Attitudes of Diabetic Men After Implantation of a Semi-Rigid Penile Prosthesis

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Erectile impotence is a common and distressing problem in diabetic men. In order to examine the impact of a penile prosthesis on the quality of life of the recipients, we mailed a questionnaire to all patients (N = 49) who received a semi-rigid (Small-Carrion) prosthesis at the Seattle VAMC from 1976 to 1981. Fourteen patients with diabetes and 23 without diabetes returned the questionnaire. Direct comparisons showed no statistically significant differences between the responses of the two groups. Based on a scale of 1–7 (1 = worst, 4 = no change, 7 = best), the general effect of the operation on the quality of life of the recipients was 5.7 ± 0.3 ($\bar{X}$ ± SEM); the quality of intercourse was 5.1 ± 0.3; the patient's perception of his partner's response to the prosthesis was 5.2 ± 0.3; and the patient's perception of postoperative changes in his relationship with his partner was 5.6 ± 0.3. Eighty-three percent of the patients were satisfied with the performance of the prosthesis. Most of the patients (86%) felt that their preoperative expectations had been fulfilled and would elect to have the procedure if they had it to do over again. However, five patients (14%) stated that they would not elect the operation again because their partners did not appreciate the operation (N = 2); the operation produced severe, prolonged pain (N = 1); or the patient's expectations had not been fulfilled (N = 2). Preoperative counseling should be used to foster realistic patient and partner expectations. This operation, which appears to improve the quality of life for most diabetic patients with erectile impotence, should be considered a part of standard care and not as a cosmetic procedure or extraordinary care.
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Erectile impotence is a common problem in diabetic men[1–3] and can be a source of great concern to diabetic men as well as to their sexual partners.[4] While erectile impotence may be psychogenic, it often has an organic etiology.[3,5,6] Penile prostheses are now being used with increasing frequency to treat erectile impotence in diabetic men, as indicated by a previous review.[7]

Even though the objective of using a penile prosthesis is to improve the recipient's quality of life, outcome has frequently been defined as successful if a patient regains the ability to achieve vaginal penetration. Despite the fact that many of the candidates for a penile prosthesis have diabetes, the impact of this operation on the interpersonal relationships and quality of life of diabetic men has not been extensively studied. One group has conducted a postoperative telephone survey, which indicated that 34 of 36 diabetic recipients of a penile prosthesis were "satisfied and happy that they had had the implantation."[8] Another group used a less interviewer-dependent technique (a mailed questionnaire supplemented by telephone interviews with nonresponders) and found that both the diabetic recipients and their partners experienced an increase in the physical enjoyment of sexual intercourse.[9]

Confirmation of these initial positive reports is desirable due to the frequency and importance of erectile impotence in diabetic males. Also, a direct comparison between diabetic and nondiabetic men using the same survey instrument for both groups is needed since a knowledge of any distinctive postoperative attitudes would facilitate more effective preoperative counseling.

METHODS

From 1976 through 1981, 19 diabetic and 30 nondiabetic men underwent operations for placement of a semi-rigid (Small-Carrion, Heyer-Schulte Corp., Goleta, California) penile

TABLE 1
Probable etiology of erectile dysfunction

Diabetic subjects* (N = 14)		Nondiabetic subjects* (N = 23)	
Neurogenic	(11)	Radical cystectomy or prostatectomy	(10)
Psychogenic	(2)	Multiple sclerosis	(4)
Vascular	(1)	Psychogenic	(3)
		Vascular	(2)
		Brain cancer	(1)
		Unknown	(3)

*Numbers in parentheses represent the number of patients in each category. Probable etiology was deduced from retrospective chart review.

