

Prostatectomy and Inguinal Hernia Repair: A Comparison of the Sexual Consequences

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This study investigated whether psychosexual changes found after surgery for benign prostatic enlargement relate specifically to the prostatectomy procedure or to the stresses of surgery in general. The sexual adjustment of 91 married men (ranging in age from 51 to 77) who had undergone either transurethral prostatectomy or inguinal hernia repair was compared using the same measures and experimental design. Results show that both surgeries appeared to result in relatively minor but widespread negative consequences for sexual adjustment and expression. Findings on both individual and couple sexual adjustment suggest that the psychosexual consequences of the two procedures do not differ substantially. As expected, the one exception was retrograde ejaculation, which was more likely to be experienced by men who had undergone prostate surgery. The results illustrate the necessity of conducting comparative studies when evaluating the sexual consequences of surgical procedures and highlight the importance of taking age into consideration when conducting research on the effects of surgery on older men.

Virtually all men experience benign prostatic enlargement, typically starting at age 40. By age 60, more than 50% of males experience some kind of prostate problem; this figure increases with advancing age.^{1,2} As the number of people over age 60 in the population is increasing, one can

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expect a growing number of men to manifest symptoms of benign enlargement of the prostate. Surgery, most commonly transurethral prostatectomy, is the treatment of choice when symptoms become severe.

The prospect of having to undergo prostate surgery is usually contemplated with dismay by men with prostatic symptoms. In addition to concerns about the procedure itself, many men are also worried about the sexual consequences of prostatectomy. For example, Libman, Creti, and Fichten³ found that while 20% of men believed their sex life would deteriorate after surgery, only 2% thought that it would improve.

The literature does not provide a clear answer to the question: What are the sexual consequences of prostate surgery? While transurethral resection, the most popular procedure, involves no external incision and is unlikely to disturb the innervation of the erectile system, the reported adverse sexual consequences of all types of prostatectomies, including the transurethral procedure, have been substantial. When one considers that prostatectomy is typically performed on aging individuals, who are already exposed to negative societal pressure, and that the surgical procedure involves the genitals directly, some incidence of psychogenic post-prostatectomy sexual impairment might be expected. What is surprising is the variability of outcome following prostate surgery for benign prostatic enlargement. A review of studies carried out between 1960 and 1985 reveal an astonishing range, 0% to 100%, in the frequency with which such impairment reportedly occurs.⁴

Most studies on aging males who have undergone surgery for benign prostatic enlargement show minor but widespread indications of deterioration in various aspects of sexual adjustment after surgery. It is not possible, however, to make firm conclusions about either the precise nature of the deterioration or about the incidence of negative sexual outcomes after prostatectomy because a variety of methodological weaknesses and confounds make the results of existing studies difficult to interpret. Problems include: 1) a preponderance of uncontrolled retrospective studies; 2) nonhomogeneous samples (type of prostatic disorder, type of surgery, general physical health, age, availability of a partner, and preoperative sexual adjustment); 3) inadequate outcome measures; and 4) widely different criteria for adequate sexual functioning as well as lack of attention to the multidimensional nature of sexual adjustment.

To assess the impact of a stressor such as surgery, it is desirable to evaluate affected individuals' status both prior to and following the event. Because of difficulties inherent in conducting prospective studies, investigations of the sexual consequences of prostate surgery have often asked men who have undergone the procedure to evaluate their prestressor adjustment retrospectively. However, data show that retrospective and prospective methods of collecting information about the sexual consequences of prostatectomy do *not* yield equivalent results. While the two techniques do not show differences when current (postsurgery) status is assessed, retrospective evaluation of sexual adjustment prior to the prostate surgery results in more favorable ratings of presurgery adjustment than does prospective evaluation.⁵

These findings suggest that when using retrospective methodology, it

is vital that data be obtained from a comparison group, where subjects also complete measures on a retrospective basis. Comparison group subjects may be of two types: individuals who have experienced no aversive event or people who have experienced a different type of stressor. In the present investigation, the latter alternative was selected. In order to evaluate the effects of prostate surgery on sexual adjustment, we selected two samples of married men who were similar in age, physical health, and psychological and marital adjustment who had undergone either transurethral prostatectomy or a surgical procedure of "equivalent" severity: inguinal hernia repair (a procedure which involves repair of the weakened connective tissue in the groin area by suturing surrounding muscles and ligaments). A hernia repair comparison group was selected because this procedure, too, is often performed on older individuals and because the two surgical procedures are similar in terms of their generally non-life-threatening physical implications and the anatomical proximity of the operative sites.

