# MANAGEMENT OF CHILDHOOD AND ADOLESCENT VARICOCELE: EXPERIENCE AT PRINCE RASHID BIN AL-HASSAN HOSPITAL-JORDAN

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## ABSTRACT

**Objective:** The aim of this retrospective study is to evaluate if the early repair of varicocele in children and adolescents can prevent testicular growth arrest and male infertility later on.

**Methods:** During a three year period (2004- 2006), 70 children and adolescents with varicocele who were operated on at Prince Rashid Hospital were reviewed (mean age 15 years, 9-19 years). All patients had been evaluated by a urologist or a pediatric surgeon. High ligation of the internal spermatic vein was carried out either by open retroperitoneal approach or transperitoneal laparoscopic approach.

**Results:** Of the 70 patients 39 had grade II varicocele and 31 had grade III varicocele. In 33 patients (49%), the disease was associated with ipsilateral testicular growth arrest. In seven patients (10%), the disease was associated with impaired seminal fluid analysis parameters, four patients had recurrence of varicocele, and three patients developed hydrocele. Of 33 patients with testicular growth arrest, 32 ( 97% ) regained normal testicular volume post operatively, while six of the seven patients with impaired seminal fluid analysis achieved normal parameters after surgery.

**Conclusion:** Varicocele can affect ipsilateral testicular growth and seminal fluid analysis parameters, which may adversely affect fertility. We recommend early recognition and treatment.

**Key words:** Adolescent, Childhood, Varicocele

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## Introduction

A varicocele can be defined as an abnormal dilatation and tortuosity of pampiniform plexus.[1] Its prevalence in boys aged 10-19 years is reportedly 7.2% to 16% and in approximately 40% of men presenting with infertility.[2-4] In most affected adolescents the varicocele is grade I (60%), while in 40% it is grade II or III.[4]

Varicocele is most common on the left side in 90% of boys and bilateral in 10%. A unilateral, primary right sided varicocele is exceedingly rare[2] and, should prompt investigation for a retroperitoneal mass compromising venous return from the right testicle.[5]

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**Table I.** The results of our observations

| | No. of patients |
|---|---|
| Grade | |
| Grade II | 39 |
| Grade III | 31 |
| Presenting symptoms | |
| Incidental | 58 |
| Pain | 12 |
| Associated abnormality | |
| Testicular growth arrest | 33 (32 Improved after repair) |
| Abnormal SFA parameters | 7 (6 Improved after repair) |

A varicocele first develops in early adolescence and it may negatively affect testicular growth, histology and function.[6-8] These gonadotoxic effects may be progressive and irreversible, and several investigators have proposed early varicocelectomy to prevent severe testicular damage and infertility in adulthood.[9,10] This knowledge has raised the question of how best to manage adolescents with varicocele. In the present study we described our experience in the management of adolescents with varicocele in the north part of Jordan at Prince Rashid Bin Al-Hassan Military Hospital.

## Method

Based on the belief that varicocele may affect male fertility in the future, we operated on all children and adolescents with varicocele. In the three year period between 2004 and 2006, 70 children and adolescent patients with varicoceles were operated on. Mean age was 15 years (range 9-19). Abnormal seminal fluid analysis data in young men (low motility, low count), testicular atrophy, scrotal pain (heaviness) and grade II-III varicocele were considered as indications for surgery. Patients over 19 were excluded from our study.

Varicocele was diagnosed by history and physical examination. All patients were examined in a warm room by a urologist or pediatric surgeon both while supine and standing with and without coughing.

The clinical findings were confirmed by color Doppler ultrasound. All patients had reflux and a venous diameter > 2mm, testicular volume was also evaluated by ultrasound (three dimensions). Seven young men of the total number treated for sub fertility had at least two seminal fluid analyses before varicocelectomy which showed at least one abnormality, either motility < 50% or count < 20 million (Table I).

Laparoscopic high clipping of internal spermatic vein was performed in those with bilateral varicocele (six patients) as described by Schwentner *et al*.[11] Open surgery was done for those with unilateral disease (64 patients) via left Lanz incision through retroperitoneal approach. All operations were performed under general anesthesia as day surgery procedure. All patients were followed up at one week (wound observation) and ≥ 3 months post operatively for clinical examination and Doppler ultrasound. Seminal fluid analysis for sub-fertile young men was done after 80 days.

