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VASECTOMY REVERSAL IN NEPAL

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Summary. Data from 157 men in Nepal who had vasectomy reversal are analysed. Most sought reversal within 5 years of vasectomy. Half of the men sought reversal because of the death of a male child, and about one-fourth because of the loss of a female child. Re-marriage was the primary reason for only 10% of the men. Those having reversal because of the loss of a male child were generally younger, and for almost half of this group, the age of their last child at the time of their vasectomy was under 2 years. The results suggest that the demand for reversal could be considerably reduced by more careful screening of the potential vasectomy acceptors.

Introduction

Despite the fact that vasectomy (like female sterilization) is considered a permanent and irreversible method of family planning, life cycle events may lead some vasectomy acceptors to want to restore their fertility. This option is enhanced by the considerable advances that have been made in recent years in surgical techniques of vasectomy reversal (Cos *et al.*, 1983; Greenberg, 1985; Silber, 1985).

The demand for vasectomy reversal (vasovasostomy) worldwide is not known, but data from a limited number of countries suggest one to three men per 1000 who had undergone vasectomy (Bradshaw, 1976; Liskin, Pile & Quillin, 1983). In view of the fact that vasectomy is the method chosen by a significant portion of those accepting family planning in many developed and developing countries (Ross *et al.*, 1985; London *et al.*, 1985), even if only 1% of those vasectomized desired reversal, the total numbers seeking such an operation would be substantial. However, in many countries, especially developing ones, vasovasostomy services are not available. Furthermore, many of those men who desire vasectomy reversal may not be aware that this possibility exists. Even those who know about it may not have access to such services. The proportion seeking reversal may therefore rise with increasing availability and awareness.

There is, however, no guarantee that the wider availability itself would help to restore fertility effectively. In a review of 25 studies conducted during 1978–83, Cos *et al.* (1983) noted that although the patency rate (incidence of patients who have a post-operative semen specimen with detectable mature sperm) averaged 82% (range

74–90%), pregnancy rates ranged between 41% and 59% only, with an average of 53%. Higher and lower success rates were found to be associated with microscopic and macroscopic procedures, respectively. Unlike the original surgery, which takes only 10–15 minutes, microscopic reversal surgery takes 2–3 hours and requires surgeons who are well-trained and willing to do the operation. Taking these and other factors into consideration, 'even if the theoretical reversal rate were to be above 90%, the complex surgery required, with the requirement for skilled microsurgeons, makes reversal impractical or unavailable for men in many parts of the world' (Ross *et al.*, 1985).

Analysis of data on those seeking reversal contributes to an understanding of the factors that are likely to predict reversal seeking, and so may help counsellors to identify and to give special attention to high risk individuals in screening for vasectomy. In this paper, data are analysed on socioeconomic and personal characteristics of men in Nepal who sought and underwent vasovasostomy, and their reasons.

Although contraceptive use is low in Nepal (in 1986, only 15% of married women of childbearing age reported using a family planning method), vasectomy and female sterilization accounted for 86% (41% vasectomy, 45% female sterilization) of the total current contraception in 1986 (Thapa, 1989). The service statistics show (Fig. 1) that female sterilization has been increasing since the mid-1970s and has risen

