

Evaluation of the Effect of Varicocelectomy on the Semen Parameters in Patients with Clinical Versus Subclinical Varicocele

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Abstract: Objectives: - To evaluate the efficacy of varicocelectomy in patients with clinical versus subclinical varicocele as regards the seminal parameters. **Patients and Methods:** from June 2010 to May 2012, a total of 162 patients with varicocele (72 subclinical and 90 clinical) who presented at Al-Azhar University Hospitals seeking advice for infertility (primary or secondary) were included in the study. All patients subjected to history taking, clinical examination, semen analysis, color Doppler ultrasonography (scrotal). Patients with recurrent varicocele, azoospermia or have cause of infertility other than varicocele were excluded from the study. Semen analysis was done for all patients before and after 3 to 6 months of varicocelectomy. Improvements of seminal parameters were statistically significant in patients with clinical varicocele ($P < 0.05$). Bilateral and right side varicocele were relatively more common in patients with subclinical varicocele. Also the incidence of secondary infertility was higher in patients presented with subclinical varicocele compared with patients presented with clinical varicocele ($P < 0.05$). **Results:** In our study varicocelectomy have favorable results in patients with clinical varicocele. As regard, the effects of varicocelectomy in patients with subclinical varicocele, we recommend avoiding varicocelectomy in subclinical group of patients unless no identifiable causes of semen abnormality.

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1. Introduction

Varicocele is a state of dilated, elongated and tortuous veins of the pampiniform plexus of the spermatic cord. Varicoceles typically develop during adolescent and have been found in about 15% of the general male populations⁽¹⁾.

Patients with varicoceles seek medical attention when they experience pain and or a dragging sensation in the scrotum; up to 40% of men evaluated at subfertility clinics have varicocele⁽²⁾.

A wide variety of explanations of the relation between varicocele and infertility have been proposed, the most important being sperm damage from elevated temperature in the scrotum, retention of waste products is slowly flowing blood in the pampiniform plexus and high concentration of testosterone and other hormones in these vessels⁽³⁾.

The different surgical methods available for the management of varicocele results in relief of pain and removal of the mass, with an improvement in semen parameters. However, although varicocele is thought of as the most treatable cause of male infertility, questions and controversy still surround this treatment⁽⁴⁾.

The most common abnormality in the seminal parameters of individuals who are presented with varicocele is decrease of sperm motility which can be seen in about 90% of patients⁽⁵⁾.

In addition, abnormality in the shape of sperm cells is very common. Currently no acceptable relation between grade of varicocele, pathology of the testicles and the abnormalities in semen parameters⁽⁶⁾.

2. Patients and Methods:-

This study was carried out from June 2010 to May 2012 on 162 patients who presented at Al-Azhar University Hospitals seeking advice for infertility (primary or secondary).

The patients subjected to history taking, clinical examination, semen analysis, color Doppler ultrasonography (scrotal). Patients with recurrent varicocele, azoospermia or have cause of infertility other than varicocele were excluded from the study. At least 2 semen analyses were done for all patients before operation and 3 to 6 months after operation. The patients were divided into 2 groups according to the degree of varicocele. 1- Group A (90 patients with clinical varicocele). 2- Group B (72 patients with subclinical varicocele).

The seminal parameters before and after the operation were compared among patients of each group.

- In both groups, varicocelectomy was done using inguinal approach for all patients.
- Clinical varicocele was classified according to Dubin system into:

- Grade I: - small, palpable with only valsalva maneuver.
- Grade II:- moderate, palpable with patient standing
- Grade III: - large, visible through scrotal skin, and palpable with patient standing.

Subclinical varicoceles are not palpable on physical examination but rather are diagnose radiographically.

After obtaining informed consent and performing clinical evaluation, for each patient a questionnaire regarding demographic features, marital situation, type of varicocele, genital evaluation and type of infertility (primary or secondary) was filled out. To ensure the accuracy of the study, a single medical technologist performed all

laboratory experiments and a single urologist performed all operations. The spermogram results pre and post operative were compared among individuals of each group. We compared the results of the study using the Epi-6 software, through the *t* test program.

3. Results

In our study we select a total of 162 men, suffering from varicocele. Their mean age was 28.2 ± 4.1 years.

The largest age group belonged to those who were 40 years and younger, making up 94.6% of group A patients and 95.8% of group B (Fig. 1). The effected side in the patients is shown in figure 2.

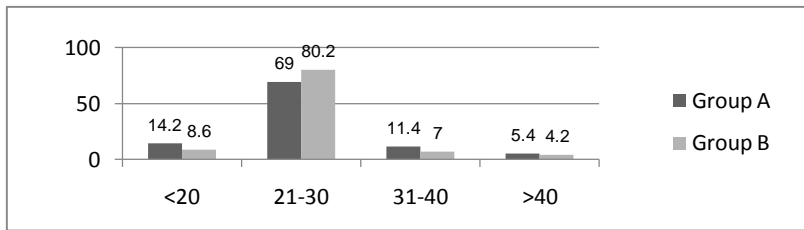


Fig. 1. Age distribution of patients.

