to 28 failures per 100 woman years (*12*).

The Condom as Prophylactic

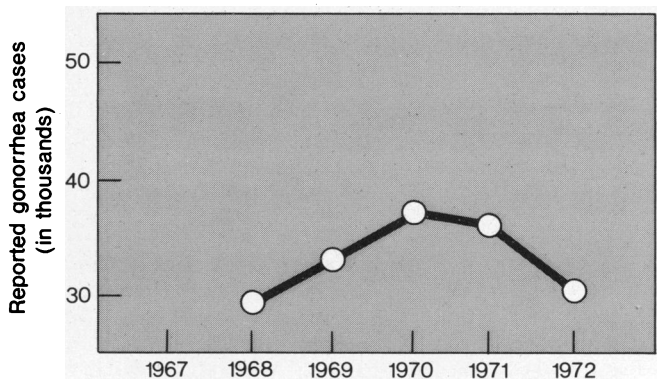
Even though in the history of the condom, venereal disease prevention and contraception became inextricably interwoven, in previous centuries use of the device was undoubtedly a prerogative of rich men, who cared less about what they would leave behind than what they might bring home. Moreover, since in recent times in the United States the law permitted the condom no other image than that of a prophylactic, this image of the condom seems to have persisted in the minds of all but the promiscuous, who, according to social studies of venereal disease, are more inclined to rely on serendipity or the pill (*13*) for contraception. This disregard of personal prophylaxis by the more promiscuous appears to stem not from ignorance but from certain attitudes that characterize their lifestyle (*14*). This fact, along with the high incidence of asymptomatic infections, may unfortunately limit the effectiveness of the condom as a public health tool.

Nevertheless, the preponderance of evidence seems to suggest that when used properly, the condom is a proven barrier against gonorrhea and other venereal infections (*14–16*). Its effectiveness is reflected in the data on U.S. soldiers in Vietnam (table 2), whose consistent use of the condom appears to have afforded them adequate protection against venereal disease

Condom imports into Sweden 1967–72 . . .



. . . and reported cases of gonorrhea 1968–72



SOURCE: Reference 19.

(*17*). The results of studies of the general population in the Scandinavian countries, where the public is better informed about the condom and its proper use than in the United States, also show the prophylactic effectiveness of this device. The frequency of condom use by infected Danish teenagers was only 25 percent that of uninfected controls (*18*), and the statistics on gonorrhea in Sweden showed a marked downward trend in reported cases coincident with the growth of the condom program of the Swedish Association for Sex Education (*19*) (see chart).

According to the Food and Drug Administration, pinholes in condoms (caused by dust settling on the drying latex) allow the passage of organisms the size of those causing venereal disease (*3*). The industrial and regulatory developments that have reduced the pinholes to practically zero in the best grades of condoms have, by the same token, significantly improved their prophylactic effectiveness. The higher grades of condoms (that is, the more expensive) probably provide better prophylaxis than the lower grades, but not better contraception. Sperm, being several times larger and many times longer than bacteria, are unlikely to penetrate pinholes.

The segments of the population that need condoms for prophylaxis are clearly distinct from those that need them for effective child spacing or family limitations. Yet advice on use is limited and does not differentiate between the two types of users. Instructions for use are conspicuously absent from most condom packages in the United States, even though the Food, Drug, and Cosmetic Act under which condoms are regulated specifically requires that these devices be accompanied by adequate directions for their use. In the United Kingdom, also, in all but the most imaginative family planning projects (*20*), sparse and obscure directions for the use of condoms blur the significant distinction between prophylaxis and contraception. These directions, like many others in handbooks of contraception, usually emphasize

Table 2. Number of U.S. soldiers with and without venereal disease by number of exposures and prophylaxis used

Exposures	Group 1 no prophylaxis		Group 2 prophylaxis sometimes		Group 3 condom always	Group 4 wash always	
	V.D.	No V.D.	V.D.	No V.D.	No V.D.	V.D.	No V.D.
1–5	14	53	10	24	48	8	16
6–10	7	9	9	14	5	4	1
11–20	3	6	4	0	1	0	0
More than 20	2	2	5	0	1	0	0
Total number	26	70	28	38	55	12	17
Percent of group	27	73	42	58	[1]100	41	59

[1] Note that this is "No V.D." column.