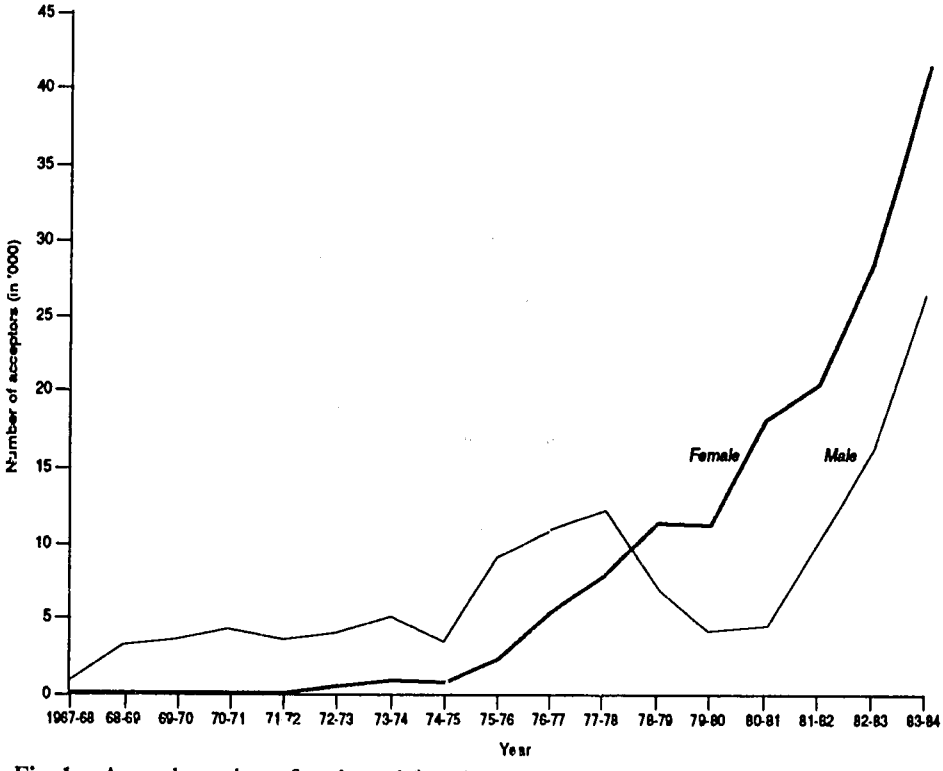

Fig. 1. Annual number of male and female sterilization acceptors, Nepal, mid-1967–mid-1984 (Nepalese fiscal years). Source: FP/MCH Project (1987).

sharply since 1979–80. Vasectomy was more frequent than female sterilization until 1977–78, after which its frequency declined to 1980–81 but rose sharply thereafter. During the 10-year period, mid-1974 to mid-1984, some 106,000 men had accepted vasectomy in Nepal.

There are no legal regulations concerning eligibility for either male or female sterilization in Nepal. Further, there appear to be no well specified criteria formulated by the government for screening male or female sterilization acceptors. In some countries such as Sri Lanka, the government has issued clear criteria related to maximum age, marital status, spouse's informed consent and parity of the potential acceptors. However, in Nepal, it is only recommended that the potential acceptor has a minimum of two living children and that the youngest child be at least 5 years old.

The Family Planning Association of Nepal (FPAN), a private, voluntary organization, performs two-fifths of the total sterilization operations in Nepal. Since 1980, the FPAN has offered vasectomy reversal on a limited, irregular basis at its referral headquarters clinic in Kathmandu, the capital city. This is the only clinic in Nepal where reversal is performed, so the service is not available to those who cannot afford to come to it. As with vasectomy, reversal is performed free of charge and, subject to availability, is provided to any individual, regardless of the place or organization where vasectomy may have been performed originally. By 1985, vasectomy reversals had been performed on approximately 185 men, 1·2 cases per 1000 total vasectomy acceptors.

Data

The data come from the FPAN's referral clinic in Kathmandu. An initial review of the clinic's records showed that for 28 cases the required data were not complete, almost all of them in the first year that FPAN made the service available. However, fairly complete records existed for 157 cases on which this analysis is based.

All reversals were performed by a single physician (T. M. Vaidya, formerly Medical Director of the FPAN). For approximately 60% of the cases, the procedure used was the re-attachment of both proximal vas deferens. In the remaining cases, one vas deferens was reattached.

Findings

The characteristics of the respondents are summarized in Table 1. All were from Nepal. Most of them had their vasectomy there but in nine it was performed in India. One-fourth of the 157 men lived in urban areas in Nepal. About half of them were literate, but did not have formal schooling. About one in ten was illiterate.

