Indexed on PubMed/MEDLINE

ISSN: 0189-6725

African Journal of Paediatric Surgery

| Volume 16 | Issues 1-4 | January-December 2019 |

SUPPORTED BY tetfund TERTIARY EDUCATION TRUST FUND

In this issue....

Official Journal of:
Association of Paediatric Surgeons of Nigeria [APSON]
Pan-African Paediatric Surgical Association [PAPSA]

www.afrjpaedsurg.org

Wolters Kluwer

Medknow

Original Article

Laparoscopic Treatment of Varicocele within Adolescents in Two African Countries

Gbenou Antoine Seraphin, Fiogbe Michel Armand[1], Akakpo-Numado Gamedzi Komlatsè[2], Metchihoungbe Codjo Serge[2], Uroz Tristan José[3]

University Hospital of Mother and Child, Lagune CHU-MEL Benin, [1]National University Hospital HKM, Cotonou, Benin, [2]University Hospital Sylvanus Olympio, Lome, Togo, [3]University Hospital of Mother and Child, Canaries Islands, Las Palmas, Spain

Abstract

Varicocele is often ignored by adolescents and their parents, in our context. The aim of the study is to present the indications and results of laparoscopic treatment in a population of adolescent students. **Subjects and Methods:** It is a descriptive and analytical prospective study over a period of 9 months (January to September 2013), focussed on cases of varicocele Grade 3 found in adolescents during a screening, and who underwent surgical treatment by laparoscopy. The laparoscopic treatment was done as part of a training mission to paediatrics surgeons, through a European Non-governmental organisation in two university hospitals in Africa. Of 2724 adolescent students examined, 149 (5.47%) had a varicocele. The average age was 16.39 ± 2.05 years (12 and 19). The side was unilateral (79.19%) with 76.51% left or bilateral (20.81%) ($P = 0.00$). According to the classification of Dubin and Amelar, there were 58 (38.92%) cases of Grade 1, 66 (44.30%) were Grade 2 and 25 (16.78%) were Grade 3. **Results:** The laparoscopic treatment was performed in 23 patients with varicocele Grade 3, by modified Palomo's technique, sectioning a segment of vessels between clips (15) between nodes (2) or after coagulation without clips and ligation (6). The hospital stay was 36 h. It has been observed one case of post-operative moderate vaginal hydrocele and 11 cases testicular hypertrophy. **Conclusion:** The laparoscopic treatment of varicocele in adolescents reduces post-operative morbidity related to conventional open surgery. This technique has been available in two poor African countries through partnership north-south.

Keywords: Adolescent, Africa, laparoscopic, varicocele

Introduction

Varicocele, one of the most common causes of male infertility,[1-3] is an abnormal dilation of the scrotal spermatic venous system that often appears to adolescence.[4-6] The disease seems to be ignored by adolescents and their parents, in our context.[1,7] Laparoscopic treatment is a challenge according to ethics[8] and to the skill of paediatric surgeon in minimally invasive surgery. The current lack of technical facilities in poor countries is often supplemented by the work of humanitarian surgical missions.[9] The aim of the present work was to present the indications and results of treatment of varicocele in a population of adolescent students in two neighbouring African countries.

Subjects and Methods

This was a prospective study over a period of 9 months (January to September 2013), which focussed on adolescents aged 13–19 years with a varicocele treated by laparoscopic surgery in two African hospitals. Patient selection was based on the assumption that the varicocele was uncommon in the clinically visible urogenital malformation (CVUM) adolescents. Laparoscopy performed under general anaesthesia, using multiuse trocars with 10 mm for the scope, and 2–5 mm instruments were placed in a triangle. The scope ports were placed at the edge of the umbilicus. Two further 5 mm working ports are inserted under laparoscopic guidance, in the right iliac fossa at the midclavicular line and in the left iliac fossa.[10] The treatment of varicocele by Palomo[11] was performed by resection of the vessels between clips [Figure 1] and between ligatures with non-absorbable sutures or without

Address for correspondence: Dr. Gbenou Antoine Seraphin, Po Box 177, Abomey-Calavi, Benin.
E-mail: gbeser_2010@yahoo.fr

Received: 25-02-2016 **Accepted:** 01-03-2018 **Available Online:** 16-09-2020

Access this article online

Quick Response Code:

Website: www.afrjpaedsurg.org

DOI: 10.4103/ajps.AJPS_28_16

How to cite this article: Gbenou AS, Fiogbe MA, Akakpo-Numado GK, Metchihoungbe CS, Uroz TJ. Laparoscopic treatment of varicocele within adolescents in two African countries. Afr J Paediatr Surg 2019;16:6-9.

clips and ligation after coagulation with bipolar forceps. The spermatic artery is not preserved as describe by Paloma.[10] The operated patients were followed for a period of 8 months after hospitalization. Ultrasound control was performed as needed.

