346

Guerette N[1], Biller D[1], Davila G W[1]
1. Cleveland Clinic Florida

A MATHEMATICAL MODEL TO PREDICT ANTI-INCONTINENCE SURGERY OUTCOMES.

Hypothesis / aims of study

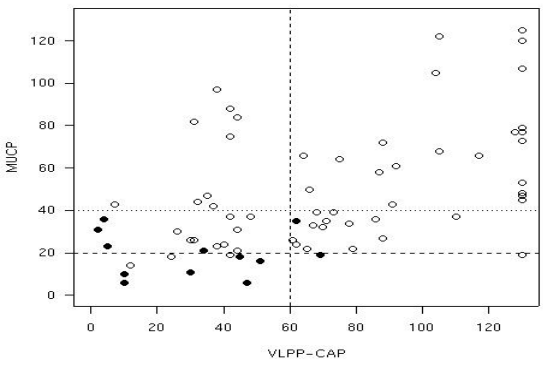
To develop a predictive model for anti-incontinence surgery outcomes using the results of urethral function (UF) assessment on pre-operative urodynamics.

Study design, materials and methods

70 women with urodynamically proven stress incontinence who subsequently underwent a transobturator sling (TOS) were identified retrospectively. UF was determined by valsalva leak point pressures and maximum urethral closure pressure (MUCP) on pre-operative urodynamics. Valsalva leak point pressures were obtained at 150cc (VLPP150) and at bladder capacity (VLPPcap). Success was defined as subjective continence and a negative cough stress test at the last follow-up visit. The sensitivity and specificity of discrete cut-off points for both MUCP and VLPPcap were calculated at 5cm H2O intervals. This allowed the calculation of the failure rate at each point for each measure. The MUCP and VLPPcap data were then paired in all possible combinations and the sensitivity and specificity were calculated for each pair, determining the most predictive pooled cut-off points for surgical success or failure. The most relevant points were superimposed on a graphical outcome model.

Results

The average subject age was 61.0 years and their mean parity was 2.4. Post-operative follow-up averaged 4.1 months. Initial analysis used the typically accepted definitions of intrinsic sphincter deficiency (ISD): VLPP </= 60cm H2O and MUCP </= 20cm H2O. These traditional cut-off points showed significantly more failures below a VLPP = 60cm H2O at bladder capacity but not at 150cc, and significantly more failures below a MUCP = 20cm H2O (Table). The MUCP and VLPPcap data were then combined as described above in an effort to better identify specific values below which failure rates increased. Using the typical ISD cut-offs the model revealed that a VLPPcap = 60cm H2O and MUCP = 20cm H2O gave a sensitivity of 50% and specificity of 95%, with a failure rate of 66.7% below the combined cut-off and 9.8% above. The most predictive levels were VLPPcap = 60 cm H2O and MUCP = 40 cm H2O, with a sensitivity of 83% and a specificity of 79%. This translated into a failure rate of 45.5% below the combined cut-off and 4.2% above (Graph).



Measure	N	Post-op SI (%)	P
VLPP150			
>60	56	9 (16.1%)	0.11
</=60	14	5 (35.7%)	
VLPPcap			
>60	39	2 (5.1%)	<0.001
</=60	31	12 (38.7%)	
MUCP			
>20	59	8 (13.6%)	0.006
</=20	11	6 (54.5%)	

Note: Analysis uses Fisher's Exact test

Interpretation of results

The Transobturator suburethral sling forms a flat platform of mid-urethral support extending from one pubic ramus to the other. Tensioning cannot be substantially altered by the operator, making it a standardized procedure. This study demonstrated urethral function assessment, including maximum urethral closure pressure and valsalva leak point pressure, could be used to develop a model that accurately predicts transobturator sling outcomes. Additionally, there are higher failure rates for transobturator slings in the face of impaired

sphincter function and, specifically, when the patient has as a maximum urethral closure pressure </= 40cm H2O and a valsalva leak point pressure at bladder capacity </= 60cm H2O.

Concluding message

Statistical modelling can be used to accurately predict TOS outcomes. A TOS should be used with caution in women with a VLPPcap </= 60cmH2O and MUCP </= 40cmH2O.