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**Abstract Topic:** - Molecular effects of genetic variation

**Abstract Title:** - Does protamine serve as a biomarker in male partners for RPL?

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**Aims:** - Protamines (PRMs) are DNA binding proteins responsible for packaging of DNA in sperm nucleus and maintenance of sperm integrity. Alteration in these genes has been linked to male infertility in humans; however, studies pertaining to recurrent pregnancy loss (RPL) were meager. Expression levels and abnormal mRNA ratios of PRM 1 to PRM 2 in spermatozoa is reported to affect early development of embryo. Hence, the present study was aimed to evaluate the role of PRM in partners with RPL.

**Methods:** - A total of 50 cases and 50 controls were enrolled. Men whose female partners experienced at least two consecutive spontaneous miscarriages before the 20th week of gestation were included as cases, while controls comprised of males whose wives had no history of miscarriages. Analysis of selected SNP's (C321A and C248T) in PRM 1 and PRM 2 genes was done by PCR-RFLP. The sperm DNA damage was examined by comet assay along with sperm DNA fragmentation. mRNA levels of PRM were analysed in semen samples by qRT-PCR.

**Results:** - The ct values of PRM 1 and PRM 2 mRNAs were significantly different between cases and control groups ( $p < 0.05$ ). The average comet scores and sperm DNA fragmentation was higher in cases compared to the controls.

**Conclusions:** - Our results suggest that PRM expression in spermatozoa is essential not only for successful fertilization but also for proper early embryo development. The limitation of the present study is small sample size. However replicative studies on large sample size will help us to identify the potential role of this biomarker towards RPL in partner.

**Keywords:** - The ct values of PRM 1 and PRM 2 mRNAs were significantly different between cases and control groups ( $p < 0.05$ ). The average comet scores and sperm DNA fragmentation was higher in cases compared to the controls.