Results

Of the 2724 adolescent students examined, 253 (09.29%) had CVUM. We noted 149 (58.89%) cases of varicocele [Figure 2], 27 (10.67%) cases of inguinal hernias and 24 (9.49%) cases of vaginal hydrocele, 16 (6.32%) cases of cryptorchidism, 13 cases (5.14%) of isolated testicular hypotrophy, 14 (5.53%) cases of cyst of the spermatic cord, 9 cases (3.56%) of micropenis and 6 cases (2.37%) of hypospadias. Amongst the adolescents with varicocele, 81 underwent scrotal ultrasound and 18 of a Doppler [Figure 3]. Cases of varicocele were divided clinically into grades according to the Amelar and Dubin[12] classification. There were 58 cases (38.93%) Grade I, 66 cases (44.29%) Grade II and 25 cases (12.78%) Grade III. The prevalence of varicocele objectified in the adolescent population examined was 5.47%. Patients with varicocele had an average age of 16.50 ± 2.03 years with extremes of 12 and 19 years. Table 1 shows the distribution of cases of varicocele according to age groups and Table 2 shows the distribution of grades of varicocele according to age.

Several functional signs were observed in 23 patients operated on scrotal swelling and scrotal pain (100%), abdominal pain (52.17%), lumbar pain (34.78%), and pelvic pain (4.35%) cases ($P < 0.05$). Functional symptoms had occurred for the first time between 12 and 19 years within 16 (69.57%) and from 10 to 12 years within 7 (30.43%). A peak was noted at the age of 14 years with 78.26%. Revealing the circumstances of the functional signs was related to situations of intense physical effort including football (65.12%). Dilation of the veins of the spermatic cord was spontaneously visible at all on the left side. A left testicular hypotrophy was observed in 15 cases (65.22%).

All 23 patients underwent scrotal ultrasound and varicocele has been confirmed. Contralateral subclinical varicocele was found in 2 cases (8.33%). Cases of testicular hypotrophy were observed in 11 cases (47.83%). Any analysis of semen parameters was not done.

Therapeutic and evolutionary aspects

The resection of the spermatic vessels was done between clips (15 or 65.22%) or between two ligatures (2 or 8.70%) in 6 cases (26.08%) and only after bipolar coagulation.

The hospital stay was 36 h. It has been observed one case of moderate vaginal hydrocele in immediate post-operative period (1 case) and hypertrophy of the left testicle in 12 (52.17%) cases in the follow-up period of 8 months.

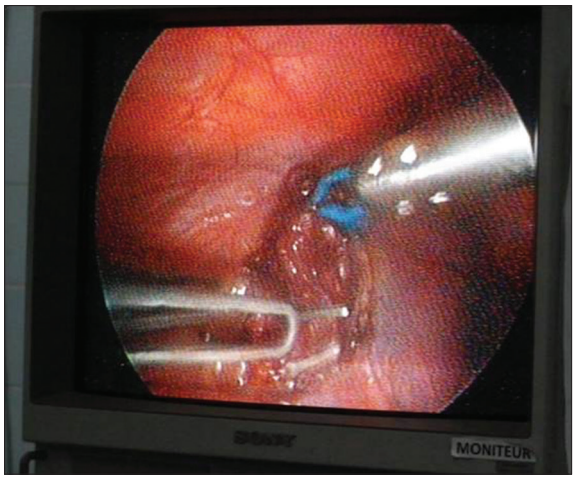

Figure 1: Clips on the spermatic vessels before resection

Figure 2: Case of left varicocele Grade III

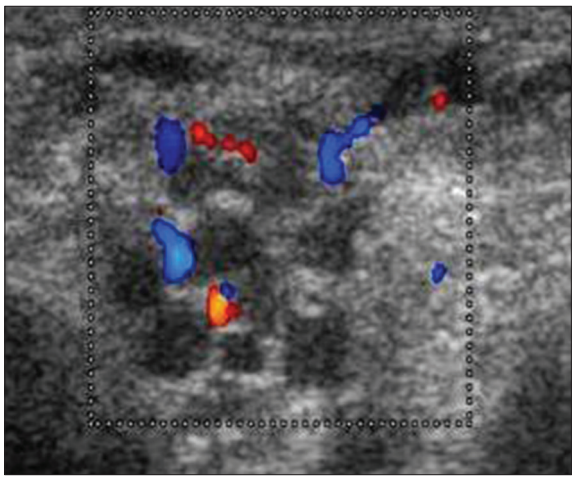

Figure 3: Ultrasound scrotal Doppler of left varicocele Grade III

Discussion

In the CVUM, varicocele was 5.47% of the cases followed by inguinal hernia (0.98%) in our study against 2.7% and 3% of varicocele inguinal hernia in Ghazzal's[13] study. In men, varicocele often causes the problem of infertility in couples[3,5,14] and African women are traditionally incriminated.[1,7] Its detection and management in adolescents is part of a strategy for improving the prognosis of future reproductive health.[4,6,15]

