	Average Comet Score (%±SE)	Low Comet Score (%±SE)	High Comet Score (%±SE)
Before Varicocele Embolisation (n=119)	**41.4** ± 0.7	**26.2** ± 1.6	**27.2** ± 1.9
After Varicocele Embolisation (n=119)	**35.3** ± 0.7	**42.1** ± 2.1	**15.3** ± 1.4
Difference (%); P Value	**-14.7;** <0.01	**+60.8;** <0.01	**-43.9;** <0.01

Source of Funding: None

MP43-15

MICROSURGICAL VARICOCELE REPAIR IMPROVES SPERM CAPACITATION AND PROBABILITY OF GENERATING A PREGNANCY, AS MEASURED BY PRE- AND POST-OPERATIVE TESTING WITH CAP-SCORE

Muhamed Qalawena, Ismailia, Egypt; Eric Seaman, Millburn, NJ; Jared Johnson, Minneapolis, MN; Ahmed El-Sakka, Ismailia, Egypt; Joshua Bodie, Minneapolis, MN*

INTRODUCTION AND OBJECTIVE: Infertility is a worldwide problem, with up to 40-50% of cases involving male infertility. Varicocele represents the most common correctable cause of male infertility. While semen analysis (SA) remains the primary diagnostic tool of infertility, it does not provide information about sperm function. The Cap-Score is designed to assess sperm capacitation via localization patterns of ganglioside GM-1, which has been shown to be a viable surrogate of capacitation-competent human sperm. The predicted probability of generating a pregnancy (PGP) is a validated metric based on semen volume, concentration, and Cap-Score. PGP is defined as the percent chance of obtaining a pregnancy within three consecutive rounds of intrauterine insemination (IUI). The objective of this study was to determine the effect of microscopic varicocelectomy on sperm capacitation and the probability of generating a pregnancy.

METHODS: Data were collected prospectively of 40 consecutive adult men who presented with infertility confirmed by SA and found to have a varicocele on exam or ultrasound who underwent unilateral or bilateral subinguinal microscopic varicocelectomy. We recorded pre and post-operative SA, Cap-Score, and PGP with a 3-month follow up. Values were compared using paired t-test and Wilcox rank-sum test.

RESULTS: Of the 40 men enrolled, 29 (72.5%) demonstrated improved Cap-Score with an average increase of 4% ($p=0.001$). The absolute change in probability of generating a pregnancy was 6% higher ($p=0.001$) after varicocelectomy, which represents a 25% relative increase in PGP. The change in Cap-Score was not associated with the grade of varicocele ($p=0.0703$) or whether the patient had a unilateral or bilateral repair ($p=0.9682$). There were no differences in semen volume ($p=0.061$) or morphology ($p=0.091$), however, there was improvement in sperm motility ($p=0.021$), total sperm count ($p=0.030$) and concentration ($p=0.004$).

CONCLUSIONS: It is known that varicocelectomy improves semen parameters and chances of conception in the majority of cases, including pregnancies via intercourse or via assisted reproduction. This study confirms that varicocelectomy augments male fertility by improving sperm capacitation, and that varicocele repair improves the probability of generating an IUI pregnancy to a statistically-significant degree. The improvement in sperm capacitation ability may explain how varicocele repair may improve the chance of pregnancy, regardless of standard semen parameter improvements.

Source of Funding: This study did not receive industry support. The only external funding for the study came from doctor M. Qalawena, a scholar visiting the University of Minnesota from the faculty of Medicine Suez Canal University, Egypt, whose personal educational grant by the Egyptian ministry of higher education funded the sixteen tests for the eight patients contributed from the University of Minnesota. Patients from the New Jersey site had received Cap-Score testing by Androvia LifeSciences Lab at patient expense. Physicians received no funding from Androvia for running the study, and the Androvia Labs did not have editorial control of the study results

MP43-16

VARICOCELE INDUCED TESTICULAR HYPERTHERMIA: INFRARED DIGITAL THERMOGRAPHIC ASSESSMENT EXPLORING THE EFFECT OF SURGICAL VARICOCELE CORRECTION ON POSTOPERATIVE TESTICULAR TEMPERATURE AND REPRODUCTIVE OUTCOME

Mohammed Mahdi, Kareim Khalafalla, Ahmed Al Saeedi, Mohamed Arafa, Haitham Elbardisi, Sami Alsaid, Ahmad Majzoub, Doha, Qatar*

INTRODUCTION AND OBJECTIVE: Testicular hyperthermia is considered as one of the main pathophysiological mechanisms of spermatogenic dysfunction in patients with varicocele. The aim is to compare scrotal & inguinal temperature measurements between varicocele patients and normal controls linking such measurements with semen parameters, in addition to the evaluation of changes in such variables after varicocele repair.

METHODS: Patients with clinical varicocele were included. They were classified into normal semen (group I; $n=25$); & abnormal semen (group II; $n=34$). Controls (group III; $n=30$) with no varicocele & normal semen parameters were recruited. Initial conventional semen analysis (WHO 2010) and oxidation reduction potential (ORP) test (MiOXSYS) were performed. Bilateral inguinoscrotal infrared digital thermographic imaging (FLIR E6, Wilsonville, USA) was done.21 patients from group II underwent microsurgical varicocelectomy, temperature measurements & semen analysis were repeated 3 months post-surgery.Temperature were compared between all groups using ANOVA. Paired t-test was used to evaluate changes in temperature & semen parameters after the procedure. Pearson's correlations were used to explore the association between temperature measurements & different variables and between changes in post-operative temperature with the changes in semen parameters.

RESULTS: Bilateral scrotal temperatures, ORP and semen DNA fragmentation were significantly higher in group II compared with the other 2 groups.Left scrotal temperature was significantly negatively correlated with sperm concentration (-0.268, $p=0.004$), total motility (-0.337, $p<0.001$), normal morphology (-0.282, $p=0.003$) & left testicular size (-0.292, $p=0.002$). While it was significantly positively correlated with ORP (0.374, $p=0.01$). After varicocelectomy, there was a significant decrease in bilateral testicular temperature ($p=0.01$), and a significant increase in the sperm count ($p= 0.03$) & Normal morphology ($p\leq0.001$), however, no significant correlation was identified between changes in testicular temperature & changes in all semen parameters.

CONCLUSIONS: Increased scrotal temperature is detected in patients with testicular dysfunction secondary to clinical varicocele. Varicocele repair results in improvements in testicular temperature & semen parameters. Further studies with larger samples are needed to support correlations between post-operative outcomes.

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