

## DOES VASECTOMY AFFECT ERECTILE FUNCTIONS AND QUALITY OF LIFE?

### VAZEKTOMİ EREKTİL FONKSİYONU VE YAŞAM KALİTESİNİ ETKİLİYOR MU?

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**Anahtar Sözcükler:** Vazektomi, yaşam kalitesi, erektil disfonksiyon, bıçaksız vazektomi, sterilizasyon

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## ÖZ

**Giriş:** No-scalpel vazektomi dünyada en yaygın kullanılan standart vazektomi tekniğidir. Bizim amacımız vazektomi ve re-vazektominin erektil fonksiyon ve yaşam kalitesi üzerindeki etkisini araştırmaktır.

**Gereç ve Yöntem:** İkiyüzoniki adet vazektomi hastası değerlendirildi. Hastalar vazektomi gününde, 3.ay, 6.ay ve 12. aylık kontrollerinde valide edilmiş SF-36 ve İİEF sorgulama formlarıyla değerlendirildi. Komplikasyon açısından ilk 7 günde hastalar değerlendirildi. Altıncı ay kontrol spermiyogramında motil sperm görülen hastalara re-vazektomi uygulandı.

**Bulgular:** Ortalama İİEF skorunda istatistiksel anlamlı artış tespit edilirken ( $p < 0.05$ ) ortalama SF-36 subskalasında herhangi bir fark görülmedi ( $p > 0.05$ ). Re-vazektomi grubunda İİEF skorlarında ve SF-36 subskalasında istatistiksel anlamlı fark görülmedi ( $p > 0.05$ ). Altıncı ay kontrollerinde motil sperm görülen 18 hastanın 12'ne re-vazektomi uygulandı, 6 hasta ameliyatı kabul etmediği için çalışma dışı bırakıldı. Vazektomi grubunda 186 hasta prospektif olarak değerlendirildi. Sadece 1(0.45%) hastada hematoma görüldü.

**Sonuç:** Bizim sonuçlarımızda vazektominin erektil fonksiyon üzerinde pozitif etkisi görüldü. Bununla birlikte re-vazektominin erektil fonksiyon ve yaşam kalitesi üzerine herhangi pozitif veya negatif etkisi tespit edilmedi.

## SUMMARY

**Introduction:** The no-scalpel vasectomy is the most common standard vasectomy technique worldwide. We aimed to evaluate the effects of vasectomy and re-vasectomy on erectile function and life quality.

**Materials and Methods:** Two hundred and twelve consecutive vasectomy patients were evaluated. Validated SF-36 and IIEF assessment questionnaires were completed for the patients at the day of vasectomy and during 3rd, 6th, and 12th month controls. Patients were evaluated for complications within the first 7 days. Re-vasectomy was performed when motile sperms were detected at the 6th month control spermogram.

**Results:** The mean IIEF scores showed a significant increase ( $p < 0.05$ ), whereas the mean SF-36 subscales did not show any difference ( $p > 0.05$ ). In the re-vasectomy group, no statistically significant difference was detected between the mean values of IIEF scores and SF-36 subscales ( $p > 0.05$ ). Of the 18 patients having motile sperms at the 6th month control, 12 were performed re-vasectomy, while 6 did not accept re-operation and were excluded. 186 patients were prospectively evaluated in the vasectomy group. Only 1 (0.45%) patient had hematoma.

**Conclusion:** Our results showed the positive effect of vasectomy on erectile function. Also, re-vasectomy had no additional positive or negative effects on erectile function and quality of life.

## INTRODUCTION

In contemporary societies, it is intended that the couples can have children at the desired time and desired number as many as they wish. In this sense, contraceptive methods are important. The known methods of contraception include natural methods, barrier methods, combined hormonal contraceptives (estrogen/progesterone), progesterone-only contraceptives, and voluntary sterilization performed as tubal ligation for women and vasectomy for men (1).

