SPERM DNA FRAGMENTATION

The methods for evaluation of male infertility have typically been limited to a semen analysis measuring count, motility and morphology of the sperm. Up to 8% of infertile men have been shown to have high levels of sperm DNA fragmentation despite a normal semen analysis. New studies suggest that sperm with certain levels of DNA fragmentation serve as a strong predictor of reduced male fertility.

The development of a healthy embryo is initiated when the chromosomes from the female (in the egg) come together with chromosomes from the sperm. These chromosomes consist of strands of DNA (deoxyribonucleic acid). These strands of DNA can become damaged.

Research indicates that sperm with high-levels of DNA fragmentation have a lower probability of producing a successful pregnancy. A review of data on hundreds of semen samples show that patients with a DNA fragmentation level of greater than 30% are likely to have significantly-reduced fertility potential, including a significant reduction in term pregnancies and a doubling of miscarriages. Sperm that appears to be normal by traditional semen analysis parameters (motile, morphologically normal sperm) may even have extensive DNA fragmentation. In an effort to achieve the most effective measurement of male fertility potential, Sperm DNA Fragmentation Analysis is an option.

ANALYSIS:
The sperm are captured within an inert agarose gel. This is treated, with an acid denaturant which removes already fragmented DNA. The remaining material is then treated with a lysing agent which frees the intact DNA into the agarose gel. This agarose is then stained to highlight the released DNA, and evaluated to determine the degree of fragmented Vs intact DNA.

Causes of sperm DNA damage:
• Drugs, chemotherapy & radiation therapy
• Cigarette smoking & environmental toxins
• Genital tract inflammation
• Testicular hyperthermia (use of hot baths, saunas, laptop computers & prolonged periods of driving)
• Varicoceles
• Hormone factors
• Infrequent ejaculation
• Male’s age

TREATMENT FOR SPERM DNA DAMAGE:
Depending on what caused the damage to the sperm DNA there may or may not be a way to improve the sperm DNA. Some ways that may help improve sperm DNA is to change to a healthier lifestyle, stop smoking, avoid exposure to toxins, and taking a daily supplement of antioxidants and zinc. Further clinical options can be discussed with one of our fertility specialists.