

## Testicular Vein Ligation Effects on Infertile Patients with Grade III Left Varicocele

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### Abstract

### Original Research Article

**Objective:** to study the effect of high ligation of left testicular vein in patients with grade III left varicocele. **Methods:** 50 patients were selected having the following criteria: Infertility more than one year with unprotected intercourse, abnormal seminal fluid analysis(SFA), normal other infertility investigations, normal evaluation of the partner for infertility, grade III left varicocele, surgery done through left high retroperitoneal ligation(HLV) of testicular vein. All patients have one seminal fluid analysis prior to operation and another analysis 3-6 months after operation. **Results:** the preoperative percentage of pregnancy was 2% (one case). The post-operative pregnancy rate was 34% (17 cases) after follow up of 1 year. SFA changes were as follow: pre-operative mean sperm count was 16.4 million/ml, compared to 18.7 million/ml post operation. Mean progressive motility preoperative was 13.8percentage, compared to 18.4% post operation. Mean percentage of normal shaped sperms was 12.1%, compared to 17.5% post operation. **Conclusion:** surgery by left high ligation varicocele has a significant effect on infertile men by improving SFA parameters.

**Keywords:** seminal fluid analysis, varicocele, infertility, high ligation.

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## INTRODUCTION

Varicocele is a common medical problem in patients looking for conception. It is developed due to enlargement and congestion of veins draining the testis that merged to form the testicular vein.

It has an incidence of about 20-24% in adult male population according to most of screening studies [1]. It is much more common on left side because of the anatomical relation between the left testicular veins to left renal vein.

### Varicocele is the main presentation of infertile male with abnormal SFA

The correlation between varicocele and infertility is not clear enough. Many studies showed that varicocele is a common cause of infertility in males but other studies showed no significant effects of varicocele on infertility, especially in mild varicocele.

## METHODS

We studied 50 cases of infertile males who underwent left HLTV within the period of 2016 and 2017, and having the following criteria:

All patients underwent clinical examination in upright position, and other infertility investigations including hormonal assays done as part of evaluation.

### SFA done once prior to surgery

All patients underwent scrotal doppler ultrasound as part of the evaluation for varicocele, testicular size, and any scrotal abnormalities.

### The mean waiting time from the evaluation to surgery was 3.2 months

Infertility was considered according to the definition of the WHO that means inability to have pregnancy in sexually active couple with unprotected intercourse for more than 1 year [2].

### All partners were evaluated to exclude causes of infertility

All patients underwent surgery by left HLTV, by identifying the left testicular vein and double ligation of it. All patients seen after 2 weeks in the clinic for the routine follow up after surgery, three cases had simple wound infection that was treated by oral antibiotics and they were doing well in the next visit. SFA did 3-6 months after surgery for all patients.

## RESULTS

A total of 50 cases were included in the study. The age of the patients ranged from 24-36 years with a mean age of 27.6 years the post follow up time was 1 year for all patients. no history of scrotal or inguinal surgery or significant trauma in all patients no other infertility causes were found apart from varicocele, including hormonal evaluation.

The mean infertility period was 19 months at time of presentation in clinic, ranging from 13-36 months.

One case (2%) had a normal pregnancy during the waiting period for operation, but he underwent surgery due to scrotal pain and discomfort.

All patients had surgery under general anesthesia with a good recovery as a day case surgery and discharged home in good conditions.

In the routine first visit in the clinic after 2 weeks, only 3 cases (6%) had mild wound infection that was treated with oral antibiotics and they did well in the next visit.

The mean SFA results were as in table number 1;

**Table-1: SFA**

parameter	preoperation	postoperation
count	16.4 million/ml	18.7 million/ml
progressive motility	13.8%	18.4%
normal shape	12.1%	17.5%

12 cases (24%) had normal pregnancy during the first six months of follow up, and a total of 17 cases (34%) had normal pregnancy at the end of 1 year follow up.

According to the clinical results, there is a significant improvement in pregnancy rate in this group of patients especially in the first few months after surgery as in table number 2

**Table-2: Pregnancy rate**

before surgery	6 months after surgery	1 year after surgery
2%	24%	34%

## DISCUSSION

Infertility is one of the common health problems and issues. it affects around 15% of reproductive couples. The male factor is responsible of around 50% of cases according to different screenings and studies [3].

The most common type of male infertility is idiopathic cause, related to abnormal SFA of unknown etiology [4]. The second common type is varicocele.

Varicocele –related infertility was taken in consideration when studies appeared to show improvement in semen parameters after testicular vein ligation surgery. 78-93% of varicocele cases are located in the left side [5].

Varicocele grading according to clinical examination is divided to 3 grades as shown in table number 3.

**Table-3: grading of varicocele**

Grade 1	Palpable during valsalva maneuver
Grade2	Palpable without valsalva in standing position
Grade3	Visible through scrotal skin

Varicocele is seen in patients looking for conception 2-3 times more than fertile patients of the same age group [6]. In clinical evaluation and examination of patients with varicocele, the examiner bias should be taken in consideration.

The effect of varicocele on spermatogenesis is thought to be due to many factors, including elevated testicular and scrotal temperature, increased intratesticular pressure, hypoxia due to change in blood flow to testis, and increased toxic metabolites refluxed from the adrenal gland [7].

Elevated scrotal temperature is mainly due to reflux of intraabdominal blood to scrotum through testicular vein, which also leads to elevated intratesticular pressure and decreased arterial flow to testis [8].

Some studies showed that patients with varicocele have lower testosterone levels compared to those without varicocele at same age group [9].

Toxic metabolites refluxed from the adrenal glands can cause vasoconstriction in the testis and leading to impaired spermatogenesis.

In this study of relatively small number of cases, our goal is to find the effects of surgery by HLV on patients presented with primary infertility and having no clear cause of infertility apart from varicocele.

All the 50 cases have left grade III varicocele and abnormal SFA parameters. The high rate of pregnancy in the post-operative follow up period may not represent the true effect of HLV on infertile male, because of the small number of cases in this study, but at the same time it gives a good clue that management of varicocele surgically has a significant effect in improving semen parameters and increasing the possibility of normal pregnancy.

## CONCLUSION

Surgical management of varicocele is a good choice of management of infertile male with no clear cause of infertility apart from varicocele. The grade of varicocele is an important indicator of infertility – related varicocele according to the post-operative improvement in SFA parameters and increased pregnancy rate.

Management of left varicocele by left HLV is a suitable choice of management due to low rate of surgical complications.

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