

*Short communication***Failure rate of no-scalpel vasectomy in prevention of pregnancy  
in Shiraz, Southern Iran**

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**Abstract**

**BACKGROUND:** Bilateral vasectomy is the most effective method of male contraception but there are still some reports on its failure. This study was undertaken to determine the failure rate of the no-scalpel vasectomy in Shiraz Vasectomy Center, Southern Iran.

**METHODS:** From 2001 to 2003, 3900 no-scalpel vasectomies were done in Nader Kazemi Health Center. The records were studied for any failure in the method. Presence of any live sperm 6 months after surgery or any report of pregnancy post-vasectomy were considered as vasectomy failure.

**RESULTS:** Among 3900 cases, 2928 patients had a complete follow up file while failure in the method was visible among 109 (3.72%) cases.

**CONCLUSION:** The low failure rate of no-scalpel method indicated its high efficacy to control the fertility in males but there is still need of performance by expert surgeons in well organized centers.

**KEYWORDS:** Iran, no-scalpel vasectomy, failure rate.

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Bilateral vasectomy is the safest method now available for male fertility control. The no-scalpel modification is a wise refinement of the vasectomy that, while decreasing the complications, increases the patient acceptance dramatically. This modification needs surgeons with special training who are expert in the technique. Since 1991, 60 millions men were reported to undergo No-Scalpel Vasectomy (NSV) method <sup>1</sup>. A randomized study on 1203 vasectomies in Bangkok revealed an eight fold lower incidence of bleeding and infection with NSV method compared to standard incisional vasectomy <sup>2</sup>. Similar results were reported by Li and Goldstein in 1991 <sup>3</sup>.

While vasectomy is a highly effective method, failures may occur due to re-

canalization of the Vas, surgical errors, anatomical variations or failure of contraception during the postoperative waiting period to azoospermia <sup>4</sup>. The incidence of vasectomy failure ranges from 1% to 5% when ligature alone is used for occlusion <sup>5</sup>. Goldstein in 1983 showed when the vas was sealed with two medium hemoclips on each end, failure rate reduced to less than 1% <sup>6</sup>. Using hemoclips while increase the cost, needs special equipment that is not available in all family health clinics especially in developing countries.

This study was designed to determine the failure rate of NSV method in our center.

**Methods**

From December 2001 to December 2003, 3900 NSVs were done in Nader- Kazemi Vasectomy

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Center (NKVC) by a single surgeon (the first author) in Shiraz, Southern Iran. NKVC is a specially designed center for NSV, founded in 1997. Of the total of 3900 vasectomies, 3250 ones were done by one surgeon. All operations were done using no-scalpel technique, described and popularized by Dr Li. In this technique, both vases are grasped and delivered to the wound by specially designed instruments without any skin incision. Approximately 10 mm of vas is excised on each side. The vas ends are occluded by silk ligation. Fascial interposition is done if possible.

The success was defined as azoospermia in 2 successive semen analyses separated by one month. Presence of any live sperm in semen analysis 6 months postoperation or any report of pregnancy post-vasectomy was indicative of failure. All vasectomized men were informed about the significance of semen analysis after the operation. It was emphasised that the couple must continue their previous contraception method from the time of vasectomy until at least two semen analyses showing azoospermia.

## Results

Of 3900 vasectomies performed during a 2-year period, 3250 were performed by a single surgeon (the first author). The remaining 650 were done by the surgeons under training. To eliminate the effect of lack of experience and expertise on success, we excluded these 650 patients. Of the remaining patients, 322 patients had no or only one semen analysis or were lost during follow-up. Among the studied cases, 2928 patients had regular follow up and complete files. The procedure failed in 109 men making a failure rate of 3.72%. In 93 patients, azoospermia was not reported after 6 months and repeated vasectomies were done. Surgical findings in this group showed recanalization as the cause of failure in 86 patients and one-sided missed vas in the remaining 7 patients. There was no case of bilateral missed vas. Early failures, identified as the presence of any motile sperm after 6 months post-vasectomy without occurrence of preg-

nancy, were found in 93 cases (3.17%) and late overt failures which resulted in pregnancy were seen in 16 men (0.54%).

