

The incidence of chronic scrotal pain after vasectomy: a prospective audit

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Study Type – Symptom prevalence study
(retrospective cohort)
Level of Evidence 2b

OBJECTIVE

To assess the extent of scrotal pain in men before and after vasectomy, to produce accurate data for the benefit of men considering this procedure, and hence improved informed consent about the outcomes, as chronic scrotal pain after vasectomy is a poorly quantified clinical problem.

PATIENTS AND METHODS

Between November 2004 and January 2006 nine surgeons carried out vasectomies in 625

men (mean age 39.9 years, SD 5.6) under local anaesthesia. A questionnaire was devised to establish the presence of any scrotal or testicular pain, and to characterize this discomfort; 6 months after the procedure a modified version of the same questionnaire was administered.

RESULTS

In all, 593 (94.7%) men returned the preoperative questionnaires and were entered into the study; 488 (82.2%) of these completed the follow-up questionnaire, giving a mean (SD) follow-up of 6.8 (1.6) months. In all, 65 men reported new-onset scrotal pain at 7 months (14.7%). The mean visual analogue score for this pain was 3.4/10. Four men (0.9%) in the responding

group described pain after vasectomy as 'quite severe and noticeably affecting their quality of life'.

CONCLUSION

At 7 months after vasectomy about 15% of previously asymptomatic men have some degree of scrotal discomfort. These early data indicate that chronic scrotal pain after vasectomy is a genuine entity, but a longer-term follow-up in this group will be important to allow further evaluation of how this pain develops with time.

KEYWORDS

vasectomy, pain, orchalgia, pain syndrome, chronic

INTRODUCTION

Recent statistics show that 18% of men in the UK aged <70 years have had a vasectomy [1]. However, surgical techniques vary widely and in the UK the Royal College of Obstetricians and Gynaecologists (RCOG) recommended [2] that 'no-scalpel vasectomy' (NSV) [3] should be used, as this results in a lower rate of early complications. The RCOG recommendations cite two randomized controlled trials that evaluated the two methods of approach to the vas. Sokal *et al.* [4] assessed 1429 men and found that the Li method (the NSV) took less time and significantly reduced the short-term complications of bleeding, haematoma formation, infection and pain than did the standard incision approaches to vasectomy. Long-term complications were similar in both groups, as were early failure rates. Christensen *et al.* [5] only included 99 men in their study and, as they found no significant differences between complication rates, might have been under-powered. However, despite this level 1 evidence on short-term complications, there is no good longer term evidence to favour either approach.

Persistent pain after vasectomy has been reported by several authors (Table 1) [6–10] and was identified as a research priority in a recent consensus article by Aradhya *et al.* [11]. It remains a source of potential concern for those asked to obtain consent or to counsel men about vasectomy, and has the potential for litigation [12]. To address this issue we conducted a prospective audit of scrotal discomfort after vasectomy.

PATIENTS AND METHODS

The study population comprised men undergoing vasectomy in a dedicated unit (The Elliot Smith Clinic) which performs around 600 vasectomies annually. There were nine surgeons performing the operations – four urologists, three GPs and two gynaecologists. Before the procedure an information pack was sent to the patients about the operation and included in this was a dedicated questionnaire to assess preoperative scrotal discomfort. At the time of the procedure patients gave written informed consent in the normal manner.

The NSV technique was used by seven surgeons, while traditional instruments were used by two. All patients had intraluminal electrocautery applied to both ends of the divided vas deferens after removal of a 1–2 cm segment. Fascial interposition was not used routinely, nor were clips or ligatures applied. This occlusion technique is endorsed in the RCOG Guideline [2]: Recommendation 38 – that division of the vas 'should be accompanied by fascial interposition or diathermy'.

Six months after vasectomy a similar follow-up questionnaire was distributed. If there was no response, then an attempt was made to contact the patient by telephone (usually no more than twice). Data were recorded on a standard proforma and compared statistically.