prosthesis at the Seattle Veterans Administration Medical Center. These patients were surveyed postoperatively by means of a mailed questionnaire that contained an assurance of confidentiality of identity. The 14 diabetic and 23 nondiabetic patients who returned a questionnaire were similar (all P = NS) with respect to age (54 ± 2 yr versus 57 ± 2; $\bar{X}$ ± SEM), months since operation (36 ± 6 versus 33 ± 5), creatinine (1.2 ± 0.04 mg/dl versus 1.2 ± 0.1), blood urea nitrogen (14 ± 1 mg/dl versus 13 ± 1), and circumcision (8 of 13 circumcised versus 13 of 23). Two patients had insulin-dependent diabetes mellitus (IDDM) and 12 had non-insulin-dependent diabetes mellitus (NIDDM). Fasting plasma glucose was 219 ± 19 mg/ml for diabetic patients and 107 ± 4 mg/ml for nondiabetic patients ($P < 0.001$). Chart review indicated that respondents and nonrespondents were similar (P = NS) with respect to age, months postoperative, renal function, and glycemia. Each respondent's probable etiology of erectile dysfunction is indicated in Table 1. Probable etiology was determined by chart review. Diagnostic work-ups as documented in the medical record were not uniform. In three nondiabetic cases there was insufficient information to establish a probable etiology of erectile dysfunction, and these were listed in Table 1 as "etiology unknown." Nocturnal penile tumescence studies (when reported) and the medical history were used to separate psychogenic from organogenic impotence. Psychogenic impotence was presumed if the impotence was of sudden onset, partner specific, associated with social stress, and without any suggestions of an organic cause. Organogenic impotence was subdivided into traumatic, vasculogenic, and neurogenic. A history of major pelvic surgery immediately preceding the onset of erectile dysfunction was considered to be causally related to the impotence. Severely diminished femoral pulses in the context of a history of angiographically documented peripheral vascular disease was considered suggestive of vasculogenic impotence. Penile blood pressure (brachial penile index) was recorded in one of three cases and confirmed the diagnosis of vasculogenic impotence. Although five patients (2 with and 3 without diabetes) had low plasma testosterone, confounding factors suggested an etiology other than hormone deficiency. No medications were incriminated as an etiologic factor. Neurogenic impotence was a diagnosis of exclusion. Based on chart review, it was felt that multiple sclerosis was the etiology of erectile dysfunction in four cases and brain cancer in another case. All of the patients were at least 1 yr postoperative at the time of the survey. Statistical analysis of the survey results was done using a nonpaired *t*-test (two-sided) for intergroup comparisons, Student's paired *t*-test (two-sided) for paired changes for a given patient, and Fischer's exact sign test for comparisons of yes/no responses.

RESULTS

Selected questions from the patient questionnaires have been abbreviated and reorganized into categories to facilitate presentation of results (Table 2). Three questions pertained to the patient's overall assessment of the results of the operation. Eighty-three percent of all respondents were satisfied with the performance of the prosthesis. Eighty-six percent felt that the prosthesis fulfilled preoperative expectations, and 86% stated that they would undergo the operation if they had it to do over again.

Five questions pertained to the patient's psychological responses to the prosthesis (Table 2). Based on a scale of 1–7 (1 = worst, 4 = no change, 7 = best), the general effect of the operation on the quality of life of the recipients was 5.7 ± 0.3 ($\bar{X}$ ± SEM); the quality of intercourse was 5.1 ± 0.3; the patient's perception of his partner's response to the prosthesis was 5.2 ± 0.3; and the patient's perception of postoperative changes in his relationship with his partner was 5.6 ± 0.3. Thirty-three percent of the patients recalled experiencing preoperative anxiety.

Physiologic aspects of sexual intercourse were also examined in the survey (Table 2). Sixty-six percent of the patients reported a preoperative ability to achieve nonpenetrating orgasm. Ninety-one percent were able to achieve penetrating orgasm postoperatively, but the operation had a negligible effect on the patient's ability to ejaculate. Although there was a variable effect on the frequency of intercourse, the overall effect of the operation was an increase in frequency.

Twenty-one percent of the patients with diabetes and 43% of the patients without diabetes experienced specific problems that they considered major (Table 3). Five patients (2 with diabetes and 3 without diabetes) with major problems stated that they would not have the operation if they had it to do over again.

Pain was experienced by all but one patient during the first postoperative week and was moderate to severe in most cases (Figure 1). By the end of the first postoperative month, 15% of the diabetic patients and 39% of the patients without diabetes were pain free, and most of those with pain had only mild to moderate pain. The prosthesis was sometimes used before the disappearance of pain (Figure 2). After 6 mo, all but two patients had used their prosthesis. Of the two patients who never used their prosthesis, one was embarrassed by the small postoperative size of his penis. The second patient's wife, who had not received preoperative counseling, feared injury and refused intercourse.

