

Efficacy of varicocelelectomy on sperms count and motility in patients with clinical varicocele and infertility.

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Abstract:

Background: Varicocele is a common condition worldwide among infertile men.

Objective: The aim of this three year prospective study done between January,2007 and December,2010,is to evaluate the effect of varicocelelectomy on sperms count and motility among patients with clinical varicocele.

Methods: During this period a total of 106 men aged 20-41 years were diagnosed with clinical varicocele (30 %with grade II and 70% with grade III varicocele).

Two semen analysis , by light and electron microscopy were taken from the patients. First analysis was immediately before varicocelelectomy and the second analysis after three months.

The operation was done through an open subinguinal approach.

Results: The sperm count and motility of the patients with clinical varicocele improved significantly (p.value= 0.000). The improvement was higher among patients with III grade varicocele than those with grade II, and there was no association between the grade of varicocele and the age of patient.

Conclusion: According to this effectiveness of varicocelelectomy on sperm count and motility, we recommend operation in patients with clinical varicocele unless there is no other causes of sperms abnormality.

Key words : clinical varicocele,male infertility,-varicocelelectomy.

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تأثير عملية ربط دوالي الخصية جراحيا على عدد وحركة الحيوانات المنوية عند المرضى المصابون بالعقم ودوالي الخصية

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المخلص:

الخلفية: دوالي الخصية هي حالة واسعة الانتشار في العالم بين الرجال الذين يعانون من العقم

الهدف : ان الهدف من هذه الدراسة التي اجريت في الفترة من يناير 2007 الى ديسمبر 2010 هو تقييم تأثير عملية ربط دوالي الخصية جراحيا على عدد وحركة الحيوانات المنوية عند المرضى المصابون بالعقم ودوالي الخصية فقط

الطرق : خلال الفترة المذكورة اجريت الدراسة على 106 مريض تتراوح اعمارهم ما بين 20 -41 سنة يعانون من العقم ودوالي الخصية (30 % من الدرجة الثانية و 70% من الدرجة الثالثة

لقد اجري فحص السائل المنوي للمريض قبل العملية الجراحية مباشرة واعادة فحصه بعد العملية بثلاثة اشهر

النتائج : ان عدد وحركة الحيوانات المنوية للمرضى تحسن حيث ان (P.value=0.000) كثيرا بعد العملية الجراحية التحسن في المرضى المصابون بدوالي الدرجة الثالثة كان اعلى من المصابون بدوالي الدرجة الثانية.لقد اوضحت الدراسة انه لا توجد علاقة بين درجة الدوالي وعمر المريض .

الخلاصة :نتيجة للتأثير الايجابي الملحوظ لعملية ربط دوالي الخصية على عدد وحركة الحيوانات عند المصابون بدوالي الخصية, لذلك نوصي بعملية دوالي الخصية لكل المرضى الذين يعانون من العقم ودوالي الخصية ما لم توجد اسباب اخرى للعقم .
الكلمات المفتاحية : دوالي الخصية, العقم

Introduction :

The testicular varicocele is the dilatation ,elongation and tortuosity of pampiniform plexus of the testis due to venous stasis .It is more common on the left side⁽¹⁾.

Varicocele is the most common cause of infertility in men ,which can be treated by operation. It is estimated that 15%of men suffer from varicocele⁽²⁾. It has been reported in 17% of fertile men and about 39% of infertile men⁽³⁾.

Testicular varicoceles interferes with testicular temperature regulation which is usually maintained at 2-3c. less than core body temperature⁽⁴⁾.

The accepted hypothesis that explain the mechanism by which varicoceles affect testicular function is that varicocele result in an increase in testicular temprature ,reflux of adrenal and renal metabolites that suppresses the spermatogenesis^(5,6).

The most common abnormality in the spermiogram of individuals who are suffering from varicocele is a decrease of sperms motility and quantity, which can be seen in90% of patients⁽⁷⁾.The most common reason for varicocelectomy is infertility when there is no other reason for infertility⁽⁷⁾.

The clinical varicoceles are detected by physical examination of patient in standing position.

The clinical varicoceles was classified by Dubin system⁽⁸⁾to:

Grade I :when the pampiniform veins can be felt while the patient is standing and performing the Valsalva maneuver

Grade ii :when the pampiniform veins are felt while the patient is standing without performing Valsava maneuver.

Grade iii :when the pampiniform veins are visible ,grossly dilated, without Valsalva maneuver.

Varicoceles are considered to be the commonest correctable cause of male infertility⁽⁹⁾.

Barwell in 1885 ,Bennett in1889 and Macomber in1929 had mentioned the effect of varicocele operation on the improvement of semen quality⁽¹⁰⁾.