RESULTS

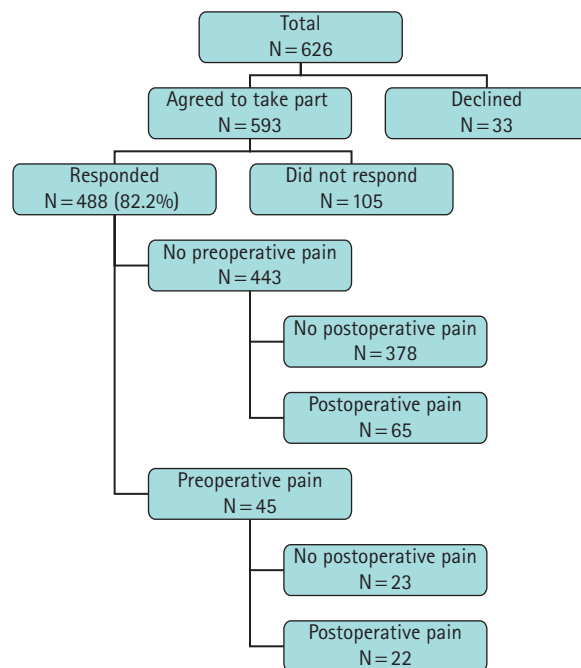
Between November 2004 and January 2006, 626 men attended the clinic, with 593 completing the preoperative questionnaire and thus agreeing to participate in the

TABLE 1 Published retrospective audits assessing pain after vasectomy

Variable	Ref				
	[10]	[8]	[6]	[9]	[7]
Definition of 'chronic'	Present at audit	Present at audit	>3 months	Present at audit	Present at 1 and 10 years after
Vasectomy technique	VD, BEL	VD, BEL	NG	VD, BE clipped	NG
n/N (%) responders	172/253 (68)	182/420 (42)	396/560 (70)	101/198 (51)	182/460 (40) 220/460 (48)
Mean (range) follow-up, months	'4 years' (NG)	58 (29–87)	19 (8–39)	46.5	1 and 10 years (NG)
Controls used?	No	No	No	Yes, age-matched at review	
All chronic pain after vasectomy, %	33	19	5 (pain >3 months)	52	17 at 1 year 14 at 10 years
Pain occasionally and not troubling, %	17	13	–	36	–
Troublesome, %	15	3	–	10	–
Severe, affects daily activities/sought medical help	5	2	–	6	6 at 1 year 4 at 10 years

VD, vas divided; BEL, both ends ligated; NG, not given.

FIG. 1. The number of men taking part in the audit, stratified by the presence of any pain before or after vasectomy.



prospective audit (94.7%). The mean (SD) age of men undergoing vasectomy in this audit was 39.9 (5.6) years. After vasectomy, 488 (82.2%) of these men completed the follow-up questionnaire, resulting in a mean (SD, range) follow-up of 6.8 (1.6, 4.4–10.6) months. Figure 1 shows the flowchart of men who answered the questionnaires by their incidence of pain before and after vasectomy.

In all, 65 men (14.7%) described the new onset of scrotal discomfort after vasectomy; of this group, 17 described complications of some kind, with four explicitly mentioning infections, 10 receiving antibiotics for presumed infection, two describing 'severe' bruising, and one immediate bleeding at home after surgery. Notably, 38 men (58%) commented that they could feel a lump at the site of current tenderness, and overall 14 men

(22%) sought advice from their doctor about the pain.

The response of the men with pain to the questionnaire after vasectomy is shown in Fig. 2; only four men among the 443 with no pain before vasectomy described the pain after vasectomy as 'quite severe and noticeably affects their quality of life' (0.9%). In this small group, the pain started at <1 month after vasectomy in all, and three men had antibiotics for presumed infection. These men described their pain on the visual analogue scale (VAS) as scoring 6, 7, 7 and 8/10, respectively. One patient had this pain continuously, whereas one had pain every day and two might go for weeks with no pain. Three had discomfort during sex and three had also consulted a doctor about the discomfort. One was able to identify a lump in the scrotum relating to the discomfort.

Figure 3 shows the distribution of VAS responses, with a mean level of pain of 3.4 among the 65 men with postoperative pain; Fig. 4 shows the level of satisfaction with the procedure in this group of men.

