Purpose: To develop a computer model to predict patency outcome after vasoepididymostomy based on pre-operative and intra-operative findings.

Methods: Retrospective study on 423 patients who underwent vasoepididymostomy between Jan 1979 and Feb 2003 by one surgeon (AJT). Patency outcome was available on 321 patients. Post-operative patency, pre-operative history and intra-operative findings (fluid quality at vas transection, presence of sperm, etc.) were recorded for analysis. A randomly selected subset of 250 patients (from 321 patients) was used for data analysis to create a decision matrix prediction algorithm. Univariate analysis revealed that presence of sperm in the right vas, bilateral versus unilateral vasoepididymostomy, and level of the epididymal anastomosis (both sides), were significant predictors of post-operative patency. Multivariate analysis showed that level of the epididymal anastomosis (right side) was the most significant independent predictor. These predictors were then used to create the model. The model was then tested on the remaining 71 patients (from the 321 patient group). This separate testing group was used to obtain an unbiased assessment of the model’s accuracy.

Results: Overall accuracy of prediction for the model ranged from 78.4 in the design group (250 patients) to 66.2% in the test group (71 patients). The model had a sensitivity, specificity, positive predictive value, and negative predictive value in predicting patency of 87.8, 36.7, 65.5, and 68.8%, respectively in the test group. Palm™ and Windows™ based versions of this computer model were created and may be downloaded as free shareware from: www.esijo.com. The Figure below illustrates a screenshot from the program. In clinical practice, we utilize a general indicator (level of epididymal anastomosis) for an estimated prediction of patency outcome after vasoepididymostomy. Our model may be more reliable by combining the additional predictors mentioned above in a structured manner.

Conclusions: This model may provide the surgeon and patient with a patency prediction to better prepare for final outcome. The model may be accessed by any physician and tested at different institutions for validation and model refinement.