Patients and Methods:

Between^{1st} January 2007 and 31st December 2010, a prospective analytical study was done for 106 infertile men, aged 20 to 40 years were diagnosed with second and third grade of varicocele with infertility were selected for this study.

The presence of varicocele was detected clinically by physical examination of patients.

In selected patients , the sexual development , medical histories , serum hormonal analysis (F.S.H, L.H, testosterone and prolactine) were normal and there was no urogenital infection.

All patients had sperms abnormalities either in count or motility or both.

The semen samples of patients were collected by masturbation after 3-5 day of sexual abstinence .The semen samples examined by light and electron microscopy by single person to insure the accuracy of examination.

The semen analysis was performed before varicocelectomy and repeated three months after varicocelectomy.

All patients underwent subinguinal approach varicocelectomy by single urologist , to ensure the accuracy of the study.

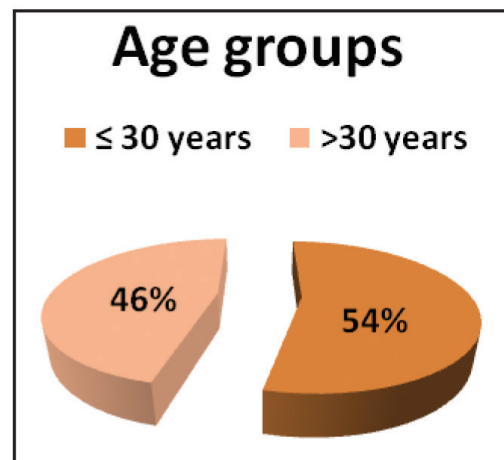
The operations of all patients were done in Ibn-sina general hospital and Hadrhamout private hospital in Hadrhamout governorate .All operations were done under spinal anesthesia and the patients discharged on the next day on oral antibiotic and anti-inflammatory drugs for 5 days.

Analysis:

The sample size of this study is 106 males with infertility and varicocele. The comparison was performed using the laboratory results before and after subinguinal varicocelectomy.

As seen in graph (1) more than half of patients (54%) were at age of thirty and less. The mean age and \pm sd of patients was 30.62 ± 4.50 years. The range of age was 20-41 years.

Graph (1): the percentage of patients according to their age groups.



Using t. test to compare between the sperms count means before and post operation, we found that there was significant increase of the count post operation than before operation. The mean of post operation was around 2 times more than before operation (59.36 vs 29.08) and p. value was highly significant (0.000). Same result was found in comparing motility before and after operation (Table 1) .

Table (1) Comparison between sperms count mean difference and motility mean difference of overall patients before and after operation.

	Mean	N	Mean difference	t. test	p. value
Sperms Count*	29.08	106	30.27	10.364	0.000
Sperms Count**	59.36	106			
Motility*	30.20	106	23.83	10.718	0.000
Motility**	54.03	106			

* Before operation ** After operation

Based on Chi2 analysis table (2) showed that there was no association between age group of patients and the grade of varicocele (p. value > 0.05).

Table (2) Association between age group of patients and the grades of varicocele.

Variables		GRADES		Total
		II	III	
AGEGROUP	<=30	17 (29.8%)	40 (70.2%)	57 (100%)
	>30	15 (30.6%)	34 (69.4%)	49 (100%)
Total		32 (30.6%)	74 (69.4%)	106 (100.0%)

Fisher's Exact test P. value > 0.05

Table (3) shows the highly significant difference between count and motility of sperms according to age groups before and after operation. The mean of sperms count before operation was 29.09 increased to 53.21 after operation at the age of 30 years and less (t. test value was 6.330 and p. value was 0.000). The same significant result was found for motility percentage.

Increasing of age more than 30 years old did not change the significance level of sperms count and motility percentage and the p. value remained at the (0.000), and the mean difference was higher for sperms count and motility at this age group.

Table (3): Comparison between means of counts and motility percentage of sperms before and after operation according to age group

Variables	Mean		N		Mean difference		T. test		P. value	
	<=30	>30	<=30	>30	<=30	>30	<=30	>30	<=30	>30
Sperms Count*	29.09	29.08	57	49	24.12	37.43	6.330	8.659	.000	.000
Sperms Count**	53.21	66.51	57	49						
Motility*	25.12	36.10	57	49	27.53	29.53	9.413	5.869	.000	.000
Motility**	52.65	55.63	57	49						

* Before operation ** After operation

Regarding the grades of varicocele, grade III is more prevalent and accounts for 70% of the recruited patients (graph 2).