The mean time since vasectomy was 4·5 years, with fairly small variation (Table 1). The mean age of the acceptors at the time of the reversal operation was 35 years. The average number of children at the time of vasectomy was 2·3. Eighty-five percent had at least two living children. About 8% (twelve cases) did not have any children at the time of vasectomy. The acceptors had proportionately more boys than girls. Nearly

Table 1. Sociodemographic characteristics of 157 men who underwent vasectomy reversal, Nepal

Characteristics (at vasectomy)	%*	Mean	*N*
Country where vasectomy was done			
India	5·7		9
Nepal	94·3		148
Time from vasectomy to reversal (years)		4·5	
Residence			
Urban	25·5		40
Rural	74·5		117
Education			
Illiterate	10·8		17
Literate, but no schooling	49·7		78
Primary	19·1		30
Secondary or higher	16·6		26
Unknown	3·8		6
Age (at time of reversal)			
< 30	21·8		34
30–39	52·6		83
40+	25·6		40
		34·9	
Living children			
0	7·7		12
1	7·1		11
2	51·0		80
3+	34·2		54
		2·3	
Living sons			
0	10·9		17
1	55·1		87
2	28·8		45
3+	5·1		8
		1·3	
Living daughters			
0	32·7		51
1	42·9		67
2	19·9		32
3+	4·5		7
		1·0	
Age of youngest child			
1	36·3		57
2–4	33·8		53
5+	12·7		20
Unspecified	9·6		15
No child	7·7		12
		2·1	

* % distributions total 100%, except for rounding.

90% of them had at least one boy whereas only 67% had one or more girls. The mean age of the youngest child at the time of the father's vasectomy was 2 years.

The total number of living children at the time of vasectomy was analysed by the country where the operation was performed. Of the twelve men who did not have any children, nine had undergone vasectomy in India and three in Nepal. Seven of the nine men who had undergone vasectomy in India did not have any living children at the time of vasectomy.

Table 2 shows the main reasons for requesting reversal. Death of a son was the most common reason (50%), and second was death of a daughter (22%). Re-marriage was the third most common reason (10%). Six men (4%) reported that they had been coerced to accept vasectomy. Other reasons for requesting reversal included physical handicaps of a living son or daughter, changes in the husband's or wife's desired family size, or other unspecific sequelae of the vasectomy.

Since child death accounted for 72% of the reasons for reversal, data were analysed by causes of death. In the majority of the cases (67%), there had not been any diagnosis or the respondents did not know the reason. Among the diagnosed cases, diarrhoea and measles were the most frequently reported causes.

The socioeconomic characteristics of the men, classified by reasons for seeking reversal, are shown in Table 3. About one-fourth of the men who gave reasons other than death of a son or a daughter, or re-marriage, had had their vasectomy in India. About 27% and 20%, respectively, of those who sought reversal because of death of a son or a daughter lived in urban areas. The urban proportion was considerably higher (35%) for the men in the residual category of causes. The two groups who wanted reversal because of death of a son or a daughter had similar educational backgrounds. However, men in the other two categories of reasons had higher educational attainment. The mean time since vasectomy to reversal was lowest for those who cited death of a son as the main reason. It was slightly higher for those who had lost a daughter and considerably higher for those who had re-married.

Among those who had lost a son, the mean age of the acceptor was lower by 2 years than among those who had lost a daughter. However, both groups had the same mean number of living children at the time of vasectomy, although the mean number of living sons was slightly higher than that of living daughters for both the groups.

