



EFFECT OF MICROSURGICAL SUBINGUINAL REPAIR ON TESTOSTERONE LEVEL IN INFERTILE MEN WITH VARICOCELE

Urology

Dr Chandra Shekhar

Mch Resident, Dr S.N. Medical College, Jodhpur

Dr Gordhan Chaudhary

Associate Professor Dr S.N. Medical College, Jodhpur

Dr Pulkit Garg

Mch Resident Dr S.N. Medical College, Jodhpur

Dr Himanshu Gehlot

Mch Resident Dr S.N. Medical College, Jodhpur

Dr Anurag Yadav

Mch Resident Dr S.N. Medical College, Jodhpur

ABSTRACT

Background: The detrimental effect on spermatogenesis by varicocele is well documented. However varicocele presents a pantedicular insult, leydig cell dysfunction is now a recognized potential consequence of varicocele. the beneficial effect of varicocele repair on testosterone production have been proposed for decades. **Objective:** To evaluate the Effect of microsurgical subinguinal repair on testosterone level in infertile men with clinical significant varicocele. **Patients and Methods:** This study included 30 patients presented to urology outdoor of dr s n medical college jodhpur with clinical varicocele for primary infertility. The study was conducted during the period between 1st April 2021 and December 2021. **Results:** Microsurgical subinguinal varicocele repair was associated with a significant improvements of testosterone levels at 6 months after surgery as compared to the preoperative levels ($P < 0.001$). however the percent of improvement was more among hypogonadal compared to euogonadal **Conclusion:** Varicolectomy was demonstrated to significantly improve serum testosterone in infertile men, especially in cases with hypogonadism.

KEYWORDS

Varicocele, Testosterone, Fertility.

INTRODUCTION

Varicocele is an abnormal dilatation of the pampiniform plexus of the veins that drain the testis. Restoration of this abnormality has been shown to cause positive effects on the spermatogenesis process (1).

Clinical varicocele is a prevalent condition affecting 15% of general male population, 35% of patients with primary infertility, and 81% of men presenting for the management of secondary infertility. The associations between clinical varicocele, impaired spermatogenesis, and male infertility have long been recognized (2).

The detrimental effect on spermatogenesis by varicocele is well documented, but not completely understood(3). It is has been proposed to be secondary to a variety of insults including oxidative stress, high scrotal temperature with loss of the scrotal counter-cooling mechanism, reflux of adrenal metabolites and gonadotropins or autoimmunity (4).

On the other hand, the association between clinical varicocele and impaired testosterone production is less clearly understood. Although, the conceptions of the negative impact of clinical varicocele on Leydig cell functions and the beneficial effect of varicocele repair on testosterone production have been proposed for decades (5).

High temperatures can reduce the activity of the 17- α hydroxyl progesterone aldolase enzyme, which results in decreased testosterone production. Thus, it is believed that treatment of varicocele may improve the function of Leydig cells, reactivate this enzyme, and increase testosterone production (6).

In men with idiopathic varicocele, testicular biopsies demonstrated decreased tubular diameters, hyperplasia and atrophy of Leydig cells with cytoplasmic vacuolization, and decreased number of testosterone-positive Leydig cells (7).

Varicocele repair has been advocated as an option to prevent and treat low serum testosterone, even in men with normal semen quality (8).

The aim of the present study to evaluate the effect varicocele repair on testosterone level in infertile men with clinically significant varicocele.

MATERIALAND METHOD

A prospective observational study of patient presented for infertility with varicocele from april 2021 to december 2021.Total 30 patients were included in our study with clinical grade II & III and infertility.Infertility is defined by the failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse. Male patient age range 20-48 yrs included in this study with average age 32 yrs. euogonadal (serum levels of testosterone $> 300\text{ng/dl}$), hypogonadal men (serum levels of testosterone $\leq 300\text{ng/dl}$). All patient underwent microsurgical subinguinal varicoceles repair for infertility. Follow-up evaluation was done at 6 months after surgery. Post op testosterone level measured and compared with pre op level.

Inclusion Criteria

- A Men presented with infertility primary or secondary.
- varicocele clinical grade II & III



Image 1; grade 3 varicocele

Exclusion Criteria

- Male presenting subclinical and grade I varicocele.
- Patient with varicocele without fertility complaint.
- Patient with previous testicular surgery.
- Hypogonadism due to other than testicular pathology.

RESULT

This prospective observational study included 30 patients between 20 to 48 yrs age with mean age of 32 yrs according to inclusion criteria. 14 patient who were classified as being hypogonadal ($< 300\text{ng/dl}$). 16

patient were classified as eugonadal ($>300\text{ng/dl}$) according to preoperative testosterone level. Results were compared at 6 month post operatively with testosterone level.