SOURCE: Table is based on data in reference 14.

that the condom should be placed on the erect penis before genital contact. This procedure is necessary only if the principal objective is to avoid the transmission of venereal disease organisms; this instruction puts unnecessary restrictions on the monogamous user.

Other Considerations

Changing attitudes. Eighty percent of the men recently surveyed in the eastern United States expressed the belief that males should share responsibility for contraception (*21*). Most, however, were not putting their belief into practice with much vigor and appeared to be waiting for a chemical answer that they could use. Although condoms are the only highly effective contraceptive available for males, only 9 percent of the men in the sample preferred them, and condoms apparently were the method of choice for only 9 percent of the married couples in the general population (*22*). Reasons given by 2,325 patients of a venereal disease clinic for not using condoms related primarily (60 percent) to interference with sexual spontaneity, unnaturalness, and lowered satisfaction (*23*). Reasons for not using condoms that were reviewed by Hart (*14*) relating to the consistency of use included nonavailability (reason given by 10 to 29 percent of the respondents) and the influence of alcohol (reason given by 13 to 25 percent). Apparently few of the respondents considered condoms ineffective, but presumably most of them were rating effectiveness for prophylaxis rather than for contraception.

Despite the availability of the more recently developed alternatives to condoms (the pill, IUD, and so forth) 40 percent of the fertile couples in Sweden, 40 percent of those in the United Kingdom, and 70 percent of those in Japan use the condom for birth control (*24*). This widespread use suggests that some of the reasons that U.S. couples reject the condom may result primarily from the cultural conditioning they have undergone, in which historically the condom was associated with venereal disease. Also, in the past, U.S. condoms have been among the thickest in the world, largely because under Federal regulations quality was measured by pinholes (porosity). The thickness of the U.S. product is certainly the reason for complaints that condoms dull penile sensitivity and mute sensation. The modern U.S. product, however, is less tactile than its predecessor since it is thinner, more compliant, better lubricated, and in some cases, of a shape that permits more movement of the glans within the sheath. Many people who have formed negative opinions based on condom use in earlier years possibly would respond more favorably to the modern product.

The lessons from Sweden are legion. For example, negative attitudes of Swedes toward condoms, which had been similar to those still prevalent in the United States, have been changed by attractive and amusing advertising and youth-oriented marketing techniques that make condom-purchasing free of shame and even "trendy." Negative attitudes have also been changed by well-documented information for physicians, pharmacists, and retailers, as well as by the careful separation of the contraceptive image from the prophylactic one, while at the same time the condom is promoted for both contraception and prophylaxis. Significant inroads on venereal disease have been made in Sweden by large-scale candid advertising campaigns by nongovernment agencies and private companies. This change in attitude has been achieved rapidly in an official and public environment that initially had been resistant or even hostile to condoms, where there had been legal restrictions and where advertisements for them had been refused or censored (*19*).

In the United Kingdom, the status of the condom never was as low as in the United States. Condoms were always available from barber shops, chemists, surgical stores, and discreet mail order companies. Some of the embarrassment and subterfuge that sometimes characterize the purchase of a condom have been eliminated by the Family Planning Association's initiation of a separate company to promote condom sales. High-quality condoms and combinations of condoms and spermicidal foam pessaries are packaged along with instructions in bright cartons bearing the titles "Forget-me-not" and "Two's Company." As in Sweden, the contraceptive image is kept separate from the prophylactic, and no brand names are associated with the advertising for venereal disease campaigns (*20*).

In Japan, the rapid rise in condom use between 1962 and 1972 (from sales of 1.7 million gross to 4.3 million gross) was partly due to door-to-door sales, the introduction of colored and shaped condoms, and the production of ultra-thin (0.033 mm) ones (*25*). (In our samples, the "ultra-thin" Japanese condoms were from 0.37 mm at the open end to a thin 0.05 mm over the glans. U.S., British, and the Japanese export latex condoms ranged from 0.048 to 0.060 mm at the open end and 0.06 to 0.09 mm over the glans. Natural skin condoms were between 0.06 and 0.07 mm throughout their length.) These heralded changes in condoms in Japan have been accompanied by (*a*) attractive packaging and pleasure-oriented advertising that is aimed at women as well as men, (*b*) the availability of condoms of different sizes and the inclusion of a clearly distinguished sample of large and small sizes in each box of medium-sized condoms, (*c*) clear instructions for use, and (*d*) plastic disposal bags packaged with the condoms. In Japan, the people's aversion to medicines with unknown side effects may facilitate the promotion of condoms. In the West, however, the population more commonly resorts to oral medicines. Physicians, pharmacists, and phar-

maceutical firms are faced with an unprecedented demand by healthy women for chronic doses of the powerful systemic drugs used in oral contraceptives over a significant fraction of their life spans.

