

## Original Article

# Pattern of Presentation and Management of Varicocele in a Tertiary Hospital in Northwestern Nigeria

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## ABSTRACT

**Background:** Varicocele is the abnormal dilatation of pampiniform venous plexus and internal spermatic vein. It is the commonest surgically correctable cause of male infertility. We reviewed pattern of presentation and management of varicocele in our hospital.

**Methodology:** This is a retrospective review of 100 patients managed for varicocele in our hospital from January 2011 to August, 2020. Data was collected via a proforma and was analyzed using SPSS version 25.0. The results were reported in percentages, mean  $\pm$  standard deviation.

**Results:** The mean age of the patients was  $35.2 \pm 8.4$  years with a range of 17 to 58 years. The varicocele was asymptomatic in 86 patients (86%), it was during evaluation for infertility. There were symptoms in 16 single young patients. The symptoms include scrotal pain and discomfort in 14 patients (14%) each and scrotal swelling in 7 patients (7%). There were co-morbidities in 7 patients (7%). There were abnormal seminal fluid parameters in 75 patients (75%), low testosterone in 23 patients (23%), testicular atrophy and or primary testicular failure in 51 patients (51%). Open sub-inguinal varicocelectomy was done in 67 patients (67%), 60% as day cases. The overall rate of improvement in seminal fluid parameters and pregnancy rates were 68.6 % and 11.9% respectively. There was resolution of symptoms in all the 16 symptomatic cases.

**Conclusion:** Varicocele is a common cause of infertility in our environment and most patients are discovered during evaluation for infertility. Patients present late with testicular dysfunction with or without primary testicular failure. Varicocelectomy was associated with good symptomatic response, improvement in seminal fluid parameters but low pregnancy rate due to testicular atrophy.

**Keywords:** Azoospermia, Management, Pattern, Testicular atrophy, Testicular failure, Varicocele.



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## INTRODUCTION

Varicocele is the abnormal dilatation and tortuosity of pampiniform plexus of veins and internal spermatic vein. It is present in 15-20 % of the general population, 35% and 71-80% of patients with primary and secondary infertility respectively<sup>1,2,3</sup>. Varicocele is associated with progressive and duration-dependent testicular dysfunction.<sup>3</sup> Idiopathic or Adolescent varicocele may be associated with decline in ipsilateral testicular volume<sup>4</sup>. Most of the patients are asymptomatic, the varicocele is detected in the course of evaluation for infertility. Few patients more especially the adolescent may be symptomatic.<sup>5</sup> The symptoms include orchalgia which is described as dull aching, throbbing exacerbated by straining and prolonged standing<sup>6</sup>. The pain may be referred to the ipsilateral groin along the course of spermatic cord<sup>6</sup>. This pain can be acute or chronic<sup>7</sup>. Other symptoms include testicular discomfort, testicular swelling with feeling of bag of worm.<sup>6</sup>

Varicocele was attributed to turbulent venous blood flow due to insertion of left testicular artery into the left renal vein at right angle.<sup>12</sup> This explains the predominance of left varicocele. Isolated right-sided varicocele occurs in 1% of the patients.<sup>3,6</sup> Bilateral varicocele occurs in 80% of the patients depending on the method of detection being it clinical or radiological.<sup>1,3,6</sup> Other etiological factors include incompetent or absent tricuspid valves in the gonadal vein which allow venous reflux into the scrotum, reflux of adrenal toxins such as adrenomodulin, catecholamines into the renal vein and nutcracker phenomenon due to compression of testicular venous drainage leading to venous hypertension and development of collateral circulation which when it involves the scrotal veins it leads to varicocele<sup>16</sup>. In proximal or classical nutcracker phenomenon the left renal vein is compressed between the aorta posteriorly and superior mesenteric artery anteriorly while in the distal nutcracker phenomenon the left common iliac vein is compressed by crossing left common iliac artery<sup>8,9</sup>. This phenomenon is seen in 0.5-0.7% of the cases<sup>9</sup>.

The mechanism of varicocele-induced testicular dysfunction is multifactorial<sup>1</sup>. Lead theory postulates that testicular cellular processes are exquisitely temperature dependent<sup>1</sup>. Venous stasis leads to intrascrotal hyperthermia which abolishes counter-current heat exchange mechanism in the pampiniform leading to Leydig cell dysfunction, injury to the germinal cell membrane, Sertoli cell

dysfunction and altered protein metabolism<sup>1,3</sup>. Other mechanisms include hypoxia, poor clearance of gonadotoxins and elevated level of oxidative stress<sup>16</sup>. Indications for treatment include symptomatic cases, grade III, presence of infertility, stress pattern of seminal function and decline in ipsilateral testicular size by 2 ml or 20%<sup>9,10</sup>.