In table (4) both counts and motility of sperms were significantly improved after operation among both patients groups with grade II and grade III (p. value =0.000) but the improvement was higher among patient with varicocele grade III. Sperms count mean among patients with grade III was 31.01 and improved to 64.39 while motility mean among this group was 29.46% and improved to 60.09%.

Table (4): Comparison between means of counts and mobility percentage of sperms before and after operation according to grade of varicocele.

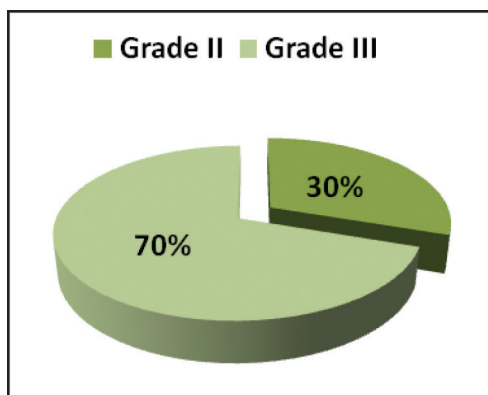
	Mean		N		Mean difference		T. test		P. value	
	Grade 2	Grade 3	Grade 2	Grade 3	Grade 2	Grade 3	Grade 2	Grade 3	Grade 2	Grade 3
Sperms Count*	24.63	31.01	32	74	23.09	33.38	4.797	9.298	.000	.000
Sperms Count**	47.72	64.39	32	74						
Motility*	31.91	29.46	32	74	8.09	30.63	2.331	12.645	.026	.000
Motility**	40.00	60.09	32	74						

*Before operation ** After operation

Table(5) : Details of effect of varicocelectomy on patients with grade II and grade III varicocele.

Effect of varicocelectomy	NO. of cases	%
1. Overall patients with varicocele	106	100
The patients who improved after varicocelectomy	86	81
The patients who did not improve after varicocelectomy	20	19
2. The patients with grade III varicocele	74	100
The patients who improved after varicocelectomy	66	89
The patients who did not improve after varicocelectomy	8	11
3. The patient with grade II varicocele	32	100
The patients who improved after varicocelectomy	20	63
The patients who did not improve after varicocelectomy	12	37

Figure 2: The percentage of patients regarding the grades of varicocele.



Discussion:

Although varicocele is an important and common cause of men infertility, fortunately, it is well treatable, and the best treatment of it, is agreed by most researchers to be surgery. The varicocele has been considered the most effective treatable cause of male infertility(11).

This study include 106 male, presented with infertility and clinical varicocele, the mean age and \pm sd of patients was 30.62 ± 4.50 years. The range of age was 20-41 years.

The results of our study showed a significant improvement of sperm count and motility in patients with clinical varicocele and infertility after varicocelelectomy (p.value was 0.000),

This results is in agreement with other studies that assessed the effect of varicocelelectomy in men with varicocele and infertility (12,13,14,15).

In our study, the results showed that the improvement of sperms parameters among patients with varicocele grade II was in 63% of cases, while the improvement in patients with varicocele grade III was in 89% of cases, and the improvement among all included patients with varicocele grade II and III was in 81% of cases. This results was in agreement with many other studies. One of them showed that the improvement of sperms parameters in patients with clinical varicocele and infertility was in 70% of cases after varicocelelectomy(16), and another study showed the improvement in sperms parameters was in 80% of cases after varicocelelectomy(17).

Regarding to the grade of varicocele, our study showed that varicocele grade III is more prevalent and accounts for 70% of included patients, while grade II varicocele accounts for 30% of cases. This perhaps may be due to the lack of awareness among those who had varicocele and present themselves late.

In our study the sperm count and motility improved significantly after varicocelelectomy among patients with varicocele grade II and III, but the improvement was higher among patients with grade III. This result indicates that the improvement of sperms parameters directly related to the grade of varicocele.

Similar studies has been showed that the improvement of sperm count and motility is directly related to the grade of varicocele (18,19,20).

Regarding to the age groups, our study include 106 infertile male with clinical varicocele (grade II and III), the range of age was 20-41 years. The patients divided into two age groups, one at age of thirty and

less accounts for 54%, and the other age groups at age of more than thirty, accounts for 46% of cases.

The results of our study revealed that a significant improvement of sperm count and motility in both age groups (p.value was 0.000).

This results indicated that the improvement of sperms parameters not changed between both age groups.

The results of our study also revealed that there was no association between age groups of patients and grade of varicocele (p. value > 0.05).

Conclusion and recommendation:

The improvement in sperms parameters of infertile men with clinical varicocele after varicocelelectomy is high for grade II and very high for grade III regardless to their age.

So we recommend varicocelelectomy for those patients at any age with varicocele and infertility unless there was no other cause of sperms abnormality.

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