Obstacles to condom promotion. Legal, institutional, and cultural obstacles to the promotion and dissemination of information about condoms exist in the United States. In the original Comstock Act of 1873, condoms and the other then-current contraceptive procedures, as well as information about them, were declared to be obscene and therefore illegal. The clandestine market in condoms that resulted was therefore without trademark protection and subject to exploitation by unscrupulous manufacturers. In the 1930s, the prohibition on the use of the mails to merchandise condoms was circumvented by defining them as prophylactics for disease. Although legal restrictions are gradually disappearing, as late as March 1973, 12 States still restricted the advertising of condoms as contraceptives, 9 States prohibited their display, 9 States restricted sales to pharmacies and physicians, and 12 States prohibited their sale from vending machines (*26*). Some State laws refer exclusively to prophylactics, in which case they are not applicable to condoms as contraceptives. Three States make it difficult for sexually active younger persons to protect themselves against venereal disease. One of these States (New York) prohibits the sale of prophylactics to persons under 16 years, and the other two (Nebraska and Utah) prohibit the sale of prophylactics to persons under 18 years.

There are as many potential outlets for condoms as there are for aspirin. With active medical and pharmaceutical endorsement, unhampered advertising, and an improved image of condom use, it is unlikely that any vested interest will suffer greatly from unlegislated sale of condoms.

The resistance of the media to condom advertising has eroded substantially in the past 2 years. The "personal" products that are now edging into media advertising may pave the way for condoms to be advertised informatively on a wide scale. Recent condom advertisements in magazines and college papers have generated 2 million requests for information and only 15 objections (*27*).

People choose their contraceptive methods on the basis of input from friends, neighbors, physicians, clinics, and the media, and unfortunately, in the United States, the condom is still denigrated by an image that makes it unattractive, by the physician who ignores it, and by the family planning clinic, which often downgrades it because it has not been effectively used in the past.

In the physician's office, the condom is often overlooked because it is a contraceptive that does not require the physician's signature. The physician can too easily assume that patients seeking birth control advice have already rejected such nonmedical options. Obviously, this is not always the case. The failure of physicians to consider this method can have far-reaching implications, even for people who for one reason or another do not seek medical advice on contraception. The emphasis that is placed or withheld by physicians generates opinions in the community that ultimately affect laws, institutional sanctions, and attitudes. An example is the state of affairs that developed in the United Kingdom after the National Health Service Reorganization Act of 1974 was amended. The British Medical Association declined to prescribe the condom on the grounds that patients did not need to consult their physicians about this method of contraception. As a result, condoms are not available to many people under the National Health Service. They may therefore have become the most expensive contraceptives in the country, being not only more expensive than sterilization or abortion but also the only contraceptive method requiring the user to make a cash outlay. Condoms are the only effective contraceptive method that does not have the endorsement of the British medical profession.

In the United States, lubricated rubber condoms require a recurring cash outlay of $20 to $40 per year per couple (based on a frequency of intercourse of 100 per year) unless they can be obtained from family planning clinics or other such sources. This expense may be an obstacle to condom use by some people, although cost has rarely been cited as a factor in nonuse. Oral contraceptives, by comparison, cost $20 to $35 per year per couple, plus initial physician or clinic fees and possibly the cost of periodic medical checks. The IUD and sterilization procedures can be considerably cheaper if amortized over several years. Condoms traditionally carry a high retail markup, presumably as an inducement for retailers to stock this "sensitive merchandise."

The insecurity and ill-will that can result from lack of proper instructions on condom use are also obstacles to the condom's wide acceptance. Given the inexplicable absence of instructions in most condom packages in the United States, the family planning clinic and the physician's office are the only sources of information on proper use available to most people. Misuse of the condom is the major cause of failure. If the user's purpose is contraception, the condom need not be placed on the penis before penetration of the vagina, only before ejaculation. The possibility is slight that pre-ejaculate sperm would be present in sufficient numbers to cause conception. Samples of pre-ejaculatory fluid from 10 volunteers in our study revealed no sperm. (The lubricative pre-ejaculatory fluid is thought to emanate from the bulbo-urethral and urethral glands.) The user can introduce the condom during foreplay or late in extended intercourse. Objections that intercourse must be

interrupted to place the condom may disappear if the placement itself becomes a natural, even playful, part of the sexual exchange.

