

# Varicocele Associated Infertility in Maiduguri North Eastern Nigeria

Ibrahim A. G<sup>1</sup>, Aliyu S.<sup>2</sup>, Ali N.<sup>3</sup>, Lawan A. M.<sup>4</sup>

Department Of Surgery College of Medical Sciences University of Maiduguri North Eastern Nigeria

**Abstract:** *Background:* Infertility is a major concern in clinical practice due to its impact on the psychosocial life of the patient. Varicocele has been established as a leading cause of infertility. The study reviewed varicocele associated infertility and the outcome of its management. *Aim:* To review varicocele associated infertility and the effect of varicocelectomy on the outcome of management. *Patient and methods:* All patients with varicocele associated infertility managed in UMTN between January 2007 and December 2011 were studied. *Results:* Fourty seven patients were analysed. Age ranged from 21 – 53 years with a mean of 37.28 years and SD of 6.89, with peak age group 31 – 40 years. Associated medical conditions were hypertension, diabetes and obesity. Bilateral varicoceles were seen in 37. Seminal fluid analysis showed normal in 27.66%, oligospermia in 32.30% and azospermia in 34.04%. Hormonal assay revealed normal findings in 44.68%, hyperprolactinaemia in 23.40%, low testosterone in 19.15% and both hyperprolactinaemia and low testosterone in 12.76%. Testicular biopsy showed normal 6.38%, arrest of spermatogenesis at various stages in 14.89%, while in 12.77% there was no evidence of viable spermatogenesis. Responses to treatment were complete in 34.04%, partial in 38.30%, while 27.66% did not respond to treatment. The optimum response was seen 18 months after varicocelectomy.

**Keywords:** Varicocele, Infertility, Varicocelectomy, Outcome.

## 1. Introduction

The term varicocele was coined by British surgeon Curling T. B. In 1843 to describe abnormal dilatation of veins in the spermatic cord<sup>1</sup>. The earliest descriptions for varicocele treatment come from the Roman encyclopedist Celsus, who practiced from 25 – 35 AD. The earliest varicocelectomy was performed for pain and cosmetics, until 1952 when the association between varicocele and infertility was recognised, in a case report published by T. S. Tulloch of a man with biopsy – proven maturation arrest in whom sperm count improved after varicocelectomy<sup>2</sup>. Epidemiologic studies suggest that approximately 15 % of the general population have varicoceles. In contrast, 19 – 41 % of men evaluated for infertility have varicocele<sup>3</sup>. Interestingly, the rate of varicocele is increased in men with secondary infertility to approximately 70%, suggesting that varicoceles may cause a progressive decline in fertility potential<sup>4</sup>. In clinical practice varicocele patients show persistent abnormality of sperm count, motility, or morphology with the "stress pattern" consisting of elongated, tapered sperm head and amorphous cells<sup>5</sup>. Functionally varicocele patients sperm is compromised with defective acrosome reaction during zona pellucid binding<sup>6</sup>. The primary proposed hypotheses involved were hyperthermia, venous pressure, hormonal imbalance, toxic substances, and reactive oxygen radicals, being implicated in the pathophysiology<sup>7</sup>. This study reviewed varicocele associated infertility and the outcome of its management.

## 2. Patients And Methods

All patients with varicocele - associated infertility that were managed between January 2007 and December 2011 were reviewed. Information was extracted from clinical and laboratory records and the data analysed using SPSS version 16. Informed consent was obtained from patients and permission given by Hospital Research and Ethical Committee. The diagnosis of varicocele was made mainly on

clinical assessment, and infertility diagnosis was based on failure to achieve conception for one of regular unprotected coitus, and seminal fluid analysis. All patients had seminal fluid analysis and microbial isolate were treated with antibiotics based on sensitivity. All patients received multivitamin and antioxidant (homtamine) supplements with Enhantz (sperm count busting supplement). Hormonal assay and testicular biopsy were done in patients with unilateral varicocele and azospermia respectively. Other investigations done were full blood count, urinalysis, and blood chemistry. All patients had varicocelectomy under regional or general anaesthesia, the techniques were inguinal and sub inguinal dissection. Seminal fluid analysis were repeated six monthly for two years. The response to treatment was complete, partial, and no response. Complete response means conception, partial means improvement in seminal fluid parameters, while no response means no conception nor improvement in semen parameters.

## 3. Results

A total of 51 patients were reviewed 4 excluded for incomplete data and 47 were analysed. Age ranged from 21 – 53 years with a mean of 37.28 years and SD of 6.89, with peak age group 31 – 40 years accounting for 25(53.19%) patients **table 1**. All patients are married with duration of problem from 2 – 15 years. Associated medical conditions were hypertension in 9(19.15%) patients, diabetes in 5(10.64%), obesity in 4(8.51%), SCD in 2(4.26%), and CLD, asthma 1(2.13%) each. All patients had varicocele, 37 patients (78.72%) bilateral, 6(12.77%) left, while 4(8.51%) right. Abnormal testicular findings were hydroceles in 5 gonads abnormal lie in 2 gonads and atrophy in 6 gonads and epididymal cyst in 1. Seminal fluid analysis showed normal in 13(27.66%), oligospermia in 18(32.30%) and azospermia in 16(34.04%). Hormonal assay revealed normal findings in 21(44.68%), hyperprolactinaemia in 11(23.40%), low testosterone in 9(19.15%) and both hyperprolactinaemia and low testosterone in 6(12.76%). Testicular biopsy showed

normal in 3(6.38%), arrest of spermatogenesis at various stages in 7(14.89%), while in 6(12.77%) there were no evidence of viable spermatogenesis. Response to treatment were complete in 16(34.04%), partial in 18(38.30%), while 13(27.66%) did not respond to treatment. In those that responded to treatment, such response was objectively seen after one year, with optimum response after 18 months from varicocelectomy. There was no mortality and morbidity was limited to surgical site infection which resolved with dressing.