There was no statistical difference (all $P > 0.05$) between

TABLE 2
Summary of survey results

Question	Question† type	Response* All subjects (N)‡	Nondiabetic subjects (N)	Diabetic subjects (N)	P§
Overall assessment					
Satisfied with prosthesis performance	Y/N	83% (36)	83% (23)	85% (13)	NS
Prosthesis fulfilled expectations	Y/N	86% (35)	82% (22)	92% (13)	NS
Would undergo operation again	Y/N	86% (36)	91% (23)	77% (13)	NS
Psychological assessment					
Effect of prosthesis on life in general	Scale	5.7 ± 0.3 (36)	5.7 ± 0.3 (23)	5.8 ± 0.5 (13)	NS
Quality of postoperative intercourse versus before onset of impotence	Scale	5.1 ± 0.3 (34)	4.8 ± 0.4 (21)	5.6 ± 0.5 (13)	NS
Patient's perception of partner's response to prosthesis	Scale	5.2 ± 0.3 (35)	5.1 ± 0.4 (22)	5.5 ± 0.6 (13)	NS
Patient's perception of postoperative change in relationship to partner	Scale	5.6 ± 0.3 (34)	5.6 ± 0.3 (22)	5.5 ± 0.5 (12)	NS
Preoperative apprehension	Y/N	33% (36)	26% (23)	46% (13)	NS
Physiologic assessment					
Preoperative nonpenetrating orgasm	Y/N	66% (35)	77% (22)	46% (13)	NS
Postoperative penetrating orgasm	Y/N	91% (34)	86% (21)	100% (13)	NS
Preoperative ejaculation	Y/N	66% (35)	73% (22)	54% (13)	NS
Postoperative ejaculation	Y/N	57% (35)	50% (22)	69% (13)	NS
Frequency of postoperative intercourse versus preoperative	More	44% (34)	50% (22)	33% (12)	NS
	Same	32% (34)	23% (22)	42% (12)	NS
	Less	24% (34)	27% (22)	25% (12)	NS
Preoperative explanation					
Adequate preoperative explanation to patient	Y/N	92% (36)	87% (23)	100% (13)	NS
Procedure explained to partner preoperatively by physician	Y/N	44% (34)	50% (22)	33% (12)	NS

*Response reported as percent yes for Y/N questions and as $\bar{X}$ ± SEM for scaled questions.
†Question types: Y/N = choice of yes or no response; scale = choice of 1–7 (1 = worst, 4 = no change, 7 = best).
‡N = Number of patients answering specific questions; not all patients answered all the questions.
§P compares nondiabetic with diabetic recipients; NS = not significant ($P > 0.05$).

any of the responses given by the diabetic patients and the corresponding responses given by the nondiabetic patients. In addition, there was no statistical difference between the responses given by those whose partner had had a preoperative explanation of the surgical procedure and those whose partner had not.

DISCUSSION

There were two major findings in this survey of patients receiving a penile prosthesis. First, for our patients the outcome of the operation was successful in the opinion of the majority of the recipients. This is true whether one addresses the patient's perception of the effect of the operation on his "life in general," the quality of intercourse, the mechanical performance of the prosthesis, the frequency of penetrating orgasm, the fulfillment of preoperative expectations, or the patient's willingness to undergo the operation again. Second, postoperative attitudes of the diabetic recipients in this series are similar to the postoperative attitudes of the nondiabetic recipients in this series.

Two other studies have specifically examined the postop-

TABLE 3
Specific problems

Diabetic subjects (N = 14)		Nondiabetic subjects (N = 23)	
Major			
(21%)*		(26%)	
No ejaculation	(N = 1)†	Too short or too soft	(N = 3)†
Embarrassment	(N = 1)	Spouse disapproval	(N = 3)‡
Severe pain	(N = 1)†	Infection resulting in replacement or reoperation	(N = 2)
		Embarrassment	(N = 1)
Minor			
(21%)		(31%)	
Embarrassment	(N = 3)	Embarrassment	(N = 1)
		Difficulty in aiming	(N = 3)
		Too short or too soft	(N = 2)
		Pain upon urination	(N = 1)

*Percentage of patients reporting a major or minor problem. Some patients reported multiple problems.
†One patient stated that he would not have the operation if he had it to do over.
‡Two patients stated that they would not have the operation if they had it to do over.

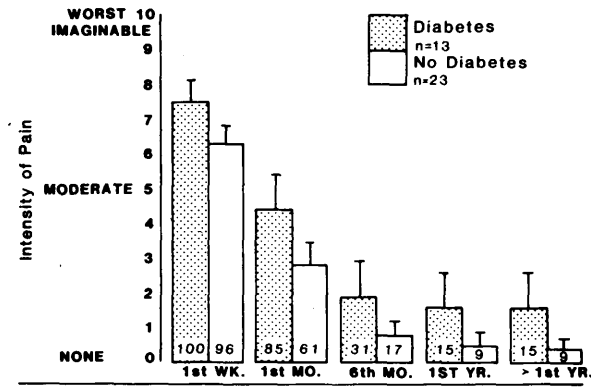

FIG. 1. Intensity, duration, and incidence of postoperative pain. Numbers within the bar graphs indicate the percentage of nondiabetic and diabetic subjects experiencing prosthesis-related pain at various points in time after implantation of a semi-rigid penile prosthesis. Pain was very common and often severe during the first postoperative week. One patient continued to report severe pain more than 1 yr after the operation. However, that patient also had a history of multiple prior vascular surgeries and chronic pain before prosthesis placement. Other patients were free of pain or experienced only very mild discomfort 6 mo after the operation.

erative attitudes of diabetic patients receiving a penile prosthesis.[8,9] Those studies and ours used different sets of questions, but all three studies found that most diabetic recipients had positive attitudes regarding their operation. In addition, our study made intergroup comparisons between diabetic and nondiabetic patients. These comparisons did not identify any distinctive concerns or attitudes on the part of the diabetic patients.

