# Duplex Ultrasonography in the Detection of Celiac Axis Stenosis

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## Purpose

To assess the predictive value of ultrasound duplex scanning in the detection of celiac axis (CA) stenosis.

## Methods and Materials

Celiac axis duplex scans were performed for clinical evaluation before CABG in 39 patients (M : 30, F : 9, 44 to 75 in age) in the supine position with 2-4 MHz convex probes. Subsequent lateral aortographies were performed in all patients after coronary arteriography. CA diameters were measured on lateral aortograms by 2 radiologists blined to the duplex results, and the original duplex velocity values were evaluated for accurate diagnosis with well-known velocity criteria such as peak systolic velocity (PSV), peak diastolic velocity (PDV) and end diastolic velocity (EDV).

## Results

CA stenosis more than 50% in diameter reduction was confirmed in thirteen patients (M : 10, F : 3, 44 to 75 in age) with lateral aortography. PSV in CA stenosis (n=13) was 283±96 cm/sec ; EDV 85±49 cm/sec ; PDV 55±33 cm/sec, whereas 161±55 cm/sec ; 59±21 cm/sec ; 32±9 cm/sec in normal CA group, respectively. PSV was significantly different between normal and stenosis group ($p<0.01$). However, EDV($p=0.054$) and PDV($p=0.12$) were insignificant. PSV ≥ 250 cm/sec provided sensitivity 77%, specificity 85%, positive predictive valve 71%, and negative predictive value 88%. EDV≥50 cm/sec provided low sensitivity (46%), but high specificity (100%). Lowering the EDV threshold (<50 cm/sec) improved sensitivity but reduced accuracy.

## Conclusion

Duplex ultrasound is a useful screening method for detection of CA stenosis. The most accurate predictor of the disease was increase of peak systolic velocity.

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