## Discussion

Vasectomy is performed as an outpatient procedure and the number of people relying on it as a method of contraception varies widely from country to country <sup>7</sup>. Although vasectomy is an old surgical technique and has a history of more than one century, it was not popular till 1991 when the no-scalpel modification was introduced by Li <sup>8</sup>. The no-scalpel modification decreased men reluctance to do vasectomy and increased its acceptance. In some parts of the world, the rate of vasectomy is now equal to tubal ligation. If we could find any drawback for NSV, it would be its long learning curve and its need of expert surgeons to do the operation. Its failure in the hand of unexpert surgeon who does the operation occasionally is high and unacceptable. It is advisable that, the operation be performed by trained surgeons (vasectomists) and in centers that are designed for NSV. The vasectomy techniques and failure rates vary among surgeons and the criteria to clarify any failure are not clearly defined. In a series of 5331 men, the failure rate of vasectomy was 1.81% including 0.6% of early and overt failures and 1.14% of technical failures. Late overt failures were 0.07% <sup>9</sup>. In a study on 1052 Nepalese men undergoing vasectomy, 2.2% had still sperm in their semen one year after operation and 2.3% of them reported pregnancy in their wives making a total failure rate of 4.5% <sup>10</sup>. In another study on 924 vasectomized men, 25 pregnancies occurred and the numbers of sperms were more than 500,000/ml, 12-37 months postsurgery <sup>11</sup>. Our results showed a failure rate of 3.72% which was lower than those reported for developing countries (4.5%) but more than European countries (1.8%) <sup>12</sup>. 3.17% of our failures were detected in follow up semen analysis after vasectomy when the patients were using a reliable contraception method without occurrence of pregnancy. Although, this is a technical failure for the vasectomy, it is not a true

contraception failure. Indeed, our true failure ending in pregnancy was 0.54% which was acceptable.

Labrecque<sup>13</sup>, who studied over 870 vasectomised patients, showed that there was no association between the length of vas segment excised and the risk of recanalization when the excised segment ranged from 5 to 20 mm. In our study, we tried to excise approximately 10 mm of vas on each side which we think is the minimum length that should be excised.

Labrecque<sup>14</sup> again in a retrospective study of 3,761 men who underwent initial vasectomy showed that the risk of vas occlusion failure in men with at least one semen analysis was much greater in the clipping and excision group than that in the cautery, interposition and open testicular end group (8.7% versus 0.26%). He concluded that cautery and interposition with an open testicular end was much more effective than clipping and excision. We used vasal ligation by silk and fascial interposition and our results were comparable with Labrecque. In our center, facilities for intraluminal cautery and clipping were not available. This study proves that silk ligation is also safe, reliable and inexpensive. From the previous studies, it is evident that the most frequent cause of unwanted pregnancy post-vasectomy is unprotected intercourse prior to demonstration of azoospermia and the technique of vasal occlusion is of second importance. Spontaneous recanalization is considered a rare event<sup>15,16</sup>.

The histological structure related to recanalization presents ductal regeneration and sperm granuloma. So, the repeat of the operation may be necessary<sup>17</sup>. In post-vasectomy semen examinations, even a single spermatozoa should not be overlooked<sup>1</sup>. The number and time of semen analysis for assessment of surgical results vary from one to three follow-ups at intervals of 6 weeks to 1 year<sup>18</sup>. In this study, we used at list 2 semen analyses during the first 3 months after operation. The consensus is that, if motile spermatozoas were present in semen samples after 6 weeks, it would be indicative of spontaneous recanalization<sup>19</sup>.

We concluded that NSV method was a safe and highly effective procedure for male contraception. The complications were minor and infrequent. The success rate in our hands was more than 96%, similar to the other studies. Although, the failure rate was low but the couple should be warned. The possibility of recanalization, late failure and occurrence of pregnancy suggest that the procedure should be performed by skilled specialists in well equipped centers.

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