Studies of sexual adjustment in aging men generally indicate a gradual decline in sexual functioning with increasing age.⁶⁻⁹ Yet, most studies of the comparative effects of different surgeries on sexuality in aging men fail to take into account large discrepancies in the age of subjects: 1) published reports generally include men whose ages vary from 50 to 80—a difference of three decades; 2) prostatectomy patients tend to be older than nonprostatectomy patients;¹⁰ and 3) in most investigations which have compared prostatectomy to other types of surgery, the age variable confounds the interpretation of results.

For example, three studies that failed to control for the ages of subjects in different surgical groups showed that prostatectomy is followed by a greater degree of erectile disorder than other surgical procedures, such as perineal biopsy,¹¹ inguinal herniorrhaphy,¹² and intraperitoneal and inguinoscrotal surgery.¹³ However, the results of a large comparative study that took subjects' age into consideration showed that prostatectomy and other types of surgery (urological surgery, general surgery) had equivalent effects on erectile function.¹⁰

In the past, we made a variety of recommendations concerning how studies of postprostatectomy sexual adjustment should be carried out.^{4,14} In the present investigation, many of these guidelines were followed. Perhaps the most significant methodological improvements are: 1) the investigation incorporates a surgical control group which is also composed of aging individuals; 2) the issue of subjects' age has been addressed; and 3) participants in the two surgical groups were selected in such a way that they are similar in a number of ways, including the availability of a partner.

METHOD

Subjects

Subjects consisted of 91 married men between the ages of 51 and 77 who had undergone either transurethral prostatectomy ($n = 67$) or inguinal hernia repair ($n = 24$) 3 to 18 months prior to testing. All were parti-

icipating in a larger investigation on the effects of aging and surgery.

Subject selection criteria were as follows: age between 50 and 79, currently married, good command of English, minimum grade 9 educational level (or equivalent) to ensure adequate comprehension and ability to fill out questionnaire measures. Subjects were excluded on the basis of: severe physical illness, diagnosis of prostatic cancer, diabetes mellitus, another recent surgery in either spouse, conditions associated with organically based erectile dysfunction (cf. Kaplan's¹⁵ tables on the effects of illness and drugs on sexuality), and psychological disturbance (defined as having sought or contemplated psychotherapy during the past two years).

The average age of men in the prostatectomy sample was 65 (range, 52 to 77); average age in the herniorrhaphy sample was 62 (range, 51 to 77). Couples had been married for an average of 31 years and their relationships were generally satisfactory. Subjects were in good physical and psychological health. Data on income and educational level indicate that subjects were, generally, from the "middle class."

Measures

Measures were adapted, where needed, to allow subjects to answer with respect to both their current level of functioning as well as their status during the year prior to the surgery. Included in the test battery were a variety of measures required for the larger investigation in which subjects were participating. Of interest to the present investigation are the following.

Background Information Form. This form was designed for the present study. It asks for information on age, years of education, years married, family income, and previous professional help for emotional, sexual, or marital problems.

Goals for Sex Therapy Scale (GSTS). This 15-item measure¹⁶ uses a seven-point rating scale to evaluate men's satisfaction with their ability to engage in various sexual activities. It yields one score which reflects satisfaction with one's sexual performance. The instrument has been shown to be sensitive to pre-post sex therapy changes.¹⁷

Self-Efficacy Scale-Erectile Functioning (SSES-E). The SSES-E measures confidence in one's ability to perform a variety of sexual behaviors. The scale lists 25 desirable male sexual performance tasks. Subjects indicate those tasks they can perform and rate their confidence on a 10-point scale ranging from 10 ("quite uncertain") to 100 ("certain"). The scale has demonstrated reasonable reliability and validity.^{18,19}

