The evolution of the Marie Stopes electrocautery no-scalpel vasectomy procedure

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Abstract

Objective. To review the evolution of the procedure, the re-operation rate and efficacy data for vasectomies performed in Marie Stopes centres during the periods 1990–1994 and 1995–1999.


Setting. Marie Stopes vasectomy centres in the UK.

Participants. A total of 41 123 men undergoing vasectomy.

Results. The re-operation rate for the period 1990–1994 was 0.7% and fell to 0.46% for 1995–1999. The reported pregnancy rate fell from 1 in 1429 procedures for the period 1990–1994 to 1 in 2804 for 1995–1999.

Conclusion. The results show that vasectomy has had a low failure rate well below that of other methods of birth control. The outcome data continue to improve over time with the evolution of improved techniques and surgical expertise.

Key message point

• The pregnancy rate using electrocautery for vasectomy was 1 per 2804 procedures for the 4-year period 1995–1999.

Introduction

Vasectomy has been free on the National Health Service (NHS) since 1972 and provision has been supplemented by private practitioners and charitable organisations. According to Hospital Episode Statistics there were 48 203 female and 35 609 male sterilisation procedures performed in the NHS in 1998/1999. 1 In some age groups there are more men who have been sterilised than women. In 1998, 19% of men in the 45–49 years age group had been sterilised compared to 15% of women, although women were more likely to have had another operation which rendered them sterile. 2 Britain is one of only four countries, together with Bhutan, New Zealand and The Netherlands, with more sterilised men than women. 3

Evolution of the Marie Stopes procedure

The vasectomy technique practised by the doctors at the Marie Stopes centre from the mid-1960s to 1978 was the conventional local anaesthetic, two-incision ‘cut and tie’ ligature procedure. 5

In June 1978, Stanwood Schmidt described the lower complication and failure rates associated with reliance on electrocoagulation and reliant on subsequent fibrosis to occlude the vasa. 6 A model 732 Birtcher Hyfrecator was purchased and the technique adopted. Under local anaesthesia the exposed vasa were divided and 5 mm of the urethral and 5 mm on the testicular sides coagulated. The sheath of the vas was then interposed between the two ends and the skin sutured.

Initial experience confirmed Schmidt’s reported reduced incidence of wound infections (1.3%), haematomas (0.4%) and lower incidence of sperm granulomas (0.4%) and congestive epididymitis (2.8%). However, a nil failure rate was never achieved. By 1979, over 400 vasectomies a month were being performed and a number of small innovations aimed at simplifying the procedure were tested and introduced. Pre-operation shaving of the scrotum was dropped, and a small, single, vertical scrotal incision adopted for which skin sutures were unnecessary. The technique of occluding the vasa was also modified. Vasectomy forceps comparable to a single-toothed Allis forceps developed by Dr Soonawala in India were imported for mobilising and teasing out a loop of vas. A centimetre either side of the loop was electrocoagulated intraluminarily. The ‘Solid State’ Birtcher Hyfrecator...
The lumen was destroyed by external diathermy with care. Schmidt recommended that the lumen be destroyed by external diathermy with care. Because of this Schmidt recommended that mid-1980s and found to have inferior coagulation (Model 733 and subsequent models) was introduced in the extensive coagulation, fascial interposition, the value of which had been questioned, was successfully discontinued. The 10-year vasectomy experience, the number of centres, was successfully discontinued.

Results

The 10-year vasectomy experience, the number of centres, operating doctors, re-operations and reported pregnancies are shown in Table 1. A total of 45 123 vasectomies were carried out during this decade. Of these 7.3% defaulted on their sperm tests. The mid-decade average number of sperm tests per client was 2.47; 49% required two tests and 21% three to four tests. Of the men declining the re-operation recommended after four unsatisfactory tests, 4% had eight or more tests before achieving azoospermia.