## Results

Of the 70 varicoceles, 39 were classified as grade II and 31 as grade III, 58 patients (81%) detected incidentally either during physical examination or noticed by the patient himself. In 12 patients (19%) pain was the presenting symptoms.

In 33 patients (49%), the varicocele was associated with impaired growth of left testicle. In seven patients (10%) out of 70 the disease was associated with abnormal seminal fluid analysis.

There was no significant difference in the operative time between laparoscopic and open high ligation of the varicocele, the mean operative duration was 20 minutes for both procedures (range 15-40 minutes), and both groups were done as day case procedures, only one patient required admission due to being operated at the end of the operative list.

The follow up at one week for wound inspection showed only one wound infection and was treated by drainage.

Surgery was considered successful by complete absence of varicocele after a minimum of three months follow up. In four patients (5.7%) there was a recurrence of the varicocele (2 grade II and 2 grade III). Three patients (4.3%) developed hydrocele after surgery, and there was no reduction in testicular volume compared with the contra lateral side during the follow up period. In 32 (97%) out of 33 patients with preoperative left testicular hypotrophy, there was clear improvement in size

after surgery. The seminal fluid analysis data turned to normal in six out of seven patients whom their disease was associated with abnormality in the sperm count and motility, the remaining one patient was lost follow up (Table I).

## Discussion

The pathogenesis of varicocele formation is somewhat unclear. It is thought that various factors play a role in an increase of pressure in the pampeniform venous plexus and its venous drainage.[12] These factors include persistent collateral veins, absent or incompetent venous valve in the internal spermatic veins, increased pressure in the left renal vein, and the anatomic relationships of the left internal spermatic vein at its insertion into the renal vein is of particular relevance.

Several surgical techniques for the treatment of varicocele have been described, but still there is no gold standard technique, and controversy still exists on the advantages and disadvantages of each option. The most widespread treatment of varicocele in children and adolescents has been high ligation of the internal spermatic vein, retroperitoneoscopic,[13,14] transperitoneoscopic (Laparoscopic)[6,11] or open retroperitoneal approach.[15] Recently, less invasive methods have emerged, such as, percutaneous retrograde sclerotherapy,[16] antigrade sclerotherapy,[17,18] and percutaneous testicular vein embolization.[19]

Scrotal ultrasonography with volume measurements has been shown to be more accurate in determining the testicular volume than the orchoidometer.[20] Furthermore, ultrasonography nowadays is used to diagnose the prevalence of varicocele and the severity of associated venous reflux.[21] It is clear that varicocele repair can result in compensatory growth of the hypotrophic testis. A reversal of hypotrophy was reported in 53-90%[5,22,23] and 100% by Yamamoto *et al*.[24] Also loss of testicular volume has been rarely reported in association with intratesticular varicocele.[25] In our study volume recovery after varicocele repair is reported in 32 out of 33 patients (97%), which is comparable to others.

Usually, adolescents do not present with infertility, therefore, semen analysis data from adolescent patients with varicocele is quote sparse. There were many observations showing that there is significant improvement of seminal fluid analysis data after surgical repair of varicocele.[26-28] In our study seven patients presented with abnormal semen analysis data and sub fertility. They married early in their life. Six regained normal seminal fluid analysis within few months of surgery and their wives became pregnant later on, one patient was lost to follow up after surgery.

Varicocele repair carries potential complications that occur infrequently and are usually mild. These are wound infection, hydrocele, persistence or recurrence of varicocele and rarely testicular atrophy. The recorded rate of complications by others range between 0-12%,[11,13,17,19] hydrocele was reported in 0-20%,[5,6,11,13,17,19] wound infection is not documented well in literature and testicular atrophy is very rare. We reported persistence rate in four patients (5.7%), hydrocele in three patients (4.3%), wound infection in one patient and no testicular atrophy was reported.

## Conclusion

- Varicocele can affect ipsilateral testicular growth and this growth arrest impairs fertility in the future that is why early recognition and treatment can reverse the whole adverse effect of varicocele on male fertility.
- All adolescent males should be examined by schools physician routinely and educated about testicular self examination to detect the disease early.
- Contra lateral testis is normal in all patients.

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