Our study also indicates that postoperative pain is often severe and may persist for several months. This pain does not usually result in a negative long-term attitude toward the operation, delay intercourse very long, or persist indefinitely. However, it would seem reasonable to address the issue of postoperative pain in a patient's preoperative counseling.

We did not find a difference in outcome between those patients whose partners had received a preoperative explanation from a physician and those whose partners had not. However, attitudes measured more than a year after surgery may well overlook intervening adjustments that would have been made more easily had the partner received counseling. We were surprised to find that only 40% of the patients in our series reported that their partners had received a preoperative explanation of the procedure from a physician.

This article reports the attitudes of diabetic patients regarding their penile prosthesis. A mailed questionnaire was used to determine these attitudes. Mailed questionnaires have been used by other groups interested in the postoperative attitudes of various series of patients receiving a penile prosthesis,[10,11] including one series of diabetic patients.[9] Other groups have used telephone interviews[8] or face-to-face interviews.[12,13] However, there is no accepted "gold standard" for questionnaire design. Nor is there any convincing evidence that a face-to-face interview or telephone interview yields more valid results than a mailed questionnaire and, in fact, we feel that the opposite is true. Clearly the attitudes of diabetic patients toward their penile prostheses are important to know since there would be little rationale for implanting penile prostheses if such prostheses did not have a favorable impact on the recipient's quality of life. On the other hand, attitudes are difficult to measure. Several features of our survey give reasonable assurances of the validity of our data. First,

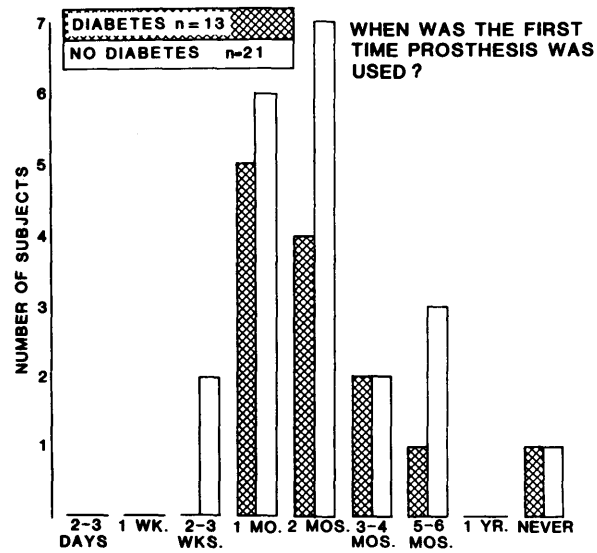

FIG. 2. Time elapsed between implantation of penile prosthesis and first use. By 6 mo after operation all but two patients had used prosthesis, some before discomfort had completely subsided.

our questionnaires were accompanied by a cover letter that assured the confidentiality of the patient's identity. The fact that some replies were negative suggests that at least some patients were comfortable relating negative experiences. Second, each patient's medical records were carefully reviewed by at least one member of the research team and, though information in these charts was not standardized, there were no indications that patient experience was misrepresented in the patients' reponses to our questionnaire. Third, the questionnaire included an open-ended section for "any comments." Most respondents included comments in that section. Whenever such comments were included they were consistent with comments and graded responses to other sections of the questionnaire. Importantly, many of the responses in the "general comments" section were rather elaborate. It would seem unlikely that respondents would construct elaborate open-ended comments simply to please the surveyors. Fourth, we compared the responses of the diabetic patients with patients who were similar except for their underlying disease. Although these nondiabetic patients do not represent the ideal control group, comparison with a sham-operated diabetic group or an operated group of healthy persons is not feasible. Another approach to validation would have been to use direct observation, but direct observation of most sexual behavior and attitudes would not have been feasible even in a prospective study.

Despite the favorable outcome in most diabetic patients, it must be remembered that serious complications do sometimes occur (Table 3). Therefore, adequate preoperative counseling and postoperative follow-up is mandatory for the patient, recommended for the partner. Nevertheless, a penile prosthesis should be strongly considered for diabetic patients with organogenic erectile impotence provided the etiology has been established and other forms of treatment such as hormonal replacement or vascular surgery are not indicated. Diabetic patients with psychogenic impotence should be considered for implantation of a penile prosthesis only on the strong recommendation of a psychiatrist or clinical psychologist after psychological treatment modalities have failed. No recommendation regarding the type of prosthesis to be used can be made on the basis of this study. However, this operation, which appears to appreciably improve the quality of life for most diabetic patients with erectile impotence, should be considered a part of standard care and not as a cosmetic procedure or extraordinary care.

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