#### 4. Discussion

A systemic review of 4,473 men aimed at determining the best treatment modality for palpable varicocele in infertile men concluded that open inguinal or subinguinal techniques of varicocelectomy resulted in higher spontaneous pregnancy rate, fewer complications compared to laparoscopic or radiological embolization<sup>8</sup>, hence the adoption of these techniques in our centre. The peak age group for varicocele associated infertility in this study was 31 - 40 years in keeping with male infertility patients. The seminal fluid analysis may show oligospermia, azospermia, or normal count but defective functionally<sup>9</sup>, this study found similar pattern. Testicular biopsy showed arrest at various stages of spermatogenesis, or complete arrest in keeping with histologic findings in varicocele induced infertility<sup>7</sup>. The response to varicocelectomy varies, from improvement in one or more semen parameters in 65%<sup>10</sup>, to pregnancy rate of 33.80% - 51.50%<sup>11</sup>, this study found improvement in semen parameters in 38.30%, and spontaneous conception in 34.04% that is positive response in 72.34%. The mean time for semen improvement and spontaneous pregnancy after varicocelectomy is approximately 6 and 9 months respectively, similar to findings by Copi et al of 5 and 7 months respectively<sup>12</sup>. This study found patients with higher preoperative semen parameters, larger bilateral varicoceles and younger age are more likely to benefit from varicocelectomy in keeping with similar findings in previous studies<sup>13</sup>. The study found patients with histologic non obstructive azospermia, after varicocelectomy are suitable candidates for Assisted Reproductive Technology (ART), because sperm restoration, even minimal, yields the possibility of invitro fertilization (IVF) or intra cytoplasmic sperm injection (ICSI)<sup>14</sup>.

#### 5. Conclusion

The varicocele associated infertility exists as a clinical problem in this environment. Patients with this condition should be offered varicocelectomy as this procedure is associated with improved semen parameters with spontaneous conception. Those that do not respond can benefit from ART. There is the need for long term effect of varicocelectomy on fertility.

#### 6. Legends of Table

**Table 1: Age Distribution**

Age group	No (%)
21 – 30	8 17.02
31 – 40	25 53.19
41 – 50	12 25.53
51 – 60	2 04.26
Total	47 100.00

#### References

- [1] World Health Organisation, "Report of the meeting on the prevention of infertility at the primary Healthcare level" WHO, Geneva, Switzerland, WHO/MCH, 1983.
- [2] Vital and Health Statistics, 2009, series 23 no. 26/CDC.
- [3] Gorelick J. I, Goldstein M. "Loss of fertility in men with varicocele," *Fertility and sterility*, 1971; 22 : 469 – 474
- [4] Macleod J. "Seminal cytology in the presence of varicocele," *Fertility and Sterility* 1965; 16: 735 – 757.
- [5] Canales B. K., Zapzalka D. M., Ercole C. J. et al, "Prevalence and effect of varicoceles in an elderly population", *Urology* 2005; 66: 627 – 631.
- [6] Chen S. S., Huang W. J., "Differences in biochemical markers and body mass index between patients with and without varicocele". *Journal of The Chinese Medical Association* 2010; 73: 194 – 198
- [7] Ricardo M., Sandro C. E. A Critical Appraisal on the Role of Varicocele in Male Infertility. *Advances in Urology* 2012(2012), Article ID 597495.
- [8] Cayan S. Shavakhov S. Kadioglu A., "Treatment of palpable varicocele review in infertile men: a meta-analysis to defined the best technique," *Journal of Andrology* 2009; 30: 33 – 40.
- [9] Bahren W. Lenz M, Porst H. Wierschin W. "Side effects, complications and contraindications of percutaneous sclerotherapy of the internal spermatic vein for the treatment of idiopathic varicocele". *Fortschritte auf den Gebiete der Rongenstrahlen und der Nuklearmedizin*, 1983; 138: 172 – 178.
- [10] Schlesinger M. H. Wilets I. F. Nagler H. M., "Treatment outcome after varicocelectomy: a critical analysis," *Urologic Clinics of North America*. 1994; 21: 517 – 529.
- [11] Diegidio P. Jhaveri J. K., Ghannam, S. Pinkhasov R., Shabsgh R, Fisch H., "Review of current varicocelectomy techniques and there outcomes", *BJU International* 2011; 108: 1157 – 1172
- [12] Colpi G. M. Carmignani L. Nerva F et al, "Surgical treatment of varicocele by a subinguinal approach combined with antegrade intraoperative sclerotherapy of venous vessels," *BJU International* 2006 ; 97: 142 – 145.
- [13] Matkov T. G. Zenni M. Sandlow J. Levine L. A. "Preoperative semen analysis as a predictor of seminal improvement following varicocelectomy". *Fertility and Sterility* 2001 ; 75 : 63 – 68.
- [14] Weedin J. W. ,Khera M. ,Lipshultz L. I., "Varicocele repair in patients with nonobstructive azospermia: a meta-analysis," *Journal of Urology* 2010; 183: 2309 – 2315.