Vasectomy is the most common surgery performed by urologists in the United States (US). No-scalpel vasectomy (NSV) is the most widely used vasectomy method worldwide. NSV is first described in 1974 by Dr. Li Shungiang, and then became the standard method of vasectomy (2,3). Vasectomy is a simple, fast, reliable, and low-cost method, and easily performed even under local anesthesia as an outpatient clinic operation (4).

The data obtained by laboratory and/or clinical studies are not sufficient to clarify the changes that may occur in the lives of patients as a result of the disease or treatment. Therefore, studies focused on the quality of life (QoL) which improved understanding of patients' perceptions are of great importance in the current treatment modalities. The Short Form 36 (SF-36), a general-purpose scale, can be used in the assessment of the vasectomy effects on the quality of life, whereas the International Index of Erectile Function (IIEF), a special purpose scale, can be used to evaluate the erectile function (5,6).

The aim of this study was to investigate the effects of the vasectomy procedure on the QoL and erectile function among patients who underwent vasectomy for family planning and re-vasectomy due to failure of the first vasectomy.

## MATERIAL AND METHODS

Two hundred and twelve patients who admitted to the Urology Clinic of our hospital for vasectomy between May 2005 and June 2008 were evaluated prospectively. Patients, who decided for vasectomy together with their wives, were enrolled in the study. The participants were

married, younger than 65 years, and had active sexual life during the past 4 weeks. Participants were questioned about their medical history including systemic diseases and chronic use of drugs. Patients with specific clinical conditions that obviously interfered with erectile function were excluded from the study. The exclusion criteria were as follows: severe genital anatomic deformities that disturbed erection; psychological and social problems that made it impossible for the patient to participate in the study; history of major pelvic surgery; patients under medications such as thiazide diuretics, phosphodiesterase type 5 inhibitors, statins, antidepressants; patients with the diagnosis of hypertension, diabetes mellitus, congestive heart failure, bronchial asthma, coronary heart disease, malignancy, cirrhosis of liver, and chronic renal failure; not being in a heterosexual, stable, monogamous sexual relationship for longer than 6 months.

Patients who underwent vasectomy completed validated SF-36 and IIEF evaluation forms at the day of vasectomy, and 3rd month, 6th month and 12th month follow-up examinations after vasectomy. SF-36 scores ranged from 0 to 100, and higher scores indicated better health status (7). IIEF questionnaire was classified into 5 categories based on the scores (6).

Patients were evaluated on term of complications within first 7 days after the operation. Third month control spermogram was performed, and the absence of live sperm or detection of rare non-motile sperm (fewer than 100,000 per millilitre) was accepted as successful vasectomy, while detection of motile sperm was considered as failed vasectomy. In such situations, the patients were asked to continue protected sex for 3 months more. In the case of detecting motile sperms in the sixth month control spermogram, re-vasectomy was recommended to the patients and performed to the ones accepted.

This study was approved by the local ethics committee. All participants were informed about the study in detail, and written consents were obtained.

The mean SF-36 and IIEF scores obtained from the evaluation forms completed preoperatively, and at the third month, sixth month and twelfth

month controls after vasectomy were compared statistically. Data analyses were carried out on a personal computer using Statistical Package for Social Sciences software (SPSS, Chicago, Illinois) version 15.0, and statistical significance level was set at 0.05.

## RESULTS

Out of 212 patients, 186 were evaluated as primary vasectomy group. Eight were lost to follow-up and excluded. Eighteen patients with motile sperms detected after the first vasectomy were included in the re-vasectomy group. Twelve among this group were accepted re-vasectomy, and operated. The mean age of the patients was  $42 \pm 6.65$  (22-63).

Distribution of the mean preoperative, 3rd, 6th, and 12th month IIEF and SF-36 scores of the

vasectomy group was shown in Table 1. Particularly, the mean preoperative, 3rd, 6th, and 12th month IIEF scores showed a significant increase ( $p < 0.05$ ). No statistically significant difference was detected between the mean preoperative, 3rd, 6th, and 12th month SF-36 subscales ( $p > 0.05$ ).