Sexual History Form (SHF). The SHF is a 28-item self-report sexual history measure. It is typically scored on an item-by-item basis, resulting in 28 variables. Of concern to the present investigation are four items that assess frequency of actual and of desired couple sexual activity, frequency of sexual arousal, and satisfaction with the couple's sexual relationship. Normative data for items are available.^{20,21}

In order to obtain a global score of male sexual functioning, 12 SHF

items measuring male sexual desire, frequency of sexual activity, and sexual ability (e.g., erections, ejaculatory control) were transformed to proportions of their maximum possible rating, summed, and divided by 12 to provide a derived score: Global Male Sexual Functioning. Maximum score is 1.0; lower scores indicate better functioning. Data indicate that this derived score is a good measure of overall sexual adjustment.²²

Additional Sexual Measures (SHF-A). Two additional questions were prepared for the present study. These use the same response format as the SHF and inquire about the frequency of retrograde ejaculation and morning erections, aspects of male sexual capacity not tapped by the SHF. Because they were added to the test battery part-way through testing, some subjects did not respond to these questions.

Procedure

The research protocol was approved by the McGill University teaching hospitals' Ethics Committee. Surgeons at several large metropolitan hospitals contacted potential subjects by letter requesting their permission to be telephoned by the researchers. The study was described to all potential subjects who agreed to be contacted.

After verifying that subjects fit the experimental criteria, an appointment was made to administer the test battery. Each subject provided written consent prior to participation. Measures were completed in the presence of one of the experimental personnel.

All subjects were tested between 3 and 18 months after their surgery. Half of the subjects in both groups first completed the battery of measures concerning their current level of adjustment and, at a testing session one to two weeks later, completed the same measures concerning their adjustment during the year prior to their surgery. The remaining half of the subjects completed the pre- and postsurgery batteries in the reverse sequence.

RESULTS

The results indicate that in spite of identical age selection criteria, subjects in the prostatectomy sample were significantly older ($M = 64.61$, $SD = 5.56$) than those in the hernia repair sample ($M = 62.08$, $SD = 7.99$), $t(89) = 2.22$, $p < .05$. Therefore, age was covaried in data analyses.

Multivariate analysis of covariance (MANCOVA) [2 Groups (Prostatectomy/Herniorrhaphy) \times 2 Time (Pre/Post)], with age as the covariate, was carried out on the seven sexual measures completed by all subjects (GSTS, SSES-E, SHF items 1, 2, 9, and 26, SHF-Global Sexual Functioning score). Univariate analysis of covariance (ANCOVA) comparisons were made on the two Additional Measures (morning erections, retrograde ejaculation) because these were completed by only some of the subjects. Inclusion of these two measures in the MANCOVA would have resulted in a substantial loss in sample size.

TABLE 1
Pre- and Postsurgery Means in the Prostatectomy
and Herniorrhaphy Samples

Variables	Prostatectomy Sample		Hernia Repair Sample	
	Pre	Post	Pre	Post
Sexual Adjustment: Capacity				
¹ Global Sexual Functioning (SHF)	.433 (.079)	.478 (.106)	.422 (.102)	.428 (.090)
Sexual Adjustment: Capacity—Orgasm				
¹ Retrograde Ejaculation (SHF-A)	1.64 (1.29)	3.28 (2.33)	1.35 (0.71)	1.61 (0.99)
Sexual Adjustment: Capacity—Erections				
¹ Morning Erections (SHF-A)	3.39 (1.48)	3.69 (1.43)	3.00 (1.48)	3.96 (1.46)
Sexual Adjustment: Behavior				
¹ Frequency of Couple Sexual Activity (SHF-1)	5.30 (1.55)	5.81 (1.71)	5.38 (1.66)	5.92 (1.86)
¹ Frequency of Desired Couple Sexual Activity (SHF-2)	4.46 (1.09)	4.67 (1.45)	4.25 (1.33)	4.54 (1.59)
Sexual Adjustment: Cognitive Dimension				
Sexual Self-Efficacy (SSES-E)	64.27 (18.84)	59.25 (20.28)	68.30 (17.31)	66.78 (21.29)
Satisfaction with Sexual Ability (GSTS)	70.58 (16.40)	66.24 (17.48)	76.88 (16.37)	66.88 (19.40)
Sexual Adjustment: Affective Dimension				
¹ Frequency of Sexual Arousal (SHF-26)	4.03 (1.37)	4.45 (1.70)	3.46 (1.56)	3.46 (1.59)
Sexual Adjustment: Couple Relations				
Satisfaction with Couple Sexual Relationship (SHF-9)	5.02 (1.27)	4.61 (1.60)	4.88 (1.23)	4.67 (1.69)

