

Color Doppler Ultrasound Imaging in Varicoceles:

Is the difference in venous diameter encountered during position change predictive of varicocele grade?

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Background

- The clinical grading system for varicoceles is subjective and dependent on the experience of the clinician.
- Doppler interrogation has not been standardized in the diagnosis of varicoceles.

Hypothesis

Venous diameter as measured by ultrasound can be used to predict varicocele grade according to WHO criteria.

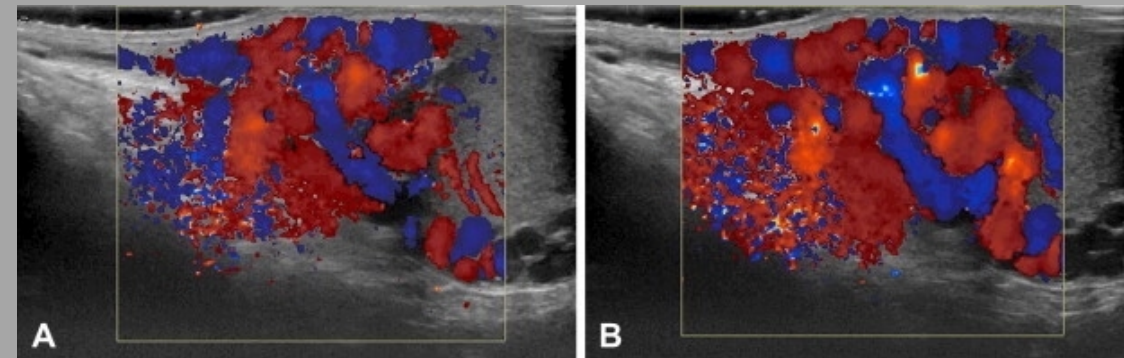
Methods

- 102 patients clinically graded based on WHO criteria
- Color Doppler ultrasound
- ROC curve analysis for diameter cutoff