Table 2 shows the results of vasectomy for each surgeon, with surgeons 8 and 9 being those using the traditional instruments and approach to the vas. Table 3 compares the techniques, showing a significant difference (P=0.04) in the incidence of pain in patients at a mean of 6.8 months after vasectomy.

DISCUSSION

Even clinicians who do not perform vasectomy themselves are often asked to counsel men who are considering having this procedure. Although evidence-based guidelines are available from the RCOG [2] there is a marked disparity in the reported rates of chronic scrotal discomfort after vasectomy, with rates of 2–52%, depending upon the study population and duration of follow-up (Table 1). Although there are several proposed mechanisms for discomfort after vasectomy [14] there remains no clear term for it, with the terms 'post-vasectomy orchalgia', 'late post-vasectomy syndrome', 'congestive epididymitis', 'chronic testicular pain' and 'post-vasectomy pain syndrome' all being coined over the last two decades [14]. Davis *et al.* [15] described chronic testicular pain as 'intermittent or constant, unilateral or bilateral testicular pain for a period of more than three months which interferes with a patient's daily activities and prompts him to seek medical advice'. It is this definition that was used by Ahmed *et al.* [6] in 1997 and has led to the general acceptance that 'about half of men have discomfort persisting for 3 months after vasectomy. We extended the definition of Davis *et al.* slightly by replacing the word 'testicular' with 'scrotal', as the pain or tenderness might not always be in the testis.

Potential biases and confounding factors affect the published reports on this topic, because of the retrospective nature of the questionnaires (all reports), the lower percentage of responders, the variable follow-up periods and lack of controls. Only two groups [7,8] noted that there was pain before vasectomy in 2–3% of their responders, and these patients were excluded in the final analysis. It also might have been difficult for men who have had a procedure to remember accurately whether any discomfort was or was not present before it. In the one study which did use age-matched controls, Morris *et al.* [9] acknowledged the difficulty in accessing such a group, as the sensitivity of the questions might well introduce response bias.

The present study is the first prospective audit to be published of pain after vasectomy. A high initial uptake and response meant that a large group of men were followed from before vasectomy to a mean of 6.8 months of follow-up. In this group of men, if there was

TABLE 2 A summary of operative results analysed by surgeon

Surgeon	Total	Patients with			
		pain before	pain after/pain before	no pain before	new pain after/none before (%)
1	55	11	5	44	4 (9.1)
2	29	7	4	22	2 (9.1)
3	54	9	6	45	5 (11.1)
4	51	2	1	49	6 (12.2)
5	43	3	1	40	5 (12.5)
6	8	0	0	8	1/8
7	57	9	5	48	7 (14.6)
8	73	2	0	71	12 (16.9)
9	118	2	1	116	23 (20)

TABLE 3 Comparison of the traditional technique with NSV; the difference (95% CI) in the incidence of new discomfort was 7.1% (95% CI 0.3–13.7; z-test P = 0.04)

Group	Traditional	NSV
No pain before vasectomy	187	256
n (%) episodes of new discomfort	35 (18.8)	30 (11.7)

FIG. 2. The distribution of answers relating to the severity of pain after vasectomy.

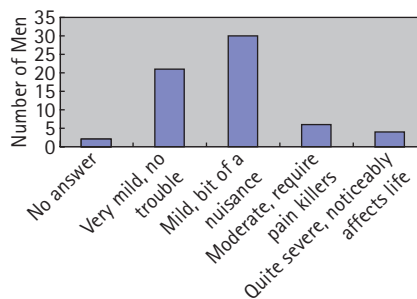
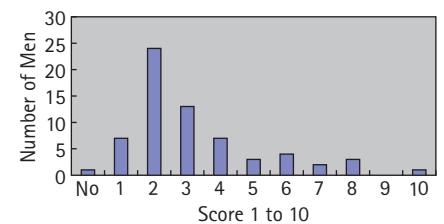


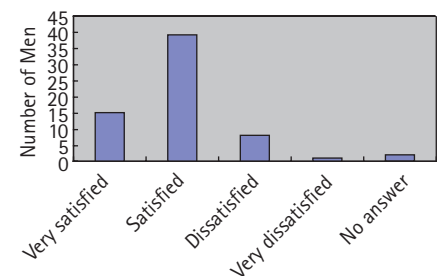
FIG. 3. The VAS score of men with new onset of scrotal pain at 7 months after vasectomy.