Persons seeking protection from venereal disease must obviously put the condom on before any genital contact and avoid genital contact after its removal. Even so, condom users need to be aware that syphilis and herpes infections can be transmitted to and from other areas of the body.

The FDA regulations for prevention of pinholes in condoms are the most stringent in the world. Minimizing pinholes is thought to be necessary for venereal disease prophylaxis. There is, however, some doubt as to whether this criterion is relevant for condoms used as contraceptives (*27*). Relaxation of these regulations would almost certainly permit thinner condoms, and thinner condoms, judging by the response to the ultra-thin condoms in Japan and in its export market, would be attractive to the user. There is no obvious reason why thinner condoms could not be marketed in this country except the obfuscation between disease prophylaxis and contraception.

Clinical considerations. The condom is suited to well-motivated couples or individuals; it gives an additional increment of control to the male and enables him to prolong coitus if the couple so desires (*28*). The contraceptive efficacy of the condom becomes almost perfect if it is used in conjunction with intravaginal spermicides. However, the trade-off in cost and convenience may not be worth the small increment of improvement.

Karafin and Kendall (*29*) have discussed some other aspects of condom use that are of interest to a clinician. Advantages in the general category of disease control that they cite include the prevention of reinfection during treatment for trichomoniasis and of the transmission of the *Herpes progenitialis* virus, which is found in many uncircumcized males and is implicated in the etiology of carcinoma of the cervix. Some positive psychological advantages of condoms include the visual assurance of successful contraception (*28*), the management of premature ejaculation, and the surmounting of esthetic objections to intercourse during menstruation (*29*).

The condom has been successfully used to reduce sperm antibody titers (especially sperm agglutinins) in women. Such antibodies appear to be more common than generally supposed; Karafin and Kendall reported that 36 of 50 prostitutes were found to have strongly positive results on hemagglutination and sperm immobilization tests (*29*). These same authors also reported that among childless women with initially high sperm antibody titers who were being treated for infertility, a period of condom use resulted in a fall in these antibody titers, which in 54 percent of the patients was followed by pregnancy.

Prescription for a New Image

An editorial in a 1973 issue of the American Journal of Public Health (*30*), calling for a "massive increase in attention to nonmedical birth control methods and delivery in the United States," signaled a significant change in the attitude of the health community toward these methods. Such a change could help rectify the distorted image of the condom. Many changes also have taken place in the United States in the marketing of condoms with a view to making them more acceptable to consumers—colored condoms, attractive packaging, informative displays and advertising, and a shift of emphasis from prophylaxis to contraception. An additional useful step might be for manufacturers to include in condom packages some clear, simple, illustrated instructions to promote effective use. Physicians and clinical counselors should be prepared to instruct on condom use and, as for any contraceptive, should be guided in deciding whether to recommend the condom by the user's motivation, character, and background as well as by the theoretical effectiveness of the method.

Except for regulations governing quality standards, the legislation on condoms in the United States is anachronistic and serves no public purpose. Health officials and pharmacists, who play an important role in reassuring people, should be more active in promoting condom use, informing people of the availability of this contraceptive, and correcting the erroneous image of it that many people have. Government testing standards for condoms should be changed after suitable research has been conducted to determine the relevance to contraceptive efficacy and consumer acceptance of pinholes and thinner condoms.

Research is needed on every aspect of condoms, from the development of synthetic polymers to the sensory nerve physiology of the penis and vagina. Research should also be directed at the public's response to advertisements, packaging aimed at ease of opening, use-effectiveness in relation to attitudes or instructions, institutional attitudes, and consumer preferences. Modern users of contraceptives need effective alternatives to drug or surgical intervention as well as the opportunity for both partners to share responsibility for birth control.

Coitus Interruptus

Coitus interruptus, or withdrawal, is the only other male method of contraception not requiring intervention by a physician. In many societies, it remains the most common contraceptive technique. Many people who seek professional advice on family planning have previously practiced this method.

