Objective assessment of outcome of transinguinal varicocele ligation in oligozoospermic subfertile men

Varicocele is considered as the most common and economically treatable cause of male factor subfertility [1]. Although more than 80% of varicoceles are not associated with subfertility a higher incidence was reported in men with primary (35-40%) and secondary (69-81%) sub-fertility [2]. Scrotal ultrasound has become the most sensitive and objective tool [3] in the diagnosis and objective assessment of outcome after surgical correction. There are no published data in Sri Lanka regarding an objective approach to varicocele detection and correction, and the impact of it on fertility. The results of 31 varicoceles in one urology unit of The National Hospital of Sri Lanka were analysed retrospectively.

The presence of the varicocele was diagnosed by Doppler study of the scrotum. Pre- and post-operative sperm count, motility and sperm morphology were recorded. High ligation of the varicocele was done using a transinguinal approach [4]. Results were confirmed by post-operative Doppler study and a semen analysis done after 6 weeks. Data were analysed with the application of paired sample t-test for pre- and post-operative seminal parameters.

Out of 91 consecutive patients who were contacted 31 responded (response rate=34.1%). The mean age of the population was 34.4 years with a range of 22-45 years. In 29 (90.3%) patients the presenting complaint was primary subfertility. Only one unmarried male was referred with a symptomatic varicocele and abnormal semen parameters. 27 (87.1%) were left-sided and the rest were bilateral. Post-operative success rate as confirmed by scrotal ultrasound was 96.8%. Improved sperm counts were observed in 74.2% of men from a mean pre-operative value of 15.6 million/ml to the post-operative mean of 40.5 million/ml, which was statistically significant (P=0.015). There was an improvement of sperm motility and morphology but they did not match the same significance levels compared to the counts. Sixteen (51.6%) patients have developed small but ultrasonically detected hydroceles as a post-operative complication.

Among the patients who were operated for subfertility 11(39.29%) have succeeded in achieving spontaneous pregnancy. In 12 patients other factors known to impair fertility such as diabetes, mumps, and inguinal exploration were present. In 3 cases the female partner was also detected to have problems. The incidence of coexisting risk factors was relatively high in those who failed to make the wives pregnant (52.9%) compared to those who have succeeded (36.4%). This difference was not statistically significant.

The mechanism by which varicocele affects testicular function and fertility remains undetermined. Hypothesized mechanisms include testicular hyperthermia, reflux of metabolites from kidney and adrenals, hypoxia due to venous stasis, anti-oxidants, gametotoxins, high levels of anti-sperm antibodies, increased apoptosis, and enzymatic dysfunction [5].

Our study showed a significant improvement in sperm count that is similar to the other studies done worldwide. Reported pregnancy rates are 20%-60% [6], which is comparable with the rates of our study (39.29%). A few studies have demonstrated significant improvement in sperm quality [7], but our study demonstrates only a marginally positive effect in this aspect.

The optimal method of varicocele correction is still controversial. Surgical correction changed from varicocelectomy (obsoleto) to high ligation methods [8] such as retro-peritoneal, trans-inguinal and laparoscopic. The transinguinal approach of Ivanissevich is a widely practiced technique, and it was used in our study, with a high ultrasound proven success rate. Our study recommends routine use of scrotal Doppler for detection of varicocele and post-operative complications, and confirms that transinguinal high ligation not only corrects the varicocele but also significantly improves sperm counts and fertility.

References

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