Table 2. Reasons for seeking vasectomy reversal, Nepal

Reason	%	*N*
Death of a son	49·7	78
Death of a daughter	22·3	35
Re-marriage	9·6	15
Coercion	3·8	6
Other sequels	3·8	6
Unspecified	10·8	17
Total	100·0	157

Table 3. Sociodemographic differentials in main reasons for seeking vasectomy reversal, Nepal

Characteristics (at vasectomy)	Reason							
	Death of a son ($N = 78$)		Death of a daughter ($N = 35$)		Remarriage ($N = 15$)		Other ($N = 29$)	
	%*	Mean†	%	Mean	%	Mean	%	Mean
Country where vasectomy was done								
India	1·3		0		0		27·6	
Nepal	98·7		100·0		100·0		72·4	
Residence								
Urban	26·9		20·0		13·3		34·5	
Rural	73·1		80·0		86·7		65·5	
Education								
Illiterate	11·5		14·3		6·7		6·9	
Literate, but no schooling	48·7		45·7		46·7		58·6	
Primary	20·5		22·9		20·0		10·3	
Secondary or higher	14·1		14·3		20·0		24·1	
Unknown	5·1		2·9		6·7		0	
Time from vasectomy to reversal (years)		3·9		4·6		6·5		5·6
Age (at time of reversal)		34·3		36·3		36·5		34·1
< 30	20·8		22·9		6·7		31·0	
30–39	58·4		40·0		73·3		41·4	
40+	20·8		37·1		20·0		27·6	
Living children		2·4		2·4		2·7		1·9
0	2·6		2·9		0		31·0	
1	11·5		2·9		0		3·4	
2	55·1		53·0		46·7		31·0	
3+	30·8		32·4		53·3		34·5	
Living sons		1·4		1·3		1·9		0·9
0	3·8		8·8		0		37·9	
1	57·7		64·7		40·0		44·8	
2	35·9		23·5		40·0		10·3	
3+	5·1		5·9		0		3·4	
Living daughters		1·0		1·1		0·8		1·0
0	34·6		20·6		46·6		34·5	
1	41·0		61·8		26·7		34·5	
2	19·2		11·8		26·7		27·6	
3+	5·1		5·9		0		3·4	
Age of youngest child		1·0		1·6		4·2		1·5
1	48·7		17·1		20·0		10·1	
2–4	26·9		7·1		31·4		9·2	
5+	14·1		5·7		30·2		34·7	
Unspecified	10·3		20·2		18·4		14·9	
No child	2·6		2·9		0		31·1	

* % distributions total 100%, except for rounding.
† Means exclude unknown cases.

There were considerable differences between these two categories of men with respect to the age of their youngest child. For 49% of those who wanted reversal because of their son's death, the youngest child's age at the time of their vasectomy was under 2 years. The youngest child's age was under 2 years for only 17% of those who sought reversal because of death of a daughter.

Discussion

The data on 157 men who underwent vasectomy reversal in Nepal do not represent the modal characteristics of vasectomy acceptors. Those seeking reversal are a specific minority group of sterilized men, in that their mean number of living children at the time of vasectomy was lower by two children than the average for male sterilization acceptors nationally (Tuladhar, 1989), their mean age at the time of vasectomy was lower (by 2 years) and a higher percentage had a youngest child who was less than 2 years old. Three-fourths of the men had a youngest child younger than the recommended minimum age of 5. Clearly, the recommended minimum age was not followed for the majority of those seeking reversal.

Death of a male child was the single most important reason for seeking reversal, followed by death of a female child. These two reasons accounted for three-fourths (72%) of all the reasons. Re-marriage was the primary reason for only about 10% of the men. These findings are different from those in more advanced countries where marital discord, divorce and remarriage play a more important role (Clarke & Gregson, 1986; Gomel, 1978; Howard, 1982). These data are more in line with results from other developing countries where child mortality assumes a greater significance (Bradshaw, 1976; Liskin et al., 1983).

Coercion was given as the reason for seeking reversal by six men (4%) who had obtained vasectomy in India. The subjects reported that this occurred during the compulsory sterilization programme in India but the circumstances surrounding this are not known.

The interval between vasectomy and reversal for those who had lost a male child was shorter than for those who had lost a female child or had re-married. The large proportion of those who lost a son (49%) had a youngest child less than 2 years old when they obtained a vasectomy.