Table 1: Distribution of cases of varicocele according to age

Ages (years)	Number of examined students	Number of cases of varicocele	Percentage	OR ($CI_{95\%}$)
10-13	478	7	1.46	1
14-19	2246	142	6.32	4.45 (2.04-10.64)
Total	2724	149		

P=0.00002. OR: Odds ratio, CI: Confidence interval

Table 2: Distribution of grades of varicocele according to age

Ages (years)	Grades according to Dublin and Amélar (%)		
	I	II	III
10-13	4 (2.69)	3 (2.01)	0
14-19	54 (36.24)	63 (42.28)	25 (16.78)
Total	58 (38.93)	66 (44.29)	25 (16.78)

χ^2=2.47, *P*=0.29

The average age of patients who have a varicocele in our study (16.50 ± 2.03 years) concord with the one, obtained by Moreira-Pinto et al.[10] (12.67 ± 1.68 years) and Esposito *et al.*[16] (12.5 with the limits of 6 and 16 years).

In the literature, the prevalence of varicocele in adolescents varies from 10% to 15%.[4,10,17] Stavropoulos *et al*.[14] with a prevalence of 3.21% estimated that the incidence of varicocele in Greek is low. Ghazzal[13] obtained in Jordan more lower prevalence (2.7%).

Concerned the functional signs identified in our study with a higher frequency of scrotal swelling and scrotal pain (100%), Hodonou *et al*.[7] in a study for adults in Benin hospitals had obtained 29.41% of scrotal swelling, 23 53% of scrotal pain and 5.88% of scrotal gravity.

The regular football[6] and situations of intense physical effort were revealing circumstances frequently observed in our study and in the literature.

The left side clinical localisation of the varicocele (100%) and the detection of subclinical cases (8.70%) by ultrasound are in accordance with literature data according to which the varicocele develops unilaterally left side in 85%–90% of cases.[6,18,19]

The incidence of testicular hypotrophy found in 65.22% is in accordance with the literature (29%–87%),[6] on the other hand Akbay *et al*.[19] found a lower rate (8.6%).

According to Varlet *et al*.,[20] the use of ultrasound allows to diagnose subclinical varicocele, fact which increases the incidence of the disease as in our study.

The analysis of semen parameters unrealised in our study for ethical reasons[8] in spite of the sexual maturation of the major part of the patients, will surely be done when these adolescent students become adults, to assess the impact of varicocele on their sperm quality. Many authors[15,18,21] have found a decrease in mobility, vitality and number of normal forms of sperm in adolescents with varicocele.

The treatment of varicocele in adults does not always improve the prognosis of fertility.[3,6] The existence of irreversible testicular function resulting from the presence of varicocele during adolescence lesions justifies early treatment of the disease in adolescents.[3-5] The purpose of varicocelectomy consists in the elimination of venous blood return from the spermatic veins.[2,10]

The methods of treatment of varicocele remain controversial. Besides the open varicocelectomy, various treatment methods include ligation inguinal procedure Ivanissevich the antegrade sclerotherapy, retrograde embolisation and microsurgical procedures and laparoscopic retroperitoneal.[2,4,10] The three-trocar technique was used in our series although techniques using 2 or 1 trocar in this minimally invasive surgery have been described.[4,22] The use of trocars' multiuse different calibres, ligation, coagulation of vessels without clips and ligation is tactics to palliate the current lack of technical facilities in the context of poor countries like ours and also to minimise the cost of interventions.[17,22]

The one case of hydrocele noted after surgery is a common post-operative complication of varicocele.[2,10,17] The ipsilateral side testicular hypertrophy observed in half of our patients is in accordance with the fact noticed by many authors[15,18] that the varicocelectomy with moderate and severe cases reversed testicular growth arrest and resulted in catch-up growth.

The short-term laparoscopic treatment of varicocele, which can be easily mastered, seems a better alternative method compared to open surgery in terms of post-operative hospitalisation time and cosmetics.[4,10] According to Navez and Penninckx,[23] the assurance of adequate training in laparoscopic surgery continues to be a major problem and the difficulties are related to the limited experience of local surgical staff, the learning curve of the tutors and the limited number of laparoscopic operation in some centres. The partnership between northern and southern practitioners through surgical missions, context of training, knowledge transfer and strengthening capacity in various fields[9] was solution for initiation and training in laparoscopic surgery by varicocelectomy.