no previous discomfort, the likelihood of any scrotal pain at 7 months after vasectomy was 14.7%, the mean pain score on the VAS 3.4 and, despite some degree of pain, 83% of these men were satisfied or very satisfied with the procedure. However, in this audit the likelihood of having pain at 7 months which was quite severe and noticeably affected their quality of life was 0.9%. These results appear comparable with the previous reports (Table 1), although there were apparently fewer men reporting severe pain/impairment.

All surgeons at the Elliot Smith Clinic use the same principles of intraluminal electrocautery applied to both ends of the divided vas deferens after removing a 1–2 cm segment,

FIG. 4. The overall impression of men who had new-onset scrotal pain at 7 months after vasectomy.



with no fascial interposition. However, two of the surgeons elected to continue with the traditional approach to the vas using conventional instruments and a scalpel incision. This was their personal choice and

was not thought to influence the outcome of the procedure, as they are highly experienced in this technique. For the last 15 years any new member of the clinic has been trained to use the Li instruments and use a NSV. The patients treated by surgeons using traditional methods (nos 8 and 9 in Table 2) had a higher rate of pain at a mean of 6.8 months, with a combined rate of 18.8% in those men with new-onset scrotal pain. These two surgeons completed 187 operations in patients who had no pain before surgery, 42% of all procedures. Thus, their results have a large influence on the overall rate of pain at a mean of 6.8 months. If their data are omitted then the rate of pain in those having the NSV would be 11.7%, vs 14.7% overall. Using a z-test, these results showed that a NSV was statistically less likely to result in discomfort ($P=0.04$; Table 3).

Notably, among those men who reported scrotal pain before vasectomy, only 49% reported pain afterward. This group of men had a mean (range) VAS score of 3.9 (1–9) at a mean of 6.8 months. However, 95% of men were very satisfied or satisfied, and only one was dissatisfied, reporting a VAS score of 9. This group of men would have been included in the previous studies with no attempt to assess preoperative pain (Table 1). Including this group of patients here resulted in a rate of 17.8% of men experiencing pain at 7 months.

The disappearance of scrotal pain in 51% of men who had pain before vasectomy might be due to several factors, including variable patient interpretation of the questionnaire, and the natural history of scrotal pain. If it is a direct result of the vasectomy, the mechanism is not clear.

The causes of pain after surgery are likely to vary; 60% of the symptomatic men could feel a lump at some point after surgery and this might indicate an earlier haematoma, sperm granuloma, or granulation tissue related to the wound.

The main limitation of the present study is it was a prospective audit rather than a randomized controlled trial. However, with a similar technique being used by all surgeons, the aim was to provide an assessment of pain in a high-turnover unit with a good follow-up. Because of the way the clinic is set up, it would be impossible to evenly distribute patients among surgeons, and inevitably

certain biases might have resulted; it is clear from Table 2 that surgeons 7, 8 and 9 had higher complication rates after vasectomy than did surgeons 1–6. Notably, surgeon 7 was new to the clinic and the period of training was included in these results.

Other limitations of the present audit lie in its relatively short follow-up, a variety of clinicians doing the vasectomy and, inevitably, the subjective nature of pain and its assessment. Some of these weaknesses will be addressed in a further audit to 2 years, following the men with pain after surgery and a matched group with no pain from the original group of vasectomies.

In conclusion, this is the first prospective audit to be published of pain after vasectomy; at 7 months after vasectomy \approx 15% of previously asymptomatic men had some degree of scrotal discomfort. These early data indicate that chronic pain after vasectomy is real, but a longer-term follow up in this group will be important to allow a further evaluation of how this pain develops with time.

ACKNOWLEDGEMENTS

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CONFLICT OF INTEREST

None declared.

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Abbreviations: RCOG, Royal College of Obstetricians and Gynaecologists; NSV, 'no-scalpel vasectomy'; VAS, visual analogue scale.