Distribution of the mean preoperative, 3rd, 6th, and 12th month IIEF and SF-36 scores of the re-vasectomy group was shown in Table 2. The mean IIEF scores did not show any statistically significant difference before vasectomy, and 3rd, 6th, and 12th months after re-vasectomy ( $p > 0.05$ ). Hematoma was detected only in 1 (0.45%) patient, whereas infection was not detected in any of the patients. None of our patients required vasectomy reversal surgery due to reasons such as fertility or pain.

**Table 1.** Preoperative, 3rd, 6th, and 12th month follow-up IIEF and SF-36 scores of the vasectomy group (Significant changes are marked with \*)

	Preoperative	3 months follow-up	6 months follow-up	12 months follow-up
IIEF	27,53	27,74*	27,77*	27,80*
Vitality Physical functioning	96,34	96,67	96,72	96,80
Bodily pain	93,21	91,83	91,66	91,88
General health perceptions	86,85	87,16	87,50	87,44
Vitality	84,2	84,62	84,97	84,92
Physical role functioning	96,10	96,90	97,31	97,31
Emotional role functioning	95,51	96,18	96,30	96,30
Social role functioning	95,70	96,18	97,04	97,11
Mental health	83,58	84,10	84,17	84,37

**Table 2.** Preoperative, 3rd, 6th, and 12th month follow-up IIEF and SF-36 scores of the re-vasectomy group

	Preoperative	3 months follow-up	6 months follow-up	12 months follow-up
IIEF	29,08	29,25	29,25	29,50
Vitality Physical functioning	95,41	97,08	97,08	97,08
Bodily pain	93,00	90,17	90,17	90,17
General health perceptions	84,17	84,58	84,58	84,58
Vitality	82,08	85,25	85,41	85,58
Physical role functioning	95,83	100	100	100
Emotional role functioning	88,88	88,88	86,10	86,10
Social role functioning	94,79	94,79	93,75	93,75
Mental health	80,00	80,67	81,00	81,33

## DISCUSSION

Although vasectomy has an important place among contraception methods, it ranks fourth among men aged 15-44 in US, with the application rate of 5.7%. The first three methods are condom (29.5%), oral contraceptives (25.6%) and tube ligation (8.1%).

Tubal ligation and vasectomy both have equal importance rates to prevent pregnancy, while vasectomy is a simple and safe method that can be easily performed in the doctor's office environment. Also, vasectomy is approximately 1/4 percent cost-efficient compared to tube ligation (4).

Vasectomy procedure consists of two parts. The first is access to the vas deferens and the second is occlusion of the vas deferens. Access to the vas deferens can be managed with several techniques: 1. Conventional incision - conventional vasectomy (CV), 2. NSV, 3. Percutaneous - percutaneous intravasal cannulation, 4. Minimally invasive method - minimally invasive vasectomy (MIV). Vas deferens occlusion methods include ligation, cauterization, clipping, chemical blocking agents, and combined methods (8,9).

In this study, we applied NSV + ligation + fascial transposition methods. In different studies, significantly shorter recovery time and faster return to work were reported for the NSV compared to the standard vasectomy (10). In a randomized controlled NSV trial, significantly less hematoma and infection, as well as significantly less pain and faster return to normal sexual activity were observed (11). In another study, the overall complication rate was 0.4% among men who had NSV technique, while 3.1% among men who had CV technique ( $p < 0.001$ ) (12). According to data obtained from 11 surgeons who performed 7700 NSV in US, 80% of physicians reported scalpel vasectomy was less bleeding, and 70% reported less complaints of patients regarding pain during and after the operation (9). Ligating the vas deferens with non-absorbable sutures may be the easiest and most practical method, but failure rate is approximately 2% of cases (12).

