

#### P-078 Prognostic factors for male fertility recovery after microsurgical varicocelectomy

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**Study question:** What clinical and laboratory parameters are reliable predictors of spontaneous pregnancy (SP) after microsurgical varicocelectomy in men from infertile couples?

**Summary answer:** Predictors of SP after microsurgical varicocele repair are the male age, baseline total sperm motility, and postoperative increase level of TPMSC.

**What is known already:** Varicocele is the most common correctable cause of male subfertility. According to the recent meta-analyses and studies, microsurgical varicocelectomy is the "golden standard" method for varicocele repair. However, it is still unclear why at least one-third of subfertile men do not experience improvement in semen parameters and more than half of them do not

report fertility recovery after varicocelectomy. There is no consensus so far on the factors affecting the efficacy of varicocele repair in men from infertile couples.

**Study design, size, duration:** This retrospective study comprises 93 men from infertile couples, with palpable varicocele, astheno-/oligozoospermia, and who underwent microsurgical subinguinal or inguinal varicocelectomy from September 2015 to May 2019.

**Participants/materials, setting, methods:** The changes in semen analysis were assessed (in 3-6 months after surgery) according to WHO-2010, spontaneous pregnancy (SP) rates after surgery also were considered. A stepwise discriminant analysis was performed to identify predictors of SP after varicocelectomy. An increase in TPMSC by at least 12.5 million was defined as a significant effect (SE) of varicocelectomy (reference values for the total number and progressive sperm motility according to WHO-2010: 39 million x 0.32 (32%) progressively motile).

**Main results and the role of chance:** Almost all semen parameters (except for semen volume) changed positively after surgery. Sperm concentration increased from 62 mln/ml (17-107) to 85 mln/ml (39-134)  $p < 0.001$ , TPMSC increased by an average of 27 mln (2.8 times;  $p < 0.001$ ). SE was observed in 52% of cases ( $n = 48$ ), a slight favorable effect in 21% ( $n = 20$ ), and no effect in 27% ( $n = 25$ ). 29 patients (31%) reported SP within a year after varicocele repair. 83% of patients (24 from 29) who reported pregnancy after varicocelectomy showed SE. According to the stepwise discriminant analysis, significant predictors of pregnancy after varicocelectomy were the male age (coefficient of the canonical discriminant function = -0.16), the initial total sperm motility (0.02), and the postoperative increase of TPMSC (0.01). Wilks' lambda was 0.67 and canonical correlation 0.57. The predictive ability of the prognostic model (discriminant function) with these three predictors was 84%, specificity 87%, and sensitivity 76%. The function real predictive accuracy for SP was 70% (21 correct out of 30 predicted).

**Limitations, reasons for caution:** The small sample size and the inability to obtain accurate data on the health condition of female partners were the main limitations of the study. Nevertheless, the findings are statistically significant, which suggests that they can be extrapolated to the general sample of subfertile men with clinical varicocele.

**Wider implications of the findings:** The proposed algorithm (function) for the prediction of SP showed satisfied predictive accuracy, and after its external validation can be recommended in 3-6 months after varicocele repair to decide whether it is advisable to expect an SP within a year or to include an infertile couple in ART programs immediately.

**Trial registration number:** Not applicable