ORIGINAL ARTICLES

Vasectomy Reversal: Is the Microscope Really Essential?

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ABSTRACT

Objective
To evaluate the outcomes of bilateral vasectomy reversal procedure in relation to the macroscopic technique, surgical time and duration of obstructive interval.

Materials and methods
We performed a retrospective study over a twelve-year period using a macroscopic technique. All cases of vasectomy reversal were consecutive and performed by the same surgeon. The procedure was performed using a single layer, spatulate end to end anastomosis technique using 6 × 6-0 prolene. No loupe magnification was used.

Results
The median age of the men was 42 years (range 30-56). The median obstructive interval in years was 8.5 years (range 2-23). The procedure was a day case and the median surgical time under general anaesthetic was 75 minutes (range 45-90). None of the patients required hospital admission following discharge. 63 of the 70 patients had positive patency test postoperatively (90 %). The sperm count was more than twenty million /ml. The pregnancy rate was 54 % and the miscarriage rate was 7.1%.

Conclusion
The outcomes of macroscopic vasectomy reversal performed by an experienced surgeon can have a high success rate using the macroscopic single layer spatulate end to end anastomosis technique. This technique is easy to learn compared to the learning curve involved in microsurgery and is an effective means of "re- establishing" fertility in vasectomised men.

Introduction

Vasectomy reversal has been requested in 0.2-10% of men. Divorce or remarriage have been the main cause but some were still married to the same partner.[1] A few men hoped the procedure would help relieve marital strains.

Significant differences in surgical technique and patient selection have been found among practising urologists.[2] The assessment of candidates for the procedure has been to some extent by history and physical examination. Serum and semen analysis for gonadotropin level and presence of anti sperm antibody respectively are other parameters though the antisperm antibody factor is of lesser significance due to availability of assisted reproduction methods.

A few distinct causes for the failure of vasectomy reversal are stenosis and local granuloma formation.[3] Careful technique with appropriate suture material[4] using macroscopic[5] or microscopic methods can improve the success in the patency rates.[6]

The objective of our study was to evaluate the outcomes of conventional macroscopic vasectomy reversal procedure in relation to the technique, surgical time and duration of obstructive interval.

Materials and Methods

A retrospective study of all consecutive cases of vasectomy reversal performed by the same surgeon (NHT) over a 12 year period was reviewed. All patients in this complete series of all reversal attempts during this period had appropriate counselling pre operatively and clinical examination suggested a short vasal gap length. Bilateral macroscopic vasovasostomy procedure was performed through a midline scrotal incision. All the scarred tissue was excised until the healthy looking vas was seen. A single layer spatulate end to end anastomosis was carried out using 6 × 6-0 prolene interrupted sutures. Loupe magnification was not used. The length of the vas spatulated was 0.5 cms on either side (Figures 1,2,3,4).

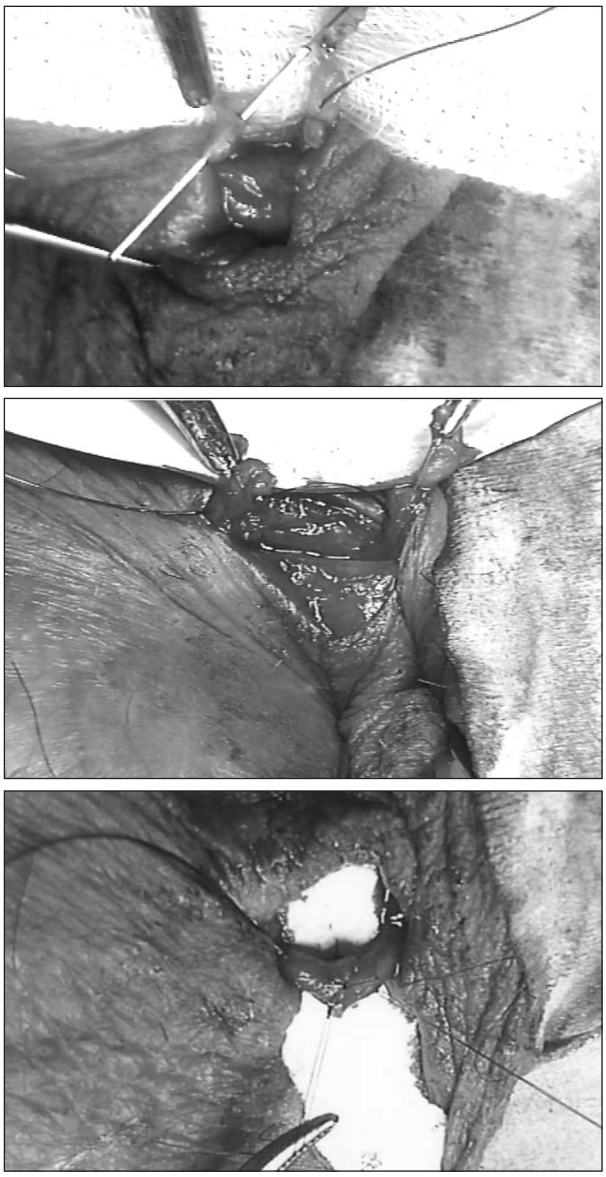
The study was carried out on seventy men with the age ranging between 30 and 56 years and an obstructive interval between 2 and 23 years. The female partner's age was between 30 and 40 years. The postoperative patency rate was confirmed by semen analysis at one month. The success of the pregnancy rate was derived from a telephonic questionnaire. This was an 18 months follow up in relation to vasectomy reversal.

