

Sexual dysfunction in men after treatment for lower urinary tract symptoms: evidence from randomised controlled trial

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Abstract

Objective To examine the impact on sexual function of treatments for lower urinary tract symptoms in men.

Design Multicentre pragmatic randomised controlled trial of standard surgery (transurethral resection of the prostate), non-contact laser therapy, and conservative management (no active intervention).

Setting Three clinical centres in the United Kingdom.

Participants 340 men aged between 48 and 90 years with lower urinary tract symptoms related to benign prostatic enlargement.

Main outcome measures ICS_{sex} questionnaire items concerned with erectile stiffness, ejaculatory volume, pain or discomfort on ejaculation, whether sex life was spoilt by urinary symptoms.

Results Erectile and ejaculatory dysfunction were common (70%) and problematic at baseline and showed the expected trends with ageing. After treatment, reduced ejaculation was reported in all groups but was not significantly worse after standard surgery than after laser therapy. Erectile function was significantly improved after standard surgery; no significant difference was found between standard surgery and laser therapy (odds ratio 0.70, 95% confidence interval 0.36 to 1.38). Standard surgery was significantly better at relieving pain or discomfort on ejaculation than either conservative management (0.06, 0.007 to 0.49) or laser therapy (0.09, 0.01 to 0.73).

Conclusions Compared with laser therapy standard surgery for lower urinary tract symptoms has a beneficial effect on aspects of sexual function—particularly in improving erectile function and reducing reported pain or discomfort on ejaculation. Older men who need treatment and want to retain or improve sexual function may thus want to consider standard surgery rather than non-contact laser therapy.

Introduction

Standard surgery for benign prostatic hyperplasia (transurethral resection of the prostate—TURP) has been reported to cause sexual dysfunction, with nearly three quarters of men experiencing retrograde

ejaculation and over 13% experiencing impotence after standard surgery according to a systematic review.¹

Concerns about the morbidity associated with standard surgery have led to the introduction of less invasive treatments, including laser therapy.^{2,3} The impact of these treatments on sexual function, however, remains uncertain because of the limited power of most previous studies combined with the lack of standardisation of what constitutes sexual dysfunction and often a failure to collect baseline as well as follow up data.

We investigated self reported sexual dysfunction at baseline and follow up in men with lower urinary tract symptoms who took part in a randomised trial of standard surgery, non-contact laser therapy, and conservative management (no active intervention).⁴

Methods

The trial was a multicentre, pragmatic randomised controlled trial.⁴ We included men who were attending urology clinics if they presented with uncomplicated lower urinary tract symptoms (international prostate symptom score ≥ 8 ,⁵ and a maximum urinary flow rate < 15 ml/s). We excluded those with a life expectancy of less than six months, evidence of prostate cancer, previous prostatic surgery, neuropathic bladder function, serum creatinine concentration > 250 $\mu\text{mol/l}$, or prostate size > 120 cc. Patients randomised to standard surgery or non-contact laser therapy were scheduled for surgery immediately. Those randomised to conservative management (monitoring without drug or other active intervention) were given general advice and bladder training. All patients were followed up at 7.5 months.

For assessment of sexual function men completed a sexual function questionnaire (International Continence Society, ICS_{sex}).⁶ For quantity of ejaculate we combined the categories of “no semen” and “no ejaculation” in all analyses because of small numbers and because the category measured the same basic dysfunction. We assessed symptoms with the validated seven item prostate symptom score⁵ and ICS_{male} questionnaires⁷ and quality of life for specific conditions by the single “impact on life” question attached to the prostate symptom score.



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We calculated that a sample size of 110 per group would be large enough to detect differences of between 13% and 19% for the study outcomes at 80% power and a two sided 5% significance level.

Analysis

We used proportional odds models with adjustment for age⁸ to examine the relations between sexual dysfunction and lower urinary tract symptoms at baseline. The odds ratios from these models represent the likelihood of having a worse outcome (more severe dysfunction) across the range of possible categories rather than dichotomising the outcome variable into presence or absence of dysfunction.