Note. Values in parentheses are standard deviations.

¹Lower scores indicate better adjustment.

The MANCOVA on the seven measures revealed no significant Group or Group \times Time effects. It did, however, show a significant Time main effect, $F(7,83) = 3.46, p < .01$. Examination of the univariate ANCOVA tests shows significant ($p < .05$ or better) Time main effects for four of the seven measures: frequency of couple sexual activity, global sexual functioning, sexual self-efficacy, satisfaction with sexual ability. A fifth Time main effect (frequency of desired couple sexual activity) approached significance ($p < .06$). As the Means in Table 1 show, *all* indicate poorer sexual adjustment post- than presurgery. The ANCOVA comparison on morning erections also showed only a significant Time main effect, $F(1,57) = 4.38, p < .05$, again indicating better functioning pre- than postsurgery.

The only analysis that revealed a difference between the prostatectomy and hernia samples—the ANCOVA comparison on retrograde ejaculation—showed significant Group, $F(1,60) = 8.54, p < .01$, Time, $F(1,60) = 11.00, p < .01$, and Group \times Time, $F(1,60) = 5.79, p < .05$, effects. Means in Table 1 and Tukey hsd test results on the significant interaction

show that postsurgery scores in the prostatectomy sample were significantly ($p < .05$) worse than scores in all other conditions.

DISCUSSION

The findings indicate that with the exception of retrograde ejaculation—a common side effect of the transurethral prostatectomy procedure itself—the sexual consequences of prostatectomy and herniorrhaphy did not differ. Both procedures resulted in minor but fairly widespread deterioration postsurgery, at least as assessed in the present investigation. Thus, our data suggest that the sexual impairment postprostatectomy reported in the literature may not be related to prostatectomy per se. Rather, except for retrograde ejaculation, deterioration is most likely due to the aging process and to the stresses of surgery in general.

The typical definition of the beginning of “old age” is 65, although many investigations of sexuality and aging include individuals ranging in age from 50 to 80—a 30 year span. Contradictory findings supporting either positive or negative aspects of aging may be summoned at will when individuals with such a wide age range are lumped together in the same sample.²³ Our own data on the relationship between age and sexual adjustment postsurgery suggest that even small age discrepancies between “older” individuals affect the nature of the findings.¹⁴ Therefore, the age variable must be very carefully controlled when investigating the comparative effects of different surgical procedures on psychosexual adjustment.

An additional consideration is the use of a retrospective methodology. Initially, we believed that the comparison of two different surgical procedures which use the same methodology would produce unequivocal results. It has become increasingly apparent that the retrospective methodology, itself, appears to generate a systematic positive bias in subjects' self-reports of their presurgery adjustment.⁵ Future investigations of the comparative effects of different surgeries on sexual adjustment would be enhanced by a prospective experimental design. In this case, however, one must be careful to conduct the presurgery evaluation prior to the onset of severe physical symptomatology and related psychological distress. A physiological measure of erectile functioning should also be included in order to complement self-report data. Finally, different aspects of sexual capacity, expression, and performance vary differentially with increasing age and in response to various stressors.⁷ Any evaluation of the consequences of different surgical procedures on sexuality in “older” individuals must take into account the multidimensional quality of sexual expression and experience.