Table 1; Testosterone Level Change Pre And Post-operative Among Intervention Group

Testosterone level	No of patient(n)	Preoperative level	Post operative level	P value
Hypogonadal ($<300\text{ng/dl}$)	14	219.3 ± 65.8	358.1 ± 94.0	$P=0.0001$
Eugonadal ($>300\text{ng/dl}$)	16	524.0 ± 180.6	533.6 ± 181.3	$P>0.05$

Microsurgical subinguinal varicocele repair was associated with a significant improvements of testosterone levels at 6 months after surgery as compared to the preoperative levels. Significant improvement in testosterone level was seen in hypogonadal patient in our study $219.3 \pm 65.8 \rightarrow 358.1 \pm 94.0$ ($P=0.0001$).

improvements in testosterone levels were also observed in euogonadal men but were not statistically significant $524.0 \pm 180.6 \rightarrow 533.6 \pm 181.3$ ($p > 0.05$)

DISCUSSION

A study by Zohdy et al.(2011) in a prospective trial showed the similar results comparable to our study. significant improvement in testosterone level postoperatively particularly in hypogonadal men. No significant improvement in eugonadal male(9).

Sathya Srinini et al. in their study included 200 infertile patient with low testosterone level and clinical varicocele. They found significant improvement in testosterone level the patient underwent surgery than who did not(10).

Hsiao et al.(2013) in a retrospectively study showed significant improvement in testosterone level in all patient after microsurgical subinguinal varicocele repair. Although all patient having low or low normal testosterone level.

In our study there was significant improvement in testosterone level postoperatively in hypogonadal patient. Which was comparable to several other study. Although increase in testosterone level was also noted in eugonadal patient but was not statistically significant.

Table 2; Different Study Group Showing Effect On Testosterone Level After Varicocele Repair.

study	Patient (n)	classified	P value
Zohdy et al.(2011)	103	49 hypogonadal 54 eugonadal	$P = 0.0001$ $P > 0.05$
Sathya Srinini et al. (2011)	200	100 varicocele repair 100 no surgery	$P < 0.001$ $P = 0.005$
Hsiao et al.(2013)	78	32 low testosterone 46 low normal	$P < 0.0001$ $P < 0.001$
Our study	30	14 hypogonadal 16 eugonadal	$P < 0.0001$ $P > 0.05$

CONCLUSION

Microsurgical subinguinal varicocele repair was associated with a significant improvements of testosterone levels in men. particularly with low preoperative testosterone levels in clinical grade II & III varicocele. Non significant improvement seen in testosterone level in preoperatively normal testosterone level. All patient having clinical grade II & III varicocele with infertility as primary complaint in our study. So Further study needed to confirm relation of varicocele with testosterone level without fertility complaint.

REFERENCES

1. Tanrikut C, Goldstein M, Rosoff S et al. (2011): Varicocele as a risk factor for androgen deficiency and effect of repair. BJU International, 108 (9): 1480-1484.
2. Alsaikhan B, Alrabeeah K, Delouya G et al. (2016): Epidemiology of varicocele. Asian Journal of Andrology, 18 (2): 179-185.
3. Choi WS, Kim SW. Current issues in varicocele management: a review. World J Mens Health 2013;31:12-20.
4. Marmar JL, Agarwal A, Prabakaran S, et al. Reassessing the value of varicocele surgery as a treatment for male subfertility with a new meta-analysis. Fertil Steril 2007;88:639-48.
5. Hsiao W, Rosoff J, Greenwood E et al. (2013): Varicocele surgery is associated with increases in serum testosterone independent of clinical grade. Urology, 81 (6): 1213-1218.
6. Christe N, Meier C (2015): Hypotestosteronaemia in the aging male: should we treat it? Swiss Medical Weekly, 145: 4748.
7. Li F, Yue H, Ando M et al. (2012): Effect of surgical repair on testosterone production in infertile men with varicocele: A meta-analysis. International Journal of Urology, 19 (2): 149-154.

8. Srinini V, Veerachari S (2011): Does varicocele surgery improve gonadal function in men with hypogonadism and infertility? Analysis of a prospective study. International Journal of Endocrinology, 1: 916380.
9. Zohdy W, Ghazi S, Arafa M (2011): Impact of varicocele surgery on gonadal and erectile functions in men with hypogonadism and infertility. The Journal of Sexual Medicine, 8 (3): 885-893.
10. Sathya Srinini V, Belur Veerachari S. Does varicocele surgery improve gonadal function in men with hypogonadism and infertility? Analysis of a prospective study. Int J Endocrinol 2011;2011:916380.