We carried out primary comparisons between treatments on an intention to treat basis using proportional odds models to obtain odds ratios and 95% confidence intervals⁸ with adjustment for stratification and baseline level of the relevant outcome measure. We used a two sided 5% significance level for all outcomes for the global test across the treatment groups and the Bonferroni procedure for multiple comparisons to determine which of the three arms was significantly different from the others.⁹ We compared the occurrence of new cases of dysfunction after treatment between the three treatment groups using exact tests.

Results

Of the 340 men recruited to the trial, 117 were randomised to standard surgery, 117 to laser therapy, and 106 to conservative management. Baseline sociodemographic characteristics were similar between the treatment groups, as was mean age (66-67 years).⁴

Sexual dysfunction at baseline—At baseline 298 men (88%) returned the ICS_{sex} questionnaire. Despite the sensitive nature of the questions little information was missing (2-7% for erectile and ejaculatory function and pain or discomfort on ejaculation, 16% for sex life spoilt by urinary symptoms). The prevalence of each dysfunction and the problem caused was similar across the treatment groups at baseline (table 1). Erectile and ejaculatory dysfunction were common (reported by 70%) and became more common with increasing age. Pain or discomfort on ejaculation was less common

but showed a similar relation with age, while sex life spoilt by symptoms declined with increasing age. All dysfunctions were reported to be highly problematic, particularly for younger men (see bmj.com).

Sexual dysfunction after treatment—At follow up 277 men (81%) returned the ICS_{sex} questionnaire. Table 1 shows the prevalence of sexual dysfunction within each of the treatment groups at baseline and at 7.5 month follow up. Overall, there were significant differences between the treatment groups for each of the dysfunctions but not for sex life spoilt by symptoms (table 2). Men who had standard surgery were significantly more likely to have improved erectile function than those who had conservative management, while the comparison between standard surgery and laser was not significant. Men who had standard surgery were also significantly less likely to report pain or discomfort during ejaculation than those who had laser or conservative management. Ejaculatory function was significantly worse among those who had standard surgery rather than conservative management. Levels of ejaculatory dysfunction after standard surgery compared with laser were not significantly higher after adjustment for multiple comparisons; none of the other findings were altered. Adjustment for age did not materially affect any results.

New cases of sexual dysfunction—We investigated new cases of sexual dysfunction among those who had reported “no dysfunction” at baseline. After standard surgery only one man (5% of those reporting no dysfunction at baseline) reported new erectile dysfunction, and only three (5% of those reporting potency at baseline) indicated impotence (defined here as erection not possible) at follow up. Corresponding figures for the other two groups were five (20%) and six (8%) for laser therapy and four (20%) and seven (10%) for conservative management (exact P=0.30 and 0.61 for the comparisons between the three groups for erectile dysfunction and impotence respectively). There was one (3%) new case of pain or discomfort during ejaculation after standard surgery compared with five (10%) after laser therapy and eight (18%) after conservative management (exact P=0.11). There was no significant difference in the number of new cases of

Table 1 Levels of sexual dysfunction before and after treatment. Figures are numbers (percentage) of patients

	Transurethral resection of prostate		Laser therapy		Conservative management	
	Baseline	Follow up	Baseline	Follow up	Baseline	Follow up
Erectile dysfunction	69 (70)	47 (55)*	71 (71)	64 (66)	73 (67)	61 (72)
Ejaculatory dysfunction	67 (70)	68 (83)*	70 (76)	80 (86)*	57 (64)	60 (73)*
Pain on ejaculation	14 (17)	1 (2)*	14 (18)	16 (20)	14 (19)	17 (27)
Sex life spoilt by symptoms	37 (43)	34 (46)	29 (33)	38 (44)	32 (42)	36 (51)

*Significant change in dysfunction within groups between baseline and follow up (Wilcoxon P<0.02).

