VARICOCELE AS A FACTOR IN IMPAIRED SPERMATOGENESIS AND REDUCED MALE FERTILITY

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Annotation. For years, varicocele treatment has been a key focus in urology-andrology due to its high prevalence and significant role in male subfertility and infertility. Despite extensive research, the etiology, pathogenesis, and treatment remain debated. A review of 60 sources (11 domestic, 49 foreign) highlights the need for effective management strategies. Treatment aims to restore reproductive function, improve fertility, and minimize recurrence and complications.

Keywords: varicocele, spermatogenesis, fertility, rehabilitation

For many years, the issue of treating patients with varicocele has been at the center of attention for both domestic and international urologists-andrologists [1]. The results of numerous studies suggest that this condition is highly prevalent in the male population, shows no tendency toward a decline, and remains one of the primary causes of subfertility or infertility.

Thus, there is a clear need to explore effective solutions to this pressing problem. Varicocele is characterized by varicose (grape-like) dilatation of the veins of the pampiniform plexus of the spermatic cord, accompanied by intermittent or permanent venous reflux [2]. Varicocele is observed in approximately 8–20% of the general male population , including 30–40% of men with primary infertility and 70–81% of those with secondary infertility. The varicose dilatation of the veins of the spermatic cord and testicular membranes leads to testicular tissue damage, impaired testicular function , disrupted spermatogenesis, and subfertility [3]. The established link between varicocele and

infertility has been the main reason for the inclusion of this pathology in programs developed by the World Health Organization.

The diagnosis of varicocele is based on the patient's medical history and physical examination . In most cases, the disease is asymptomatic; however, according to studies by T. Lorenc et al. [4], and S. Pack and W.S. Choi , some patients may palpate a scrotal mass above the testicle or complain of scrotal sagging, prolonged pain in the scrotum or groin that worsens with walking, prolonged standing, or erection, and pulling pain in the testicle along the spermatic cord and groin area that intensifies when lifting heavy objects.According to A.D. Tarasko [5], pain syndrome in varicocele is nonspecific, which necessitates differential diagnosis with other conditions.

To date, the etiology of this condition has been studied and is recognized as multifactorial **[6].** The prevailing concept considers varicocele not as an independent disease, but rather as a symptom of a developmental anomaly or pathology of the inferior vena cava or renal veins.

The extreme variability in the structure of the venous system (including both the left and right renal veins) is the result of impaired regression of the cardinal and subcardinal veins. Retrograde blood flow is observed in cases of congenital (primary) absence of valves in the testicular vein, as well as in genetically determined weakness of the venous wall due to underdevelopment of the muscular layer and connective tissue dysplasia, leading to primary valvular insufficiency [7].

Conclusion: Varicocele is a multifactorial condition with a high prevalence among men and a significant impact on male fertility. It is not an isolated disease but often reflects underlying vascular anomalies, such as congenital valvular insufficiency or developmental abnormalities of the venous system. Although frequently asymptomatic, varicocele can impair spermatogenesis and testicular function, making accurate diagnosis and timely intervention essential. Given its

role in male infertility and demographic implications, continued research and improved treatment strategies remain critical.

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