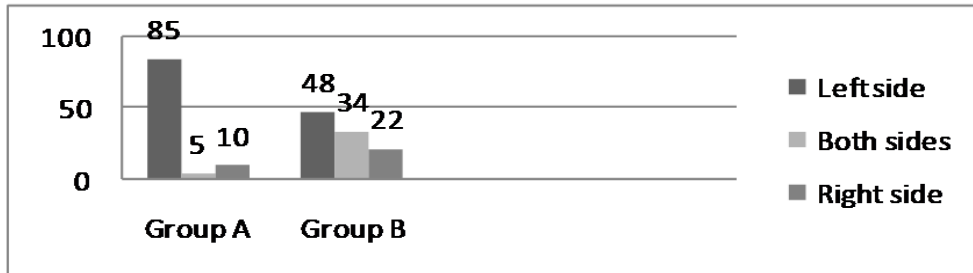


Fig. 2. Side Distribution of varicocele

In patients of group A, 21 (23.33%) had grade I, 41 (45.56%) had grade II and 28 (31.11%) had grade III varicocele.

Among patients of our study, the period of time from marriage to the first visit to the urology clinic regarding infertility was 3.4 ± 1.2 years in group A patients and 1.6 ± 1.9 years in group B patients, with a significant *P* value of < 0.001 . In group A patients,

78.2% had primary and 21.8% had secondary infertility.

Among group B patients, 25.3% had primary infertility, 74.7% had secondary infertility. Comparison of spermogram parameters before and after varicocelectomy between individuals of each group is shown in table 1.

Table 1. Comparing the spermiogram parameters between two groups of patients having clinical and subclinical varicocele before and after varicocelectomy.

Sperm parameters	Groups	Values before operation	Values after operation	P Value
Sperm count (million per ml)	A-I	20.62 ± 23.78	50.76 ± 17.95	< 0.05
	A-II	19.2 ± 33.8	48.4 ± 16.9	< 0.05
	A-III	15.6 ± 32.3	38.23 ± 18.7	< 0.05
	B	21.4 ± 14.7	23.7 ± 13.6	NS
Percentage of motile sperms	A-I	49.75 ± 23.85	53.85 ± 21.07	NS
	A-II	41.27 ± 19.25	62.6 ± 19.9	< 0.05
	A-III	39.7 ± 16.2	73.45 ± 12.25	< 0.05
	B	59.4 ± 11.2	61.6 ± 8.9	NS
Percent of sperm with normal morphology	A-I	58.75 ± 19.45	59.35 ± 13.51	NS
	A-II	53.76 ± 18.35	54.7 ± 17.4	NS
	A-III	50.35 ± 19.46	51.16 ± 18.65	NS
	B	44.2 ± 22.5	45.7 ± 17.8	NS

Abbreviation: NS, Non-significant.

* Data are given as mean ± SD.

†A-I to A-III, patients with clinical varicocele (three grades); B, patients with subclinical varicocele.

Significant improvements appear in sperm count and in motility parameters after operation only in group A.

The main complications after operation in both groups were testicular pain and sensitivity in 19 patients (14 group A and 5 group B), mild hydrocele in 17 (6 group A and 11 group B), testicular atrophy in 3 (all of group B) and recurrence of varicocele in 8 (3 group A and 5 group B).

4. Discussion

Although varicocele is an important and common cause of men's infertility, fortunately, clinical varicocele is well treatable, and the best treatment of it is agreed by most researchers to be surgery. The controversial subject is management of subclinical varicoceles. Most of these patients are referred to urology clinics because of infertility after some para clinical diagnosis such as spermiogram and/or sonogram abnormality. Many different opinions have been stated in various papers regarding the results of surgical operation on patients with subclinical varicocele. In our study varicocelectomy did not have favorable results in patients with subclinical varicocele. This result going with the results of Bsata and Masabni who did not have positive results after performing varicocelectomy on patients with subclinical varicocele⁽⁷⁾. In contrast, Pierik *et al.* in their research on patients with clinical and subclinical varicocele showed that surgical operation had the same positive results regardless of the type of the disease⁽⁸⁾.

Varicocelectomy for subclinical varicoceles

Many studies tried to detect the effect of varicocelectomy in patients with subclinical

varicocele. From this studies, Unal *et al.* who compared two methods of treatment in patients with subclinical varicocele by prescribing clomiphene to one group and performing varicocelectomy on another group. They showed that the spermiogram parameters improved in both groups, with no significant difference between the two methods of treatment⁽⁹⁾.

In our study, bilateral or right sided varicoceles were relatively more common in group B compared to the clinical group and baseline spermiograms of subclinical patients were less abnormal than those of the patients of group A.

Considering our results and the results of previous studies, it can be concluded that underlying mechanism and pathogenesis of left sided subclinical varicoceles and those who had severe spermiogram abnormality (same as those who had clinical varicocele) are similar to clinical varicocele, for which surgery may give better results. In our study, most of the patients were affected on the left or both sides; hence, it seems that other mechanisms may have affected their sperm parameters.

5- Conclusion

Varicocelectomy show favorable outcome in patients with clinical varicocele, while in patients with subclinical varicocele there was no significant value of varicocelectomy, so, we recommend avoiding surgery in these patients unless no other causes of semen abnormality to avoid the possible complications that might be occur from such surgery.

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