

Microsurgical Vasectomy Reversal: Ten-Years' Experience in a Single Institute

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Background: A retrospective review was made of patients who received vasectomy reversal from 1989 to 1998 at Chang Gung Memorial Hospital (CGMH) in Linkou, Taiwan. The patency rate and partner pregnancy rates were also analyzed.

Methods: Seventy patients underwent a vasovasostomy at CGMH from 1989 to 1998. Postoperative semen analysis and achievement of pregnancy in a partner were examined. Various preoperative factors were also examined and analyzed.

Results: Patients ranged from 30 to 58 (average, 40.8 ± 6.5) years old. The most common reason for requesting a vasovasostomy was divorce (42.3%). The patency rate was 85.7% (36/42), and the pregnancy rate was 40.6% (13/32). However, if patients receiving a vasovasostomy for reasons other than to achieve pregnancy (i.e., pain, erectile dysfunction, or infertility of the wife) were excluded, the pregnancy rate reached 50.0% (13/26). Three patients received a second vasovasostomy; patency was noted in 2, and pregnancy was achieved in the partner of 1. Of the 5 patients receiving a vasovasostomy due to post-vasectomy pain syndrome, 3 felt that their condition had improved.

Conclusion: The patency and pregnancy rates of vasovasostomies in CGMH were 85.7% and 50.0%, respectively. Repeat surgery could be considered an effective means of restoring fertility if an initial vasovasostomy failed. Moreover, a vasovasostomy appeared to be an effective means of treating post-vasectomy pain syndrome.

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Key words: vasovasostomy, vasectomy reversal, patency rate, pregnancy rate.

Vasectomy is a safe and effective means of permanent contraception employed by nearly 7% of all married couples and performed on approximately 500,000 men annually in the US. Surveys suggest that 2% to 6% of all vasectomized men ultimately seek reversal, and a vasovasostomy is the

most-common method used.⁽¹⁾

Quinby and O'Connor performed the first vasovasostomy in 1915, while O'Connor reported the first one in 1948.⁽²⁾ Macroscopic vasovasostomy with and without loupe magnification was extensively used between 1948 and 1977.^(2,3-10) Although several

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authors still advocate use of the macroscopic technique,^(8,9,11-17) a literature review suggests that superior results are obtained when performing a microscopic rather than a macroscopic or loupe magnification vasovasostomy.⁽¹⁰⁾

This study reports on 70 patients receiving microsurgical vasectomy reversal at CGMH from 1989 to 1998. Various preoperative factors and post-operative results are examined.

METHODS

Seventy consecutive vasectomy reversals performed at CGMH from 1989 to 1998 were retrospectively reviewed. The chart records of 6 patients were lost, and only 64 patients could be followed-up. Various preoperative factors, including the age when the vasovasostomy was performed, the duration between vasectomy and vasovasostomy, and the reason for seeking a vasovasostomy, were examined. A modified 1- or 2-layer microsurgical vasovasostomy was performed in all patients using 9-0 or 10-0 nylon sutures under microscopic magnification.

Patency was defined as the presence of sperm in the follow-up semen analysis. The pregnancy rate of partners was also calculated. Statistical analysis of the comparison of the patency and pregnancy rates based on the obstruction interval was performed using Chi-squared test. A value of $p < 0.05$ was considered statistically significant.

RESULTS

Ages of the patients ranged from 30 to 58 years, with a mean age of 40.8 ± 6.5 years. The most common reason for seeking a vasovasostomy was divorce in 22 (42.3%) patients. Other reasons included the desire to have more children (12), the loss of a son or daughter (7), the desire to have a boy (5), post-vasectomy pain syndrome (5), and erectile dysfunction after vasectomy (1) (Table 1). The obstruction interval ranged from 4 months to 25 years, with a mean of 7.8 ± 5.0 years.

Among all patients, 42 had postoperative semen analyses, and sperm was found in the semen of 36 (85.7%). Thirty-two patients could be tracked in terms of whether or not they had gotten a partner pregnant; 13 couples achieved conception, and the pregnancy rate was 40.6%. Notably, the pregnancy

rate reached 50.0% (13/26) if patients who received a vasovasostomy for reasons other than to achieve pregnancy (3 for pain and 1 for erectile dysfunction) and patients whose wives were infertile (2) were excluded.

Table 1. Comparison of Reasons for Vasectomy Reversal in Studies Performed in Western and Eastern Societies

Reason	CGMH (N=64)	TMCH ^{*(23)} (N=60)	Belker et al. ⁽²²⁾ (N=1469)
Divorce/new partner	22 (42.3%)	38 (63.3%)	917 (75.5%)
Psychological/symptomatic	6 (11.5%) [†]	10 (16.7%) [‡]	19 (0.6%) [¶]
Desire for a child/boy	17 (32.7%)	7 (11.7%)	0 (0%)
Child died	7 (13.5%)	5 (8.3%)	31 (2.6%)
Others	0 (0%)	0 (0%)	246 (20.3%) ^{£k}

* TMCH: Taipei Medical College Hospital.

† Five patients had vague pain, and 1 had erectile dysfunction.

‡ Seven patients referred to sexual dysfunction and weakness and 3 to vague pain.

¶ Symptom identified as scrotal pain.

£k Seven patients noted religious reasons, while others were not identified.