Vasectomy reversal surgery reveals sperm granuloma at the site of vasectomy in 10-30% of

the patients. Many studies have been conducted on chronic orchialgia and/or epididymal pain following vasectomy. The frequency was reported in the range of 0.1% - 33% (13,14,15,16). The incidence of symptomatic infection and hematoma was reported as 1% and 2%, respectively (17,18). The complication rate may vary according to the experience of the surgeon. Hematoma rate was reported as 4.6% for those who perform 1-10 vasectomy, 2.4% for those who perform 11-50 vasectomy, and 1.6% for those who perform more than 50 vasectomy per year. Li SQ et al. reported hematoma in 0.09% and infection in 0.91% of cases in their study including 179,741 cases (2). In our study, hematoma was detected only in 1 patient (0.45%), infection was not detected in any of the cases.

Nine studies evaluating the failure rate of cases of combined ligation and fascial interposition treatment exist to date. The failure rate was 1% in 6 of these 9 studies, while 1.11%, 1.98% and 5.85% in the remaining three studies (17,19). The failure rate detected in our study was 8.37%.

The guidelines recommend protection for 12 weeks over 20 ejaculations after vasectomy for the effective contraception (20). Contraception may be terminated if less than 10,000 non-motile sperm can be detected in the examination of fresh ejaculate obtained at least 7 months after vasectomy. This phenomenon is known as 'special clearance' (21).

It is reported that about 0.1% - 0.3% of the vasectomized men request vasectomy reversal surgery (22). The incidence of sperm detection and pregnancy with microscopic vasovasostomy in patients with less than 3 years of vasectomy history were, 97% and 76% respectively. These ratios decrease with the time passed as 88% and 53% in those with 3-8 years of vasectomy history, 79% and 44% in those with 9-14 years of vasectomy history, and 71% and 30% in those with more than 15 years of vasectomy history (22,23). None of our patients request vasectomy reversal surgery due to any reason such as fertility or pain.

Studies conducted on vasectomy displayed no long-term evidence of any health problem so far. Recent studies did not support previous data on

the possible relationship between vasectomy and testicular cancer and cardiovascular diseases (22,24,25). No correlation was reported between stroke and vasectomy either (26,27). Also, relationship between prostate cancer and vasectomy could not be clarified yet (28-31).

There is a fallacy on vasectomies' negative effect on erectile functions. Thus, evaluating erectile functions after vasectomy is of great importance. Dr. Buchholz et al claimed a decrease in erection frequency or weak erection in 2%, and decrease in sexual activity in 7% of patients according to their study(32). But, these changes were correlated with pre-vasectomy problems, psychosocial changes, and partner changes among 4% of the patients, while there was no change in the other parameters (32). Statistically significant improvement was detected in the assessment of IIEF questionnaire of the vasectomy group, which may indicate psychologically more comfortable sexual intercourse could be managed without worrying about pregnancy, in our study. There was no statistically significant difference in the re-vasectomy group, and this could be interpreted as the continuing concerns of the re-vasectomized patients due to return of some

moving sperm to the ejaculate after vasectomy. Nevertheless, we didn't observe any negative impact on the quality of life of the vasectomized and re-vasectomized patients.

## CONCLUSION

One-year prospective follow-up of the vasectomy group displayed a statistically significant and positive effect on IIEF. However, at the end of one-year follow-up, there was no statistically significant difference concerning the eight parameters of SF-36. As a result, vasectomy showed a statistically significant and positive impact on erectile functions, but it did not have any significant effect on the quality of life.

In the re-vasectomy group, at the end of one-year prospective follow-up, no statistically significant effect could be observed concerning IIEF and eight parameters of SF-36. As a result, re-vasectomy did not have any significant effect on the erectile functions and the quality of life of the patients. We believe, further research on re-vasectomy should be conducted with a larger sample size, since we had relatively a small group in this study.

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