Table 2 Differences in sexual dysfunction at follow up in treatment groups, adjusted for centre and relevant baseline measurement

	Erectile dysfunction		Ejaculatory dysfunction		Pain or discomfort on ejaculation	
	OR* (95% CI)	P value‡	OR† (95% CI)	P value‡	OR* (95% CI)	P value‡
TURP v conservative management	0.37 (0.19 to 0.74)	0.014	3.27 (1.69 to 6.35)	0.0017	0.06 (0.007 to 0.49)	0.0013
Laser v conservative management	0.53 (0.28 to 1.01)		1.64 (0.91 to 2.97)		0.70 (0.26 to 1.93)	
TURP v laser	0.70 (0.36 to 1.38)		2.00 (1.03 to 3.87)		0.09 (0.01 to 0.73)	

TURP=transurethral resection of prostate (standard surgery).

*Odds ratios <1 reflect lower risk of more severe dysfunction for first treatment group compared with second.

†Odds ratios >1 reflect higher risk of more severe dysfunction for first treatment group compared with second.

‡For global tests of treatment differences.

ejaculatory dysfunction (exact $P=0.26$), with 12 (43%) such cases after conservative management, 13 (63%) after standard surgery, and 13 (65%) after laser therapy.

Discussion

In the treatment of men with urinary symptoms we found that some aspects of sexual function were improved after standard surgery.

Implications of findings

This study is important for several reasons. Firstly, it contradicts the bulk of observational evidence that transurethral resection of the prostate can cause greater sexual dysfunction than minimally invasive treatments such as laser therapy. We found that transurethral resection resulted in improvement in erectile function and reduction in pain or discomfort on ejaculation. There were few new cases of impotence, as in other trials.^{10 11} In no instance was laser therapy significantly better than transurethral resection in maintaining or improving sexual function.

Secondly, our results strongly support the need to use valid and reliable measures of sexual function reported by patients at baseline and follow up. In this and other studies levels of sexual dysfunction were high among men with lower urinary tract symptoms,^{6 12} and previous reports of impotence after transurethral resection have probably been exaggerated by measurement error, differing definitions of "impotence," and a failure to account for baseline levels.

Potential limitations of the study include possible response bias, though levels of missing data were low even for the questions on sexual function. To minimise measurement error we used the ICS_{sex} questionnaire, which has been shown to exhibit good levels of content and construct validity in terms of its comprehensibility to patients, low levels of missing data, ability to detect expected patterns with age, and ability to discriminate between community and clinic populations.⁶

In conclusion, assertions that minimally invasive treatment such as laser therapy may have less impact on sexual function than transurethral resection seem to be unjustified. Older men who need treatment for troublesome lower urinary tract symptoms and who wish to retain (or even improve) sexual function may thus want to consider transurethral resection.

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What is already known on this topic

Troublesome lower urinary tract symptoms and erectile dysfunction are common and often problematic in older men

Standard surgical treatment for lower urinary tract symptoms (transurethral resection of the prostate) has been reported to cause greater erectile and ejaculatory dysfunction than newer less invasive treatments such as laser therapy

What this study adds

While standard surgery and laser therapy are associated with reduced ejaculation, other aspects of sexual function, particularly erectile function and pain or discomfort on ejaculation are significantly improved after standard surgery, with few new cases of impotence

Standard surgery rather than minimally invasive therapies should be considered for older men who need treatment for problematic lower urinary tract symptoms and who wish to retain or improve sexual function

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Endpiece

A wish

Nor bring, to see me cease to live,
Some doctor full of phrase and fame,
To shake his sapient head and give
The ill he cannot cure a name.

"A wish" in *New Poems* by Matthew Arnold
(1822-88), English poet, critic, essayist, and educator

Submitted by Fred Charatan,
retired geriatric physician, Florida