Infant mortality is still high in Nepal. In the early 1980s, Nepal had an infant mortality rate of 108 (per 1000 births); the rate for males was substantially higher, at 117, compared with 98 for females (FP/MCH Project, 1987). This suggests that those vasectomy acceptors who have a relatively small family size and whose last child is still very young are at high risk of losing a child, particularly if it is a male child.

More careful screening of men seeking vasectomy, and especially a strict regard of the age of the last child, could reduce the demand for vasectomy reversal considerably. Couples with very young children should be encouraged to adopt a temporary reversible method of family planning and defer vasectomy until the last male child is older. The promotion and use of spacing methods need to be given greater importance in the family planning programme in Nepal (Thapa, 1989).

One important deficiency in the data is the absence of patency or pregnancy rates. Because these vary widely, it is important to know both anatomical and functional

success among the subjects (Fuchs & Alexander, 1983; Requada *et al.*, 1983; Silber, 1978a, b; Weinreth, 1984; Ameler & Dubin, 1975; Frued & Ventura, 1974). Anatomical failures are associated with several possible factors, including the procedure for reconnection; the length of time the vas deferens has been obstructed; the presence or absence of spermatic granuloma; obstruction in the proximal vas or epididymides; any misalignment of the proximal and distal vas lumens; the presence or absence of sperm antibodies after vasectomy; vasectomy in the convoluted rather than the straight vas; and the size of the segment of vas removed at vasectomy. Functional failure may occur because of one or a combination of the following: epididymal and testicular changes; injury to sympathetic nervous system; low quality of pre-vasectomy sperm; poor or lowered fertility of the partner; poor follow-up and the presence of sperm antibodies detrimental to fertility. Standardized follow-up at 2-year or more frequent intervals in order to determine the effects of the various immunological, epidemiological or technique-related factors on successful outcomes has been suggested (Weinreth, 1984; Silber, 1978a; Wichlund & Alexander, 1979).

The determination of some of these variables requires laboratory testing facilities that are not available in Nepal. Partly because of this, no systematic follow-up system for the vasovasostomy acceptors is established. Neither are the men required to return to the clinic. Hence, anatomical or functional successes could not be systematically ascertained.

The effect of reversal services may not be fully assessed by consideration of anatomical or functional successes only. Gomel (1978), in a study of sterilized females in Canada seeking reversal, found that 46% were willing to accept a pregnancy rate of under 15% with tubal reconstruction; 86% were willing to accept a chance of 50% or less. Such a psychological factor may play an important role among those seeking vasectomy reversal also. Some of the men who undergo reversal may benefit psychologically from reversal even if their fertility is not restored.

But the question remains whether reversal services should be provided merely for psychological reasons. Perhaps an equally important question is to what degree psychological factors play a role in men's decision to seek vasectomy reversal in developing countries. Provision of reversal services may not only distract attraction from the programme's focus but also divert a disproportionately large share of resources. In Nepal, the clinical facilities and logistic support required to set up true vasectomy reversal services do not appear feasible at present or in the foreseeable future. Furthermore, making reversal easily available may create a false impression that vasectomy is easily reversible. Nevertheless, the programme needs to be responsive to the family tragedies experienced by a small number of acceptors.

Conclusion

There are two particular categories of men liable to seek vasovasostomy. These are men who have just one male child or whose youngest child is less than 2 years old. This suggests that a significant portion of the demand for vasectomy reversal could be eliminated by discouraging such men from having a vasectomy and instead motivating them and their wives to use temporary methods of family planning until the youngest child is at least 2 years old. The IUD and the NORPLANT implant

system (which is being introduced in Nepal) could be attractive, highly effective reversible methods for such couples since, unlike the pill or condom, they do not require daily motivation and compliance.

An important implication of the analysis is that family planning personnel need to be more careful in pre-operative counselling. Efforts to reduce the demand for reversal could be implemented more easily and less expensively than expanding the availability of vasovasostomy.

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