Conclusion

Varicocele is one of the frequent CVUMs within the adolescents in our context, and laparoscopic treatment has improved quality of care. The assurance of adequate learning and a current practice in paediatric laparoscopic surgery continues to be an important problem in poor countries. The partnership between northern and southern practitioners through surgical missions has been a solution for initiation and training in laparoscopic surgery by varicocelectomy.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Bornman MS, Schulenburg GW, Boomker D, Chauke TR, Reif S. Observations in infertile African males at an andrology clinic in South Africa. Arch Androl 1994;33:101-4.
2. Chan P. Management options of varicoceles. Indian J Urol 2011;27:65-73.
3. Niedzielski J, Paduch D, Raczynski P. Assessment of adolescent varicocele. Pediatr Surg Int 1997;12:410-3.
4. Link BA, Kruska JD, Wong C, Kropp BP. Two trocar laparoscopic varicocelectomy: Approach and outcomes. JSLS 2006;10:151-4.
5. Prabakaran S, Kumanov P, Tomova A, Hubaveshki S, Agarwal A. Adolescent varicocele: Association with somatometric parameters. Urol Int 2006;77:114-7.
6. Fontaine E, Benoit G, Jardin A, Beurton D. [Varicocele in adolescents]. Prog Urol 2000;10:1099-107.
7. Hodonou R, Hounnasso P, Akpo C. Aspects épidémiologiques et diagnostiques de la varicocèle (à propos de 17 cas au CNHU de cotonou). Le Bénin Méd Spéc Urol 1998;9:5-7.
8. Iserson KV, Chiasson PM. The ethics of applying new medical technologies. Semin Laparosc Surg 2002;9:222-9.
9. Gbenou AS, Biotchané I, Fiogbe M, Lokossou TH, Biaou O, Adjibabi W, *et al*. Bilan de 4 missions chirurgicales caritatives étrangères au Benin. Le Bénin Méd 2002;22:65-70.
10. Moreira-Pinto J, Osório AL, Carvalho F, de Castro JL, de Sousa JF, Enes C, *et al.* Varicocoelectomy in adolescents: Laparoscopic versus open high ligation technique. Afr J Paediatr Surg 2011;8:40-3.
11. Palomo A. Radical cure of varicocele by a new technique; preliminary report. J Urol 1949;61:604-7.
12. Amelar RD, Dubin L. Therapeutic implications of left, right, and bilateral varicocelectomy. Urology 1987;30:53-9.
13. Ghazzal AM. Inguinal hernias and genital abnormalities in young Jordanian males. East Mediterr Health J 2006;12:483-8.
14. Stavropoulos NE, Mihailidis I, Hastazeris K, Moisidou R, Louka G, Filiadis I, *et al*. Varicocele in schoolboys. Arch Androl 2002;48:187-92.
15. Paduch DA, Niedzielski J. Repair versus observation in adolescent varicocele: A prospective study. J Urol 1997;158:1128-32.
16. Esposito C, Monguzzi GL, Gonzalez-Sabin MA, Rubino R, Montinaro L, Papparella A, *et al.* Laparoscopic treatment of pediatric varicocele: A multicenter study of the Italian society of video surgery in infancy. J Urol 2000;163:1944-6.
17. Polok M, Patkowski D, Apoznański W, Dorobisz U, Laska E, Chrzan R, *et al.* Electrocoagulation versus clips in laparoscopic varicocelectomy in boys. J Laparoendosc Adv Surg Tech A 2010;20:277-80.
18. Cayan S, Akbay E, Bozlu M, Doruk E, Erdem E, Acar D, *et al.* The effect of varicocele repair on testicular volume in children and adolescents with varicocele. J Urol 2002;168:731-4.
19. Akbay E, Cayan S, Doruk E, Duce MN, Bozlu M. The prevalence of varicocele and varicocele-related testicular atrophy in Turkish children and adolescents. BJU Int 2000;86:490-3.
20. Varlet F, Becmeur F, Groupe d'Etudes en Coeliochirurgie Infantile. Laparoscopic treatment of varicoceles in children. Multicentric prospective study of 90 cases. Eur J Pediatr Surg 2001;11:399-403.
21. Mori MM, Bertolla RP, Fraietta R, Ortiz V, Cedenho AP. Does varicocele grade determine extent of alteration to spermatogenesis in adolescents? Fertil Steril 2008;90:1769-73.
22. Krajinovic K, Germer CT. Laparoscopic single port surgery: Is structured training necessary? Chirurg 2011;82:398-405.
23. Navez B, Penninckx F. Laparoscopic training: Results of a Belgian survey in trainees. Belgian group for endoscopic surgery (BGES). Acta Chir Belg 1999;99:53-8.