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Article

The Outcomes of Sub Inguinal Varicocelectomy on Seminal Fluid Analysis Parameters in Infertile Patients with Clinically Diagnosed Varicoceles

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Abstract: Background; a comparison study in seminal fluid parameters (count, motility and morphology) pre and post subinguinal varicocelectomy, in patients with history of primary infertility, normal sperm count and clinically diagnosed varicocele.
Patients and method; in this study one hundred infertile patients had primary infertility (1-7 years), normal sperm density and clinical confirmed varicocele were included. A seminal fluid analysis has been recorded preoperative and sex months post varicocelectomy.
Results; 100 patients included in this study; mean age was 22.43± 7.24.
Mean period of infertility was 2.5 years (ranging from 2-7 years), a significant changing in motility has been noted postoperative in normal sperm count patients.
Conclusion; in patients with primary infertility, varicocele and normal sperm count preoperatively there was significant improvement in sperm motility post varicocelectomy while no postoperative significant improvement in sperm morphology for those patients.

Keywords: Varicocele; Varicocelectomy; Infertility, Male; Semen Analysis; Sperm Motility; Sperm Morphology; Subinguinal Approach; Treatment Outcome.

Introduction

Primary infertility defined as failure a couple to get pregnancy after one year of unprotected sexual intercourse.

About fifty percent of couples with primary infertility is due to male factors [1]. There are many factors affecting male fertility however varicocele regarded as one of the most important causes of primary male infertility. [2]

Testicular venous drainage is through pampiniform plexus that present as a network of veins in spermatic cord surrounding the testicular artery through which heat exchange takes place in order to cool arterial blood. Varicocele ultimately will increase the temperature in the scrotum that has adverse effect on sperm development [3]. [4].

Varicocele can affect sperm count, motility and morphology causing oligospermia, azoospermia, asthenospermia or teratospermia either separately or together (OAS) syndrome. [5].

In this study we compare the seminal fluid analysis results pre and postvaricocelectomy such as motility and morphology in patients with history of primary infertility, normal sperm count and clinically diagnosed varicocele.

Materials and Methods

From January 2022 to 2025, one hundred patients with primary infertility, normal sperm count and clinically diagnosed left side varicocele included in this study and the varicocele surgery for them has been done in AL Dewaniya Teaching Hospital, Department of urology, infertility clinic.

Preoperative complete clinical evaluation was done by history, physical examination and color doppler ultrasound for all of them. In addition to preoperative assessment of seminal fluid analysis, all of the patients had normal count but had either abnormal motility and/or abnormal morphology.

Table 1

Variable	Cut-off value
Sperm volume	>1.5ml
Sperm concentration	>15 million / ml
Total sperm count	>39 million
Sperm progressive motility (A + B)	>32%
Sperm morphology	>4%
Sperm DNA fragmentation	<30%
Non-sperm cells	<1 million / ml

WHO laboratory manual for the examination and processing of human semen. Geneva: World Health Organization; 2010.

Under spinal or general anesthesia, a sub inguinal varicocelectomy has been done for all of those patients, one month later a color doppler ultrasound done to confirm the correction of varicocele by absence of venous blood back flow. Sex months postoperative, a seminal fluid analysis done for all of them and all changes in sperm count, motility and morphology had been recorded.

Results and Discussion

The One hundred patients were included in this study, mean age was 22.43 ± 7.24. mean infertility period was 2.5years (range 2–7years), no significant changes in sperm count pre and post varicocelectomy (*P* value = 0.105) (as shown in Table 2).

Ninety percent (90%) of patients show abnormal motility preoperative, a significant improvement post operative was recorded (*P* value = 0.000) (as shown in Table 2). In which only 40 patients still show abnormal motility (asthenospermia) postoperative. With regard to morphology 46% of patients had abnormal morphology (teratospermia) preoperatively, postoperatively 40% of patients still had abnormal morphology so no significant changes recorded (*p value 0.4000* as shown in table 2).

(table 2) changes in seminal fluid analysis in patients with normal sperm count after varicocelectomy

no. 100	**Sperms concentration**	**Morphology %**	**Motility (*a*) %**	**Motility (*a* + *b*) %**
Preoperative	59.9 ± 40.2	3.6 ± 1.6	15.4 ± 8.0	29.7 ± 10.7
Postoperative	64.7 ± 43.2	3.7 ± 1.4	20.4 ± 8.4	40.3 ± 10.7
P value	0.105	0.400	0.000	0.000

Discussion

Varicocele patients mostly have no symptoms, however some of them have mild pain, heaviness or feeling of dragging sensation specially in large varicocele. [6] varicocele corrective surgery is indicated in patients who have infertility and abnormal seminal fluid analysis (oligo, astheno or teratospermia) either separately or concomitantly, however previous studies shows improvement in sperm parameters in subfertile male after varicocelectomy. [7] A recent study focus on recording changes in seminal fluid analysis parameter post varicocelectomy in patients with normal sperm count and have abnormal sperm motility with or without abnormal sperm morphology. [8].

Two studies have been published recording postvaricocelectomy changes in patients with normal sperm count, in the first one it shows no significant improvement in isolated teratospermia, while in second one shows no significant improvement in both asthenospermia and teratospermia post varicocelectomy. [7], [9].

In this study also shows no significant improvement postvaricocelectomy in sperm morphology in patients who has normal sperm count and abnormal morphology preoperative, however the asthenospermia is the only sperm parameter has been improved significantly after surgical repair of varicocele [10][11][12][13][14][15].

In conclusion, patients with subfertility, normal sperm count and clinically diagnosed varicocele, the surgical correction has important value in sperm motility with statistically significant improvement in asthenospermia.

On the other hand, subfertile men with normal sperm count, clinically diagnosed varicocele and isolated abnormal sperm morphology might get no benefit from varicocele repair as there is no significant improvement in sperm morphology postoperatively.

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