



## **Global Conference on Medical and Health Sciences**

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### **A MULTIVARIATE PROGNOSTIC MODEL OF TREATMENT FAILURE AFTER SURGICAL CORRECTION OF VARICOCELE-ASSOCIATED INFERTILITY**

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#### **Relevance**

Although varicocelectomy improves semen parameters in most patients, a substantial proportion do not achieve fertility recovery, and there is no validated integral tool that predicts the probability of response before surgery. A multivariate prognostic model would allow objective preoperative stratification and the timely planning of assisted reproduction.

#### **Material and methods**

In 139 patients with varicocele-associated fertility disorders, independent predictors of treatment failure were selected using the LASSO method and multivariate logistic regression. A prognostic model was constructed and internally validated by bootstrapping (1000 repetitions), with discrimination assessed by the area under the ROC curve and calibration by the Hosmer–Lemeshow test.

#### **Results and discussion**

Independent predictors of treatment failure were a sperm DNA fragmentation index >30% (OR 3.48), FSH >8 IU/L (OR 2.71), testicular volume <12 mL (OR 2.39) and Coolsaet type II–III reflux (OR 2.92). The model showed good discrimination (optimism-corrected AUC 0.79) and adequate calibration (Hosmer–Lemeshow  $p=0.63$ ). The accumulation of unfavorable factors sharply



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reduced the response rate: with two or more adverse factors, the proportion of responders fell from 88% to 21%.

### **Conclusion**

The developed and internally validated multivariate model reliably identifies patients with a low probability of response to surgical correction of varicocele-associated infertility, providing a basis for the timely planning of assisted reproduction and for reducing the time to achievement of pregnancy.