

## Local anaesthetic vasectomy is not as painful as patients expect

Vasectomy's efficacy rate exceeds 98%.<sup>1</sup> Yet, the number of vasectomies has been steadily declining in England, with a 63% reduction between 2005/06 and 2015/16 according to NHS Digital.<sup>2</sup> An oft-mentioned culprit is fear of pain.<sup>3</sup> To our knowledge, only one Canadian study proved that pain experienced during the procedure is "significantly less than pain expected" using a cohort of 172 patients.<sup>4</sup>

To dispel these misconceptions, we set out to investigate the interplay between expectations and pain perception during vasectomy. At a primary care centre in the UK, we considered No-S-calpel Vasectomy patients from March 2015 to May 2018. The mean age of patients was  $39.87 \pm 6.22$  (range 23–65) years. At the end of the procedure, they were asked to rate their preoperative expectation of pain (expected pain, EP), pain experienced from the anaesthetic needle (needle pain, NP) and pain experienced during the procedure (operative pain, OP). A paper questionnaire was used with a score of 1 indicating no pain and 5 excruciating pain. Given the known correlation between age and expectations of pain, age was also recorded as a potential confounding variable.<sup>5</sup>

We collected 509 questionnaires in total. The results and corresponding statistical analyses are summarised in table 1. Note that the total refers to the number of responses for each of EP, NP and OP considered separately, thus the difference in figures.

The average NP and OP were indeed found to be significantly less than expected as shown by the paired t-test. Moreover, the majority of patients (62.72%) reported less pain from the needle than they expected before the procedure while only 10.45% reported more pain than expected. In comparison, about half the patients thought the pain from the entire procedure was less than expected (52.17%) and 12.2% reported more pain than expected. When the pain was less than expected, the average decrease was 1.44, but when it was worse the average increase was 1.90. This further suggests that patients generally have a more positive experience than what they anticipate.

**Table 1** Findings and corresponding statistical analyses of expected pain, needle pain and operative pain scores where the lower the score the less painful the experience and the higher the score the more painful the experience

Parameter	EP	NP	OP
Score frequency (n)			
1	43	106	110
2	104	251	206
3	157	108	106
4	131	37	78
5	73	6	9
Total	508	508	509
Mean $\pm$ SD	3.17 $\pm$ 1.16	2.00 $\pm$ 0.89	2.35 $\pm$ 1.04

  

	EP vs NP	EP vs OP
Paired t-test (t, p)	17.04, <0.001	13.20, <0.001
Comparative mean (% of responses, average $\Delta$ )		
+ $\Delta$	10.45%, 1.26	12.20%, 1.90
No change	26.82%	35.63%
- $\Delta$	62.72%, 1.78	52.17%, 1.44
Pearson's correlation (r, p)	0.205, <0.001	0.199, <0.001
Multiple linear regression with age as confounding (p, 95% CI, R <sup>2</sup> )	<0.001, 0.094 to 0.225, 0.046	<0.001, 0.101 to 0.254, 0.040

EP, expected pain; NP, needle pain; OP, operative pain.

-  $\Delta$ , average decrease in score; +  $\Delta$ , average increase in score; EP, expected pain; NP, needle pain; OP, operative pain.

Interestingly, while 73 patients were expecting excruciating pain, only 6 (1.2%) reported such pain from the needle and 9 (1.2%) from the operative procedure.

Furthermore, higher EP only corresponded weakly to higher NP and OP as shown by the weak but significant Pearson's correlation. The significant multiple linear regressions also indicate that the ability of EP to predict NP or OP is weak, even when age is taken as a confounding. This information may be used by the clinician to reassure the patient that the pain experienced is likely to be less than expected.

An important proportion of patients – 26.82% for NP and 35.63% for OP – found their expectations to be reflective of the actual pain. The interpretation of these specific findings is, however, challenging as the patients only rated their expectations post-procedure and so may have subconsciously attempted to harmonise their expectation with the actual pain. This represents a non-negligible limitation of the study. Other potential limitations include variations in style and content of counselling, distractions during the procedure,

the reasons for seeking vasectomy, patient education level, operative time, response bias, and past personal experiences with pain. Data were also collected at a single centre.

In conclusion, vasectomy is less painful than what most patients expect. This study clearly refutes the widespread misinformation about vasectomy in the community. It provides essential information to guide pre-procedure counselling so that of all the factors hindering men from seeking vasectomy, fear of pain is not one of them.

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work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. MA-A had substantial contributions to the conception and design of the work and the acquisition and interpretation of data. He revised the work critically for important intellectual content and gave his approval of the final version of the manuscript submitted. He fully agrees to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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