When patients were grouped based on the duration of obstruction of < 8 years and ≥ 8 years, the patency rates were 86.4% and 85.0%, respectively ($p = 0.899$). In addition, the pregnancy rates were 57.1% and 41.7%, respectively ($p = 0.431$) (Table 2).

Table 2. Comparison of the Patency and Pregnancy Rates Based on the Obstructive Interval

Duration (years)	Patency	Pregnancy	<i>p</i> value
< 8	19/22 (86.4%)	8/14 (57.1%)	0.899
≥ 8	17/20 (85.0%)	5/12 (41.7%)	0.431

Three patients received a second vasovasostomy; sperm in the semen after the operation was noted in 2, and a pregnant partner was achieved by 1. Five patients received a vasovasostomy for post-vasectomy pain syndrome; 1 was lost to follow-up, and 3 of the remaining ones felt that their symptoms had improved.

DISCUSSION

Vasovasostomies have become popular in

Taiwan in recent years owing to changes in marital concepts. The most common reason for a vasovasotomy in our study, similar to that of a Western study,⁽¹⁸⁾ was divorce and the desire to have children with a new partner. Although the desire to have more children, particularly a boy (32.7%), with the same partner was not noted in the Western study, this was found in an Eastern study⁽¹⁹⁾ (Table 1).

Several factors appear to determine the success of a vasovasotomy. The pregnancy rate after vasectomy reversal is inversely related to the duration of the obstructive interval. Silber indicated that men with obstructive intervals of 5 years or less had a high likelihood of being fertile.⁽²⁾ Based on Belker's study, new obstructive interval guidelines may be useful when advising patients about the likelihood of a successful vasectomy reversal.⁽¹⁸⁾ Table 3 summarizes the results of other studies.⁽¹⁸⁻²³⁾ In this study, the overall patency and pregnancy rates were 85.7% and 50.0%, respectively. The pregnancy rate seemed to decrease with duration of obstruction although it was statistically insignificant, while the patency rate did not appear to obviously change. This could be due to the small number of cases in our study.

Table 3. Results of Vasectomy Reversal: Comparison of Various Studies

	No. of patients	Patency (%)	Pregnancy (%)
CGMH	70	85.7	50.0
TMCH ⁽¹⁹⁾	60	84.21	36.84
Belker et al. ⁽¹⁸⁾	1469	86	52
Silber ⁽²⁰⁾	282	91	81
Wright et al. ⁽²¹⁾	52	96	67
Casella et al. ⁽²²⁾	33	86	28
Yamamoto et al. ⁽²³⁾	30	56	50*
		36	7 [†]

* Duration of less than 5 years. †Duration of more than 5 years.

Of the patients receiving vasovasotomies for post-vasectomy pain syndrome, 75% (3/4) felt that their pain had been relieved. This finding corresponds to that of Stanley et al.,⁽²⁴⁾ which reported 27 of 32 patients noting improvement.

Three patients received a second vasovasotomy. Sperm in the semen was noted in 2 patients, and conception was noted in 1. Table 4 summarizes the results of other studies.^(18,19,25,26)

Table 4. Comparison of Results of Repeat Vasectomy Reversal

	No. of patients	Patency (%)	Pregnancy (%)
CGMH	3	66.7	33.3
TMCH ⁽¹⁹⁾	8	62.5	??
Belker et al. ⁽¹⁸⁾	222	75	43
Javier et al. ⁽²⁵⁾	41	79	31
Gerald et al. ⁽²⁶⁾	57	67	30

Some patients remain azoospermic even after a repeat vasovasotomy. Microscopic epididymal sperm aspiration combined with intracytoplasmic sperm injection is indicated for these patients and has a remarkable success rate for men with problems of obstructive azoospermia.⁽²⁷⁾ This technique is considered an adjuvant for patients with failed repeat vasectomy reversal.

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顯微輸精管重建手術：單一醫學中心的十年經驗

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- 背景：** 探討接受輸精管結紮後的病患，經由顯微手術重接之後，其接通率及懷孕率之分析。
- 方法：** 從1989年至1998年10年之間，在林口長庚醫院總共有70位病患，接受顯微輸精管重建手術，經術後的精液分析及受孕與否，去探討接通率及懷孕率。此外，病患的年齡、結紮的期間長短及接受重建手術的原因，也一併探討。
- 結果：** 病患年齡分佈從30歲至58歲，結紮期間長短從4個月至25年，最常見接受手術重建的原因為離婚(42.3%)。在術後精液分析及追蹤，接通率為85.7%，懷孕率為40.6%。其中有6位病患是因為其他身心因素而接受此手術(如疼痛或性功能障礙)；若將此類病患排除，則懷孕率可達50%。若考慮結紮期間長短，則對接通率及懷孕率並無影響。此外有5位患者是因為結紮後疼痛症候群而接受重建手術，術後門診追蹤時，在4位病患之中，有3位的症狀自覺明顯改善。
- 結論：** 在本院之顯微輸精管重建手術，其接通率及懷孕率分別可達85.7%及50%，結紮期間的長短對接通率及懷孕率並無影響。對於第一次輸精管重建手術之後仍無法懷孕者，第二次輸精管重建手術仍然有些效果。另外，對於接受結紮而有會陰部疼痛的病患，接受此重建手術對於其症狀也可有明顯的改善。
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關鍵字： 輸精管吻合手術，輸精管重建手術，接通率，懷孕率。