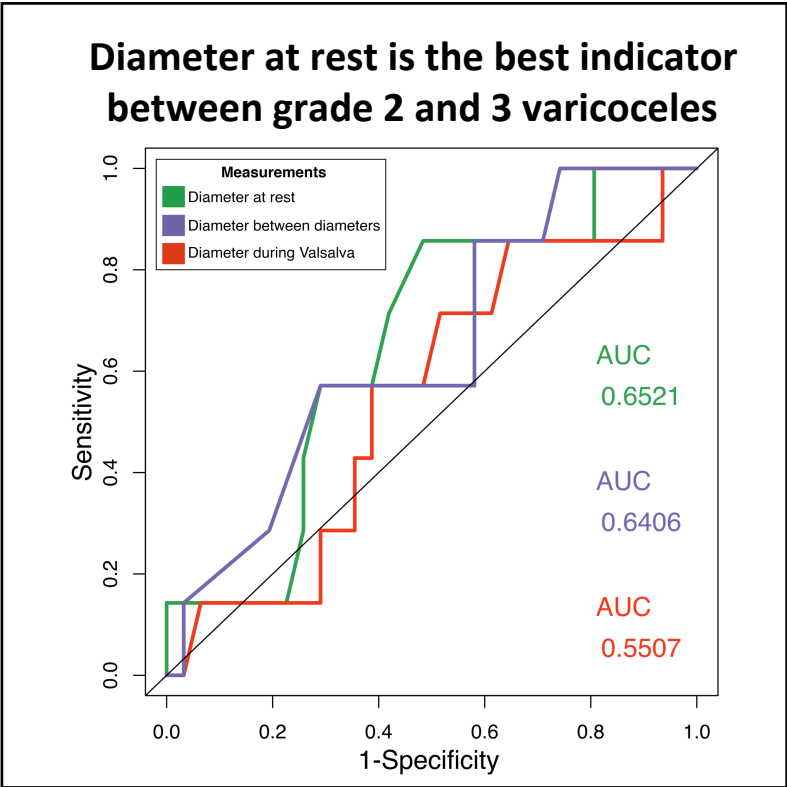
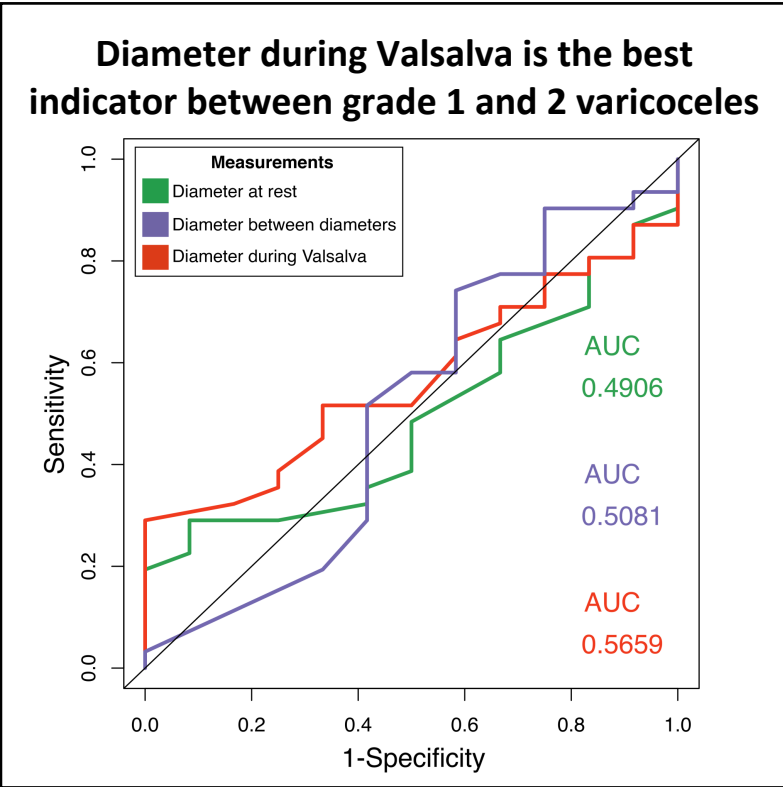
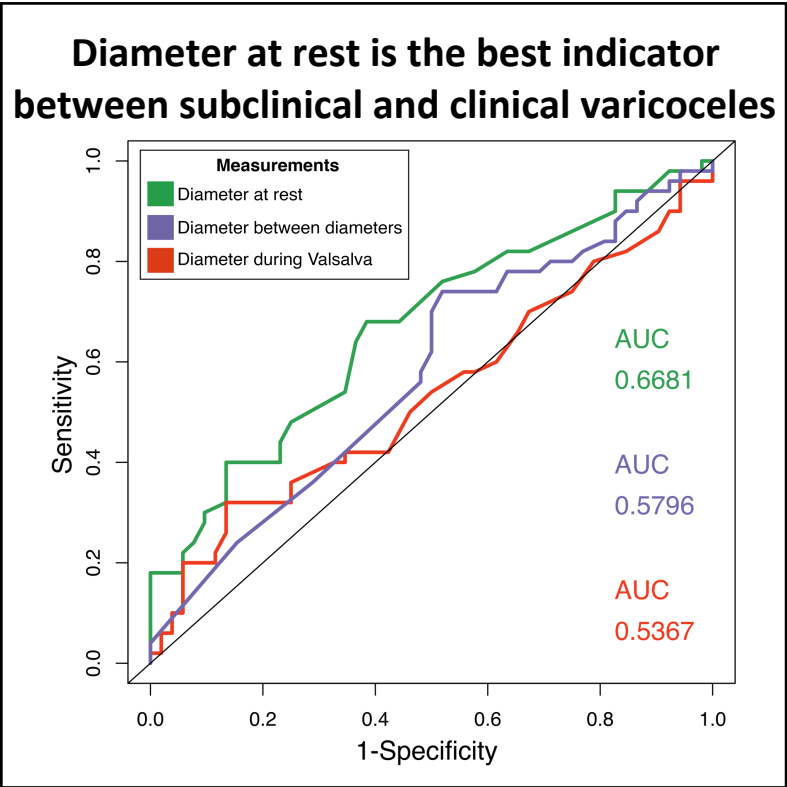
WHO Clinical Grading Criteria

WHO Grade	Examination
Grade 0	No varicocele
Grade I	When there is no visible or palpable distention except when the man performs the Valsalva maneuver
Grade II	When intrascrotal venous distention is easily palpable but not visible
Grade III	When the distended venous plexus bulges visibly through the scrotal skin and is easily palpable

Varicocele diameter increasing with Valsalva on color Doppler ultrasound (A→B)



Courtesy of Pauroso et. al. 2011



AUC = area under the curve

WHO grade	Best Measurement	Cut-off value (mm)	Sensitivity (%)	Specificity (%)	AUC
0 vs I-III	Diameter at rest	3.0	79	42	0.67
I vs II	Diameter during Valsalva	5.7	71	33	0.57
II vs III	Diameter at rest	3.6	71	58	0.65

Table 1. Cut-off values of venous diameter to distinguish between clinical grades of varicocele