There were 13 reported pregnancies among partners of vasectomised men who had completed their tests and been sent the ‘all clear’ letter; a reported secondary failure rate of 0.04% or 1 per 2500 vasectomies. Over the course of the decade there was a slight improvement in the recorded primary and secondary failure rates. The re-operation rate for the period 1990–1994 was 0.7% and 0.46% over the following 5 years. The reported pregnancy rate fell from 1 in 1429 procedures to 1 in 2804.

Discussion

The Marie Stopes organisation use of electrocautery to occlude the vasa without fascial interpositioning in 81 000 cases confirms the Elliot Smith Clinic series of 12 300 diathermy cases that this is a quick, safe, simple and effective vasectomy technique. The primary failure rate resulting in a re-operation because of continuing presence of sperm of 0.64% is comparable to the Elliot Smith Clinic incidence of 0.7% and that achieved by surgeons at the Margaret Pyke Centre using the cut and tie technique in the early 1970s (0.6%).

Conclusion

The results of this study show that vasectomy has had a low failure rate, which is well below that of other methods of birth control. The lower failure rate in the second of the two 5-year periods is welcome, however, the surgeons concerned would like to be able to eliminate all failures.

Method

The study was a retrospective review of repeated primary failures (where semen analysis post-vasectomy continues to show sperm) and secondary failures (where sperm reappear in the semen analysis at a later stage) of vasectomies performed at Marie Stopes centres during the period 1990–1999. The study period was further subdivided into two periods covering 1990–1994 and 1995–1999.

Results

The 10-year vasectomy experience, the number of centres, reports on funding and competing interests

Funding. None declared.

Competing interests. Dr Black is Chief Executive of Marie Stopes International, ProfessorFrancome has no financial relationship with Marie Stopes International.

Table 1 Marie Stopes vasectomies: primary and secondary failures 1990–1999

<table>
<thead>
<tr>
<th>Year</th>
<th>Centres</th>
<th>Operating doctors</th>
<th>Vasectomies</th>
<th>Test defaulters</th>
<th>Re-operations</th>
<th>Men tested</th>
<th>Reported pregnancies</th>
<th>Vasectomies (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>22</td>
<td>25</td>
<td>4062</td>
<td>334</td>
<td>8.22</td>
<td>16</td>
<td>0.43</td>
<td>1</td>
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<tr>
<td>1991</td>
<td>22</td>
<td>25</td>
<td>3738</td>
<td>298</td>
<td>7.92</td>
<td>29</td>
<td>0.84</td>
<td>2</td>
</tr>
<tr>
<td>1992</td>
<td>23</td>
<td>26</td>
<td>3683</td>
<td>292</td>
<td>7.93</td>
<td>27</td>
<td>0.8</td>
<td>1</td>
</tr>
<tr>
<td>1993</td>
<td>21</td>
<td>24</td>
<td>4058</td>
<td>278</td>
<td>6.85</td>
<td>20</td>
<td>0.53</td>
<td>0</td>
</tr>
<tr>
<td>1994</td>
<td>21</td>
<td>24</td>
<td>4347</td>
<td>263</td>
<td>6.05</td>
<td>22</td>
<td>0.54</td>
<td>2</td>
</tr>
<tr>
<td>1995</td>
<td>25</td>
<td>28</td>
<td>4683</td>
<td>390</td>
<td>8.33</td>
<td>25</td>
<td>0.57</td>
<td>4</td>
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<tr>
<td>1996</td>
<td>24</td>
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<td>8.19</td>
<td>25</td>
<td>0.57</td>
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<td>1997</td>
<td>26</td>
<td>30</td>
<td>5344</td>
<td>289</td>
<td>5.4</td>
<td>66</td>
<td>1.3</td>
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<td>359</td>
<td>6.44</td>
<td>23</td>
<td>0.44</td>
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<tr>
<td>1999</td>
<td>25</td>
<td>29</td>
<td>4883</td>
<td>417</td>
<td>8.54</td>
<td>27</td>
<td>0.6</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>45 123</td>
<td>3309</td>
<td>7.3</td>
<td>267</td>
<td>0.64</td>
<td>15</td>
<td>0.03</td>
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References

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