Varicocelectomy can be open, laparoscopic or radiological (embolization)<sup>11</sup>. The gold standard approach is inguinal or sub-inguinal microsurgical technique which has the least complications and failure rate of 1%. Varicocelectomy is associated with symptoms resolution, progressive improvement in seminal fluid analysis parameters in 60-80% and pregnancy rate in 20-60%<sup>6</sup>. In adolescent varicocele, there is progressive increase in testicular volume referred to as catch up growth<sup>1,6,12</sup>. Dubin and Amelar<sup>1,3</sup> grade varicocele into I to III based on clinical examination. Stage III is associated with higher post varicocelectomy improvement provided that there is absence of testicular atrophy, follicle stimulating hormone is normal, sperm count is greater than  $5 \times 10^6$ /ml and motility is greater than 60%<sup>3,9,14</sup>. But when primary testicular failure sets in the dysfunction is likely to be irreversible<sup>9,16</sup>.

Varicocele is a common presentation of male infertility in our practice but no study has been done on varicocele in our environment to ascertain its magnitude.

The objective of this study is to document pattern and the management of varicocele in our institution.

## METHODOLOGY

This is a retrospective study of patients managed for varicocele in our hospital from January 2011 to August 2020. Data was collected from case notes, theatre records and entered into a proforma and was analyzed using SPSS version 25.0.

Information retrieved included biodata, presentation, presence of infertility, examination findings, laboratory investigations findings, doppler ultrasound findings, treatment and outcome. Laboratory investigations included seminal fluid analysis and hormonal profile.

Results were reported in percentages, mean  $\pm$  standard deviation.

**RESULTS**

There were 100 patients managed for varicocele within the period of study with mean age of  $35.2 \pm 8.4$  years with a range of 58 to 17 years.

The commonest presentation was infertility, which was found in 86 patients (86%). Other details of the presentations are shown in table one below. Female factor infertility was present in 14 patients (14%). The varicocele was detected on doppler ultrasound in 40 patients (40%). There was low testosterone in 23 patients (23%). Other details of the investigations are shown in figure 1 below.

Inguinal open varicocelectomy was done for the 67 patients (67%), under local anesthesia (1% xylocaine + adrenaline) with or without analgesia pentazocine and ketamine in patients bilateral varicocele when the local anesthesia is inadequate. The procedures were done as day cases in 60 patients (60%) while 7 patients (7%) were admitted with mean admission period of 3 days (1-3 days). There was

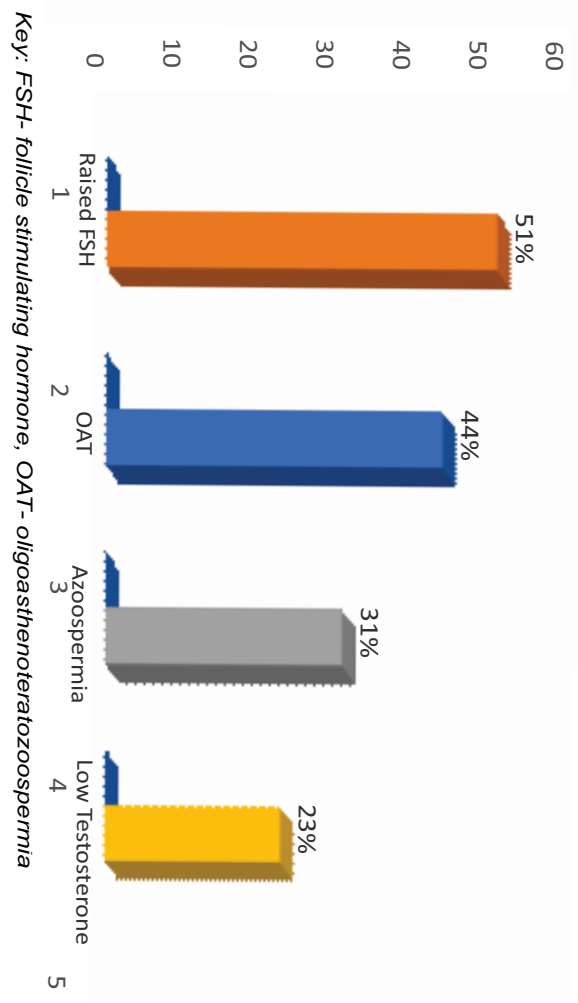
resolution of symptoms in 16 symptomatic cases. The patients' follow up was erratic with 90% of the patients lost to follow up after average follow up of 1 year. There was overall improvement in seminal fluid parameters in 46 patients (68.6%) and spontaneous pregnancy in 8 patients (11.9%). Only 30 patients (30%) completed 1 year follow up with 66.7% improvement in seminal fluid parameters and pregnancy rate of 16.7%. Seroma and surgical site infection occurred in an obese, diabetic patient (1%).