REFERENCES

1. Basso A: The prostate: The elderly male. *Hosp Prac* 12(10): 117–123, 1977.
2. Mostofi FK: Benign hyperplasia of the prostate gland. In MF Campbell, JH Harrison (eds), *Urology*. Philadelphia, Saunders, 1970.

3. Libman E, Creti L, Fichten CS: Determining what patients should know about transurethral prostatectomy. *Patient Ed Counsel* 9:145-153, 1987.
4. Libman E, Fichten CS: Prostatectomy and sexual function: A review. *Urology* 29(5):467-478, 1987.
5. Fichten CS, Libman E, Amsel R, Creti L, Weinstein N, Rothenberg P, Liederman G, Brender W: Evaluation of the sexual consequences of surgery: Retrospective and prospective strategies. *J Behav Med*, in press.
6. Harmon SM: Clinical aspects of aging of the male reproductive system. In EL Schneider (ed), *Aging: The aging reproductive system* (Vol 4, pp. 29-58). New York, Raven, 1978.
7. Libman E: Sociocultural and cognitive factors in aging and sexual expression: Conceptual and research issues. *Can Psychol* 30(3): 560-567, 1989.
8. Martin CE: Marital and sexual factors in relation to age, disease and longevity, In RO Wirt, G Winokur, M Ruff (eds), *Life history research in psychopathology* (Vol 4). Minneapolis, University of Minnesota Press, 1975.
9. Pfeiffer E: Sexual behavior in aged men and women. *Arch Gen Psych* 19:753-758, 1968.
10. DeBacker E, Lauwerijns A, Willem C: Sexual behavior after prostatectomy. *Europ Urology*, 3:295-298, 1977.
11. Finkle AL, Finkle PS, Finkle AC: Encouraging preservation of sexual function post-prostatectomy. *Urology*, 6(6):697-702, 1975.
12. Gold FM, Hotchkiss RS: Sexual potency following simple prostatectomy. *NY St J Med* 69:2987-2989, 1969.
13. Windle R, Roberts JBM: Ejaculatory function after prostatectomy. *Proceedings of the Royal Society of Medicine*, 67, 1160-1162, 1974.
14. Libman E, Fichten CS, Creti L, Weinstein N, Amsel R, Brender W: Transurethral prostatectomy: Differential effects of age category and presurgery sexual functioning on postprostatectomy sexual adjustment. *J Behav Med* 12:469-485, 1989.
15. Kaplan HS: *The new sex therapy*. New York, Brunner/Mazel, 1974.
16. Lobitz WC, Baker EL Jr: Group treatment of sexual dysfunction: Coping skill training for single males. In D Upper, SM Ross (eds), *Group treatment of male sexual dysfunction: An annual review* (pp. 99-115). Champaign, IL, Research, 1979.
17. Cohen BD, Reynolds BS, Price S, Schochet BV, Anderson AJ: Group treatment for erectile dysfunction in non-partnered males: New findings. Presentation at the American Psychological Association Annual Convention, Montreal, 1980.
18. Fichten CS, Libman E, Rothenberg I: Sexual Self-Efficacy Scale—Form E. In WL Yarber, CM Davis (eds), *Sexuality related measures: A compendium* (pp. 129-131). Lake Mills, IA, Graphic, 1988.
19. Libman E, Rothenberg I, Fichten CS, Amsel R: The SSES-E: A measure of sexual self-efficacy in erectile functioning. *J Sex Marital Ther* 11(4):233-244, 1985.
20. LoPiccolo J, Heiman J, Hogan DR, Roberts CW: Effectiveness of single therapists versus cotherapy teams in sex therapy. *J Consult Clin Psychol* 53(3):287-294, 1985.
21. Nowinski JK, LoPiccolo J: Assessing sexual behavior in couples. *J Sex Marital Ther* 5:225-243, 1979.
22. Creti L, Fichten CS, Libman E, Brender W: A global score for the "Sexual History Form" and its effectiveness. Presentation at the 21st annual convention of the Association for Advancement of Behavior Therapy, Boston, 1987.
23. Gatz M: Adult development and aging: Growing older in a contingent and noncontingent world. Presentation at the annual convention of the Association for Advancement of Behavior Therapy, Boston, 1987.