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INVITED EDITORIAL

Male Fertility

Foreword: varicocele – unraveling the enigma

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It was more than 40 years ago, as a first-year Urology resident, that I performed my first varicocele ligation (a Palomo procedure[1]) under the watchful eye and able hands of my staff physician. I dutifully read all I could the night before the procedure and became familiar with the names of Barfield, Macomber and Sanders, Tulloch, MacLeod, Ivanissevich, Palomo, Amelar and Dubin and others who had written about varicoceles being associated with abnormal semen parameters and a potentially surgically correctable cause of male infertility. During and after our uneventful surgical procedure, I was grilled as to the anatomy and known pathophysiology of a varicocele. I felt well-versed from my reading and proudly regurgitated all I had learned about the anatomy of the left testicular vein and pampiniform plexus, incompetent or absent valves in the vein, increased testicular temperature, sluggish flow of blood from the left testis and possible toxins from the opposing left adrenal gland vein entering the dilated, incompetent testicular vein – any or all of which could contribute to disturb spermatogenesis and cause infertility. It all seemed simple enough! I pretty much thought we knew all we needed to know about this so-called "bag of worms."

Fast-forward to the present and it becomes obvious how little we actually did know with respect to our understanding the concept of a varicocele and how it may or more commonly, may not affect spermatogenesis and fertility potential. This venous "enigma,"[2] as it was so aptly termed by Dr. Turner,[2] has fueled many hot debates at national and international scientific meetings among specialists in Urology, Gynecology, and Andrology. Most urologic surgeons appear to accept the fact that a varicocele is a commonly identified, potentially correctable cause for primary and secondary infertility. They also recognize that it is not a "fix" for everyone on whom they operate nor do most men with a varicocele need to have it corrected. Indeed, many men are found to have a varicocele on routine examination and may never have a fertility problem and are often unaware of the venous abnormality being present until this incidental finding is pointed out to them during the examination.

If one queries the word "varicocele" in PubMed, almost 5000 scientific articles would appear, from the more recent month's publications to an early paper dating back to 1846.[3] A brief perusal of the more recent papers, particularly over the last couple of decades, leads one to appreciate how much our knowledge regarding varicoceles and their effect on the fertility and gonadal function has increased. Yet there still are many unknowns surrounding this anatomic venous anomaly.

This special edition of the Asian Journal of Andrology takes us one step further in understanding the enigma of the varicocele and current controversies surrounding the indications or contraindications for ablative therapy. Drs. Agarwal and Esteves are to be heartedly congratulated on their ability to gather so many recognized, international authorities in male reproduction who share with us recent advances in understanding the pathophysiology of varicoceles and its variable affect on fertility and androgen function. In addition, world renowned surgeons and interventionalists discuss the indications, techniques and controversies regarding surgery for this venous anomaly for both adolescents and adult males.

The availability and reported success of advanced assisted reproductive methods (*In Vitro* Fertilization with Intracytoplasmic Sperm Injection - IVF-ICSI), has dramatically altered the playing field for couples that find it difficult to conceive by natural means. Success in this area has led some reproductive endocrinologists to suggest that given a few live normal appearing sperm is all they need for intracytoplasmic sperm injection and, therefore, it does not matter if there is a varicocele or not in the male partner with suboptimal sperm quality. Disregarding the excessive costs, which are not inconsequential, and potential risks borne by the female partner undergoing ovarian stimulation and IVF, the need for repeated cycles and the inherent risks related to the greater incidence for multiple gestations, it would seem a grave disservice to a couple not to offer the option of a potentially curative solution to their infertility if the male partner has a varicocele and associated suboptimal semen quality.[4,5]

It is obvious that since I performed my first varicocele ligation and tried to impress the staff surgeon with my thorough knowledge of varicocele anatomy and pathophysiology, there have been dramatic and meaningful advances in our understanding of the effects of varicoceles on the gonadal function of some men. We had, then, never heard the terms: reactive oxygen species and oxidative stress, DNA fragmentation, or heat-shock proteins. We never thought or had the means of looking for "subclinical varicoceles." The conceptualization and realization of sophisticated assisted reproductive methods such as IFV/ICSI for impaired male factors were then pure speculation and fiction.

The outstanding authors who have contributed to this special edition offer us a state-of-the-art view of the pathophysiology and treatment options for men with varicoceles. I would venture to predict that the next generation of researchers and surgeons will consider many of these current concepts as being as naïve and simplistic as those of the past. I do hope that the next generation of "experts" remembers the words of the 12th century theologian, John of Salisbury:

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"We are like dwarfs sitting on the shoulders of giants. We see more, and things that are more distant, than they did, not because our sight is superior or because we are taller than they, but because they raise us up, and by their great stature add to ours".

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