**Table 1: Presentation of patients with varicocele**

Presentation	number of patients	percentage (%)
Infertility	86	86
<b>Primary</b>	<b>30</b>	<b>30</b>
<b>Secondary</b>	<b>56</b>	<b>56</b>
Bilateral disease	40	40
Unilateral disease	60	60
<b>Left side</b>	<b>59</b>	<b>59</b>
<b>Right side</b>	<b>1</b>	<b>1</b>
Atrophic testes	51	51
Scrotal discomfort	14	14
Scrotal pain	14	14
Gonococcal urethritis	8	8
Scrotal swelling	7	7
*Co-morbidity	7	7
Cigarette smoking	5	5
Hyperprolactinemia	3	3
Alcohol consumption	2	2

Key hypertension, diabetes, sickle cell disease- chronic liver disease, peptic ulcer disease

**Figure 1: Hormonal and seminal function abnormalities in the patients with varicocele**



## DISCUSSION:

Varicocele is present in 15% of general population, 35% of patients with primary infertility and 71-80% of those with secondary infertility<sup>1,2,3</sup>. There is associated progressive and duration dependent decline in testicular function<sup>3</sup>. Highest post-varicocelectomy response is seen in grade III varicocele in the presence of normal testicular volume, normal hormonal profile and minimal seminal dysfunction<sup>9,17</sup>.

The mean age of patients of 35 years in this study is consistent with 35 years reported by Jeje EA *et al*<sup>18</sup> in Lagos, but slightly lower than 37 years reported by Ibrahim AG *et al*<sup>16</sup> in Maiduguri and Osifo OD *et al*<sup>19</sup> in Benin city. The index study included all varicoceles while the previous studies included only patients with infertility<sup>16,18,19</sup>.

Most of our patients (86%) presented due to infertility and only 16% of the patients presented with scrotal swelling, discomfort and pain as reported in the previous studies<sup>4,6</sup>. There was co-morbidity in 7% of our patients which is lower than 42.6% reported by Ibrahim AG *et al*<sup>16</sup> in Maiduguri. The testicular atrophy of 51% is much higher than 12.8% reported by the previous study<sup>16</sup>.

There was bilateral varicocele in 40% in the present study which is lower than 78% reported by Ibrahim AG *et al*<sup>16</sup>. As reported by the previous studies, unilateral varicocele is more common on the left due to the insertion of left testicular vein into the left renal vein at right angle, longer left renal vein by 8-10 cm and absence of valves is higher in the left testicular vein as compared to right testicular vein<sup>4,6</sup>. Isolated right varicocele is found in 1% which is in agreement with the present study<sup>3,6</sup>.

In the present study 75% of the patients had abnormal seminal fluid analysis which is comparable to 73% reported by Ibrahim AG *et al*<sup>16</sup> but lower than 91% reported by Osifo OD *et al*<sup>19</sup>.

The OAT syndrome of 44% is higher than oligospermia of 32% reported by Ibrahim AG<sup>16</sup> but lower than 75% reported by Osifo OD *et al*<sup>19</sup>. The azoospermia of 31% reported in this study is lower than 34% reported by Ibrahim AG *et al*<sup>16</sup> but higher than 24% reported by Osifo OD *et al*<sup>19</sup>.

Low testosterone of 23% recorded in this study is lower than 31.9% reported by the previous study<sup>16</sup>. There was raised follicle stimulating hormone and prolactin in 51% and 3% of the patients respectively in this study which were similar to what was reported by the previous studies<sup>6,16</sup>. Ibrahim *et al*<sup>16</sup> reported higher number of

patients with hyperprolactinemia (23%).<sup>6,16</sup>

Varicocelectomy was done in 67% of the patients which is lower than 82% reported by a previous study<sup>19</sup>.

The improvement in seminal function of 68% in this study was higher than 38% reported by Ibrahim AG *et al*<sup>16</sup> but they recorded higher pregnancy rate of 34%. The overall pregnancy rate in the present study was 11.9%. Osifo *et al*<sup>19</sup> reported much higher improvement in seminal fluid parameters and improvement in pregnancy rate of 100% and 76% respectively. The average year follow up outcome in the present was higher with improvement of seminal fluid parameters of 66.7% and pregnancy rate of 16.7%.

Presence of testicular dysfunction with or without testicular failure, multiple risk factors for infertility such as female factor, cigarette smoking, chronic liver disease, chronic kidney disease, use of antiulcer medications, gonococcal urethritis may compromise improvement in seminal fluid parameters or pregnancy rate after varicocelectomy in the present study. This is in agreement with previous studies.<sup>2,6</sup> Some of the patients with improvement in seminal function parameters and other patients with no improvement of the parameters but without testicular failure were referred for invitro fertilization. This is in agreement with the previous studies that post varicocelectomy patients may achieve pregnancy by assisted reproductive technology.<sup>2,6,9</sup> This is facilitated by improvement in seminal parameters.<sup>6,16</sup>

We have not recorded varicocele specific complications like recurrence, testicular atrophy or hydrocele as reported by previous studies.<sup>3,6,16,19</sup> We only recorded a general complication of seroma and surgical site infection in a patient.

