

Perspective Article

Whither Varicocele?

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Varicocele was first described as a possible causative factor in male infertility in the year 1885 by the British surgeon Barwell¹. Tulloch was the first to publish a case report on varicocelelectomy documenting a rise in semen parameters after varicocelelectomy². More than sixty years later, the role of varicocele in male infertility still remains controversial.

The incidence of varicocele is 15% in the general male population and 19% to 40% among infertile men^{3,4}. Varicocele is supposed to alter semen parameters and cause infertility by one or more of the following mechanisms:-

- 1) Varicocele is believed to increase the scrotal temperature by venous stasis which is considered to impair spermatogenesis. It is presumed that the testes lie in the scrotum because they need lower temperature for effective spermatogenesis³. However, in reality, it is not known why the testes are scrotal in some mammals and not in others. It has never been convincingly demonstrated that the scrotal temperature is raised in men with varicocele compared to men without varicocele⁵. Besides, in varicocele, there is stasis of venous blood which is cooler and therefore should cause a cooler scrotum and not a warmer one.
- 2) In varicocele, reflux of blood from the left renal vein into the left internal spermatic vein is supposed to carry adrenocortical metabolites and these metabolites are supposed to cause suppression of spermatogenesis^{3,6}. It is difficult to comprehend how adrenocortical metabolites in the static venous blood would perfuse into testicular tissue and suppress spermatogenesis.
- 3) Varicocele is supposed to cause a stress pattern in semen parameters often described as oligozoospermia, asthenozoospermia and teratozoospermia⁷. It has never been consistently or clearly shown what this stress pattern is and the definition of oligoasthenoteratozoospermia has changed five times in the last 34 years⁸. Semen analysis is hugely variable from time to time in the same individual⁹, the definition of oligozoospermia is uncertain¹⁰ and the sperm morphology assessment is very subjective¹¹.

Therefore, at this point in time, it is not at all clear if varicocele causes male infertility and if so the mechanism of causation is not known^{12,13}.

Management

The management of varicocele has had a chequered history. Several studies recommend varicocelelectomy¹⁴⁻¹⁷ whereas others find it to be

ineffective^{12,18}. The NICE guidelines published in 2013 do not recommend surgery for infertile men with varicocele because it does not improve pregnancy rates¹⁹. There have been several surgical approaches like open surgical, microsurgical, laparoscopic surgical methods and radiological methods like embolisation^{17,18}. The effectiveness of all these techniques is debatable. The precise mechanism by which any of these techniques would improve the spermogram is not known.

In 2014, in my opinion, varicocele, probably a variation in the normal anatomy of testicular venous drainage and a coexistent factor in some infertile men has been overblown as a causative factor in male infertility. Surgery for varicocele in these depressed infertile men with all the attendant risks and with no proven benefits in randomized controlled trials, I feel, is superfluous. A technique which was introduced in the pre assisted reproduction era should no longer serve in the armamentarium of the infertility physician. It should be confined to the pages of history of infertility treatment along with ventrisuspension and Rubin's tubal insufflation. Men with varicocele and varying sperm pictures should be subjected to assisted reproduction, IUI or ICSI depending on the sperm picture.

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References

- 1) Barwell, R. One hundred cases of varicocele treated by the subcutaneous wire loop. *The Lancet* 1885; 125(3222): 978.
- 2) Tulloch WS. Varicocele in subfertility. *British Medical Journal* 1955; 2(4935): 356.
- 3) Naughton CK, Nangia AK, Agarwal A. Varicocele and male infertility: Part II: Pathophysiology of varicoceles in male infertility. *Human Reproduction update* 2001; 7(5): 473-481.
- 4) Meacham RB, Townsend RR, Rademacher D, Droese JA. The incidence of varicoceles in the general population when evaluated by physical examination, gray scale sonography and color Doppler sonography. *The Journal of Urology* 1994; 151(6): 1535.
- 5) Mieuisset R, Bujan L, Mondinat C, Mansat A, Pontonnier F, Grandjean H. Association of scrotal