Results

In this study, 70 men had vasectomy reversal procedure carried out by macroscopic technique. The age ranged between 30 and 56 years with a mean of 42.7 years and a median of 42 years. The obstructive interval ranged between 2 and 23 years. The mean was 8.75 years and the median obstructive interval was 8.5 years. Divorce and remarriage were the main factors for the reversal procedure

Figure 1 Single layer spatulate end to end anastomosis technique using interrupted 6 × 6-0 prolene.

Figures 2-4 Macroscopic single layer spatulate end to end anastomosis technique using 6× 6-0 prolene.



to be undertaken by these men. The surgical time under general anaesthetic varied between 45 and 90 minutes with a median of 75 minutes. The procedure was a day case and none required hospital admission following discharge. A total of 63 of the 70 patients had positive patency test postoperatively (90 %) and none failed to hand in a semen sample following the procedure. The sperm count was more than 20million /ml in all the men with a positive patency test. The overall pregnancy rate was 54 % and the miscarriage rate was 7.1%. The patency and the pregnancy rates for an obstructive interval of less than 10 years were 92.2% and 69.8% respectively. The patency and pregnancy rates for an obstructive interval interval between 11 and 20 years were 78.4% and 48.9% respectively. Complete semen analysis was carried out if required and referred to the appropriate fertility unit. The summarised results of the various parameters are depicted in Table I and Table II.

Table I

Parameters	Results
Number of subjects	70
Median age in years	42 (30-56)
Median obstructive interval in years	8.5 (2-23)
Median operative time in minutes	75 (45-90)
Operative Procedure	Day case
Positive patency rate in percentage	90%
Sperm count in million/ml	>20m/ml
Positive pregnancy rate in percentage	54%

Table II Patency and pregnancy results in relation to obstructive interval in years

Obstructive interval in years	Patency (%)	Pregnancy (%)
2-10	92.2 %	69.8 %
11-20	78.4 %	48.9 %

Discussion

Vasectomy reversal procedure is more cost effective for fertility treatment than a direct approach to assisted reproduction. However, there are several pathological factors that limit natural pregnancy rate e.g. inadequate quality and quantity of the sperm, presence of antisperm antibody, stenosis or obstruction at the vasovasostomy site, sperm granuloma and female infertility factors. The advances in microsurgical techniques for vasectomy reversal in recent years in the hands of experienced surgeons trained in microsurgery had reported the outcome of postoperative patency rate between 80-99%.[7,8] However, the microscopic technique requires competence which is achieved by special training in microsurgery, laboratory practice and experience. The multicentre vasovasostomy study group showed reduced

patency rates and reduced pregnancy rates with increasing length of obstructive interval.[9] The groups were divided according to the obstructive interval namely, <3 years, 3-8 years, 9-14 years and >15 years. The patency rates ranged between 97-71% respectively and the pregnancy rates ranged from 77% to 30%.

Our study has included older men with a longer obstructive interval. Other than surgical technique, preservation of vas blood supply, duration of obstructive interval, partner's age and possibly the initial vasectomy technique may influence the overall outcome of a successful reversal procedure. Despite this, our overall patency rate of 90% and pregnancy rate of 54% compares favourably with series of vasectomy reversals using microscopic technique. [9, 10, 11]

Limitations of macroscopic vasectomy reversal via a scrotal approach are the inability to perform epididymovasostomy if required and possible difficulties in bridging any long vas defects. However, these possible scenarios were not encountered in this complete series and preoperative examination to suggest a short vasal gap length is also helpful in making a clinical decision about the technique to be offered to the patient.

The European Association of Urology (EAU) guidelines for male factor infertility, recommend microscopic vasectomy reversal technique but there has been no prospective randomised study comparing macroscopic and microscopic vasectomy reversal technique. Although our series is relatively small, these results suggest a highly economic formula for achieving satisfactory levels of fertility.

In conclusion, macroscopic technique is cost effective and easy to learn compared to the learning curve involved in microsurgery. For older men with a longer obstructive interval, who desire to have children, it is important to emphasise that macroscopic technique in the hands of an experienced surgeon can also produce good results and should be considered as an effective means of re establishing fertility.

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