## CONCLUSION

Varicocele is a common presentation of male infertility in our environment. Patients often present late with testicular dysfunction with or without primary testicular failure. Varicocelectomy was associated with good symptomatic response in young adult, good improvement in seminal fluid parameters but low pregnancy rate due to testicular atrophy. The outcome might be affected by erratic follow up pattern.

**Declarations:** The paper was presented at the annual meeting and scientific conference of Nigerian Association of Urological

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**Conflict of interest:** There is none to declare

## REFERENCES

1. Niederberger CS. Male Infertility. In: Wein AJ, Kavoussi LR, Partin AW, Peters CA, editors. Campbell -Walsh' s Urology. 11th ed. Philadelphia; 2016. p. 1881–940.
2. Masson P, Brannigan R. The varicocele. *Urol Clin N Am*. 2014;41(1):129–144.
3. Goldstein M. Surgical Management of Male Infertility. In: Wein AW, Kavoussi LR, Partin AW, Peters CA, editor. Campbell -Walsh' s Urology. 11th ed. Philadelphia: Elsevier Sunders; 2016. p. 1869–900.
4. Raheem OA. Surgical management of adolescent varicocele : Systematic review of the world literature. *Uro Ann*. 2020;5(3):133–9.
5. Del Giudice PT, Belardin LB, Camargo M, Zylbersztejn DS, Carvalho VM, Cardozo KHM, et al. Determination of testicular function in adolescents with varicocele - a proteomics approach. *Andrology*. 2016;4(3): 361-553.
6. Baigorri BF, Dixon RG, Carolina N. Varicocele : A Review. *Semin Intervent Radiol* 2016;33:170–176 .
7. Cimador M, Pensabene M, Sergio M, Caruso AM, De Grazia E. Focus on paediatric and adolescent varicocele: A single institution experience. *Int J Androl*. 2012;35(5):700-5.
8. Coolsaet BL. The varicocele syndrome: Venography determining the optimal level for sugical management. *Journal of Urology*. 1980;124(6):833–8.
9. Fretz PC, Sandlow JI. Varococoele: current concept in pathophysiology, diagnosis and treatment. *Urol Clin N Am*. 2002;29(202):921–37.
10. Colpi GM, Francavilla S, Haidl G, Link K, Behre HM, Goulis DG, et al. European Academy of Andrology guideline Management of oligo-astheno-teratozoospermia. *Andrology*. 2018;6(4):513-524
11. Agbo PS, Mungadi IA, Liman HU OM. Varicocele: Management and the continuing controversies. *Sahel Med J*. 2010;13:120–105.
12. Sarefoglul EC, Saitz TR, La Nasa JA, Hellstrom WJ. Adolescent varicocoele management controversies. *Andrology*. 2013;1:109-115
13. Dubin L, Amelar R. The varicocele and infertility. Male infertility. DubinL AR, editor. Philadelphia: PA: Sunders; 1977:57–68 p.
14. Miyaoka R, Esteves SC. A Critical Appraisal on the Role of Varicocele in Male Infertility A Critical Appraisal on the Role of Varicocele in Male Infertility. *Advances in Urology* 2012;2012:597495
15. Ollandini G, Trombetta C, Mazzon G, de Concilio B, Bucci S, Pavan N, et al. Should older patients be offered varicocoele correction to improve their fertility? *Andrology*. 2014; 2(3):40-407
16. Ibrahim AG., Aliyu S, Ali N, Lawan AM. Varicocele Associated Infertility in Maiduguri North Eastern Nigeria. *Int J Curr Res*. 2014; 7(5):17432-17434.
17. Joel LM, Ashok A, Sushil P, Rishi A, Robert AS, Susan BAJ, et al. Reassessing the value of varicocelectomy as a treatment for male subfertility with a new 2 meta-analysis. *Fertil Steril*. 2007;88(3):639–48.
18. Jeje EA, Alabi TO, Ojewola RW, Ogunjimi MA, Osunkoya SA. Male infertility: An audit of 70 cases in a single centre. *African J Urol*. 2016; Jeje EA, Alabi TO, Ojewola RW, Ogunjimi MA, Osunkoya SA. Male infertility: An audit of 70 cases in a single centre. *African J Urol*. 2016;223-226.
19. Osifo OD, Agbugui JO. Male Infertility Secondary to Varicocele \_A Study of the Management of 45 Patients . *Afr J Reprod Health*. 2008;12(1):54–9.