- hyperthermia with impaired spermatogenesis in infertile men. *Fertility and Sterility* 1987; 48(6): 1006-1011.
- 6) Camoglio FS, Zampieri N, Corroppo M, Chironi C, Dipaola G, Giacomello L, Ottolenghi A. Varicocele and Retrograde Adrenal Metabolites Flow. *Urologia Internationalis* 2004; 73(4): 337-342.
- 7) Simşek F, Türkeri L, Cevik I, Bircan K, Akdaş A. Role of apoptosis in testicular tissue damage caused by varicocele. *Archivos españoles de Urología* 1998; 51(9): 947-950.
- 8) World Health Organization. WHO laboratory manual for the examination of human semen and sperm-cervical mucus interaction 2010.
- 9) Pandiyan N. Semen analysis – A numbers game. *CHCMJ* 2012; 1(1): 2-3.
- 10) Prathima T, Pandiyan N. Definition of Oligozoospermia – A Commentary. *CHCMJ* 2013; 2(4): 108-109.
- 11) Uma Maheshwari. Inter-observer variability on human sperm morphology assessment. Paper presented at the CAC; Chennai; 2014 March 29.
- 12) Evers, JL, Collins JA. Assessment of efficacy of varicocele repair for male subfertility: a systematic review. *The Lancet* 2003; 361(9372): 1849-1852.
- 13) Charny CW, Baum S. Varicocele and infertility. *JAMA* 1968; 204(13): 1165-1168.
- 14) Madgar I, Weissenberg R, Lunenfeld B, Karasik, A, Goldwasser B. Controlled trial of high spermatic vein ligation for varicocele in infertile men. *Fertility and Sterility* 1995; 63(1): 120-124.
- 15) French DB, Desai NR, Agarwal A. Varicocele repair: does it still have a role in infertility treatment? *Current Opinion in Obstetrics and Gynecology* 2008; 20(3): 269-274.
- 16) Krause W, Müller HH, Schäfer H, Weidner W. Does treatment of varicocele improve male fertility? *Andrologia* 2002; 34(3): 164-171.
- 17) Ding H, Tian J, Du W, Zhang L, Wang H, Wang Z. Open non microsurgical, laparoscopic or open microsurgical varicocelectomy for male infertility: a meta analysis of randomized controlled trials. *BJU international* 2012; 110(10): 1536-1542.
- 18) Bechara CF, Weakley SM, Koungias P, Athamneh H, Duffy P, Khera, M, Lin PH. Percutaneous treatment of varicocele with microcoil embolization: comparison of treatment outcome with laparoscopic varicocelectomy. *Vascular* 2009; 17(suppl 3): S129-S136.
- 19) NICE Clinical guidelines. Fertility: assessment and treatment for people with fertility problems. National Institute for Health and Clinical Excellence; February 2013; 2nd edition: 136.

Mind the diet for a timely delivery

Pre-term birth accounts for around 10% of all live births worldwide and is a leading cause of death and disease in infants. In a new study carried out in Adelaide, South Australia, the researchers investigated the relationship between preconception diet of the women and the occurrence of pre-term birth when they became pregnant. Women who consistently ate high protein foods(lean meat, fish, chicken, whole grains), vegetables and fruits before they became pregnant had less chance of delivering a pre-term baby, while women who ate high fat-high sugar food (take away food, potato chips, cakes, biscuits etc.) had a greater chance of having a pre-term birth. Diet is a modifiable risk factor and it is important to adopt a wholesome diet before as well as during the pregnancy to achieve the best outcome. The results of the study are published in *Journal of Nutrition* (J. A. Grieger, et al. Preconception Dietary Patterns in Human Pregnancies Are Associated with Preterm Delivery. *Journal of Nutrition*, 2014; DOI: 10.3945/jn.114.190686,)

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