Coitus interruptus has its roots in antiquity, being by far the oldest and most common method of contraception in use in the world. It is explicity described in Genesis 38: 8–9: "Then Judah said to Onan, 'Go in to your brother's wife, perform the duty of a brother-in-

law to her, and raise up offspring for your brother.' But Onan knew that the offspring would not be his; so when he went in to his brother's wife he spilled the semen on the ground, lest he should give offspring to his brother." Later Jewish thinking was influenced by this reference. The Talmud refers to coitus interruptus as "thrashing inside and winnowing outside." Historical demographers have shown that in some social groups in 17th and 18th century France and England, marital fertility declined markedly, presumably as a result of a growing use of coitus interruptus or possibly of coitus interruptus combined with induced abortion (*31*).

Its very obviousness is one reason for the popularity of coitus interruptus. It is often regarded as a natural method of birth prevention, even by some Roman Catholics. It is referred to as "being careful." Studies reported by Days and Potts (*31*) indicate that in France, Italy, and Hungary, all at least nominally Catholic countries, it is the contraceptive method of choice for two-thirds of the population. Ironically enough, the influence of Christianity in Latin America appears to have fostered frequent use of coitus interruptus. In Australia, it is practiced by one-fifth of the married couples and in 1965 yielded only to the pill as the number one method of contraception. In England, it was outranked in 1972 both by the pill in second place and the condom in first place. In the United States, coitus interruptus is less popular, and in the Orient it is rare (*31*).

Coitus interruptus has several unique advantages. It costs nothing, it cannot be forgotten when the couple goes away from home, the children cannot find it, the government cannot tax it, and it requires no medical supervision. The skilled use of coitus interruptus may impart to the man a sense of mastery and responsibility. The woman may be relieved of some of the burden of responsibility for contraception, but nevertheless she can facilitate effective withdrawal or even initiate it in some cases. Obviously, however, this procedure requires a good deal of self-control, especially considering the strong desire to achieve deeper penetration at the time of impending orgasm (*32*).

Most authors on the subject of coitus interruptus allude to the possibility of its failure as a contraceptive due to the presence of spermatozoa in the lubricative pre-ejaculatory fluids that often ooze from the penis in response to sexual stimulation. Actual counts of sperm in these secretions do not appear in the literature. As mentioned, our observations of samples of pre-ejaculatory fluid from 10 men revealed no sperm. Since it is possible, however, that the lubricating fluid may contain spermatozoa after a recent ejaculation, it has been suggested that between multiple acts of intercourse there should be urination to flush out spermatozoa (*33*). Nevertheless, when coitus interruptus fails to prevent conception, the reason usually is inadequate withdrawal.

Because coitus interruptus requires little instruction or followup, analysis of pregnancy rates among users has been rare and only undertaken as part of a sample study on cross-sections of a community. In such a study in Indianapolis, Ind., a low rate of 10 pregnancies per 100 woman years was found among users of coitus interruptus (*34*). Undoubtedly this rate would be much higher among inexperienced and casual users.

For maximum effectiveness of coitus interruptus, seminal emission must take place well away from the vagina and external genitalia of the woman. The man therefore has to be aware of the imminence of ejaculation, and the ejaculation has to occur as a single climatic event. However, more than 50 percent of males experience ejaculation as an intermittant or protracted emission of semen, at least on some occasions (*35*). Furthermore, factors such as alcohol and fatigue may affect the type of ejaculation or dull the awareness of its imminence.

Additional disadvantages of coitus interruptus include possible adverse psychophysical consequences for the woman if she repeatedly fails to reach orgasm after sexual arousal (*36*). Masters and Johnson have pointed out that resolution of the anatomical and physiological changes associated with sexual excitation, which usually occur rapidly and orderly after orgasm, become drawn out and less orderly if sexual arousal has not culminated in orgasm (*37*). The recurring failure of the woman to obtain orgasmic release following sexual stimulation may lead to difficulties, and this subject is worthy of study. It has been suggested that in some males, the psychological pressures of coitus interruptus may result in impotence —in particular, premature ejaculation (personal communication in 1974 from W. H. Masters). Furthermore, many males are physiologically or psychologically unable to practice coitus interruptus, either because they do not perceive the imminence of ejaculation, or because they cannot, or choose not, to withdraw in time. Therefore coitus interruptus cannot be considered a foolproof method of contraception.

Conclusion

The condom deserves another look, both as a contraceptive and as a prophylactic. In view of recent information about its efficacy and the more stringent manufacturing regulations that have increased quality assurance, the condom can serve both as an effective method of birth control and as an efficient means of protection against venereal disease. Coitus interruptus, another common nonprescription method of birth control, is certainly not a foolproof one.

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