

Comment to our article; Effects of varicocelectomy on testis volume and semen parameters in adolescents: a randomized prospective study

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Yamamoto M, Hibi H, Katsuno S, Miyake K. Effects of varicocelectomy on testis volume and semen parameters in adolescents: a randomized prospective study. *Nagoya J Med Sci.* 1995;58(3–4):127–132.

Because the treatment of a varicocele in adolescents remains controversial, we undertook a prospective study in 51 male adolescents, aged 15–21 years, who were referred for a varicocele. Twenty-nine patients were treated with high retroperitoneal ligation of the left spermatic vein, and 22 were untreated. Eighteen healthy adolescent volunteers without a varicocele were also assessed. Testicular volume was measured using an orchimeter, and semen analyses were carried out at referral and after 1 year of follow-up. In addition, serum luteinizing hormone (LH), follicle-stimulating hormone (FSH) and testosterone levels were estimated by radioimmunoassay. Both patient groups had significantly smaller testis volumes than the controls at the outset. In the follow-up, the treated patients had testis volumes similar to those of the controls. Both testes increased significantly in volume after treatment. Although semen parameters were comparable in all groups initially, sperm concentration increased significantly after treatment of the varicocele. We concluded that varicocele treatment in adolescents leads to increased testis volume and a higher sperm concentration; however, whether early treatment will improve testicular function remains to be elucidated.

Keywords: Adolescents, Preventive treatment, Semen quality, Testis volumes

Varicocele is common in young men and boys. It affects up to 15% of the general male population. A varicocele is caused by excessive venous distension of the pampiniform plexus due to incompetent venous valves along the spermatic cord. Although most adult varicocele cases are discovered during infertility investigations, they are frequent in adolescent populations due to asymptomatic left hemiscrotal swelling.

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Surgical treatment of varicocele ultimately aims to improve and preserve the potential for future fertility of an individual. The treatment goal in adolescents is to avoid testicular injury and prevent testicular damage, which can be achieved through varicocelectomy.

Several academic societies have recently published guidelines for surgical indications. According to the American Society for Reproductive Medicine (ASRM), American Urological Association (AUA), and European Association of Urology (EAU) guidelines, adolescent males with unilateral or bilateral varicocele and considerable testicular hypotrophy ipsilateral to the varicocele may be considered candidates for varicocelectomy. Furthermore, the European Society of Pediatric Urology (ESPU) believes that older adolescent with poor semen quality are potential candidates for varicocelectomy.

In 1995 we conducted a random prospective trial to assess the effects of varicocele in adolescents.¹ When compared to the control group, our results demonstrated that varicocelectomy resulted in significant testicular growth. Several authors have confirmed similar results after varicocelectomy. Although sperm concentration increased in the treated group, other parameters did not change in the treated, untreated, or control groups. Our research showed that a varicocelectomy resulted in either the cessation of a progressive effect or reversal of an established effect. Our control research findings appeared to be consistent with those of others who have reported progressive deterioration of semen parameters in patients with untreated varicocele.^{2,3}

There are various varicocelectomy techniques. The ASRM and AUA guidelines concur that both surgery and percutaneous embolization may be conducted when considering varicocele repair. The surgical methods include laparoscopy or open retroperitoneal, inguinal, and subinguinal approaches. Percutaneous embolization treatment of varicocele is achieved through percutaneous embolization of the refluxing internal spermatic vein. These recommendations acknowledge that there are variations in the recurrence rates among the techniques, and state that few of these methods has been demonstrated to be more effective than others in terms of boosting fertility.⁴ However, the type of intervention selected largely depends on the therapist's experience. Laparoscopic varicocelectomy is technically possible, but it must also be justified financially. Recent evidence indicates that microsurgical varicocelectomy is the most efficient and least morbid method among the various varicocelectomy techniques. We used the retroperitoneal approach to operate at the time of this article in 1995. To avoid scrotal lymphatic hydrocele, microscopic lymphatic sparing varicocelectomy is now common, and low ligation technique is widely accepted. However, I have conducted high ligation microscopic lymphatic sparing under an operating microscope, because low ligation may cause spermatic arterial injury.

The recommendations acknowledge the lack of information on the future fertility impact of treatment. However, the recent EAU/ESPU meta-analysis reports that there is moderate evidence regarding the advantages of varicocele treatment in children and adolescents concerning testicular volume and sperm concentration increase.⁵ One of the most persistent issues in pediatric urology is how to manage varicocele in children and adolescents. As the majority of boys present with an asymptomatic varicocele leading to unknown future fertility issues, it is difficult to determine whether surgical intervention is required and beneficial and whether it can be managed with continued observation. Different techniques and modalities may be used to access adolescent varicocele. As not all adolescents with a varicocele experience testicular growth arrest or subfertility, active surveillance has emerged as a useful strategy.

Our article was published over 25 years ago and was based on one of the few prospective studies.¹ I hope that this article will aid in future research.

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