



Correlation of Visceral Adiposity Index (VAI) and Lipid Accumulation Products (LAP) with Metabolic and Endocrine Markers in Women with Polycystic Ovary Syndrome (PCOS)

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INTRODUCTION: Polycystic ovary syndrome (PCOS) is the most common endocrinological disorder among reproductive age women, its prevalence ranging from 6% to 26% depending upon ethnicity and criteria used for diagnosis. (1) Various parameters have been studied to assess the stratification of PCOS women according to their individual risk of developing diabetes and metabolic syndrome (MetS). But most of the studies have shown that body mass index (BMI) alone is not an accurate indicator of risk of metabolic syndrome and cardiovascular disease. BMI represents total obesity but it does not provide information about body adiposity. (3)

Visceral adiposity index (VAI) :

Emerging as a marker of adipocyte dysfunction and its efficacy is being considered comparable to Computed Tomography.
[WC/36.58 + (1.89 x BMI)] x (TG/0.81) x (1.52/ HDL-c)
CUT OFF >1.675

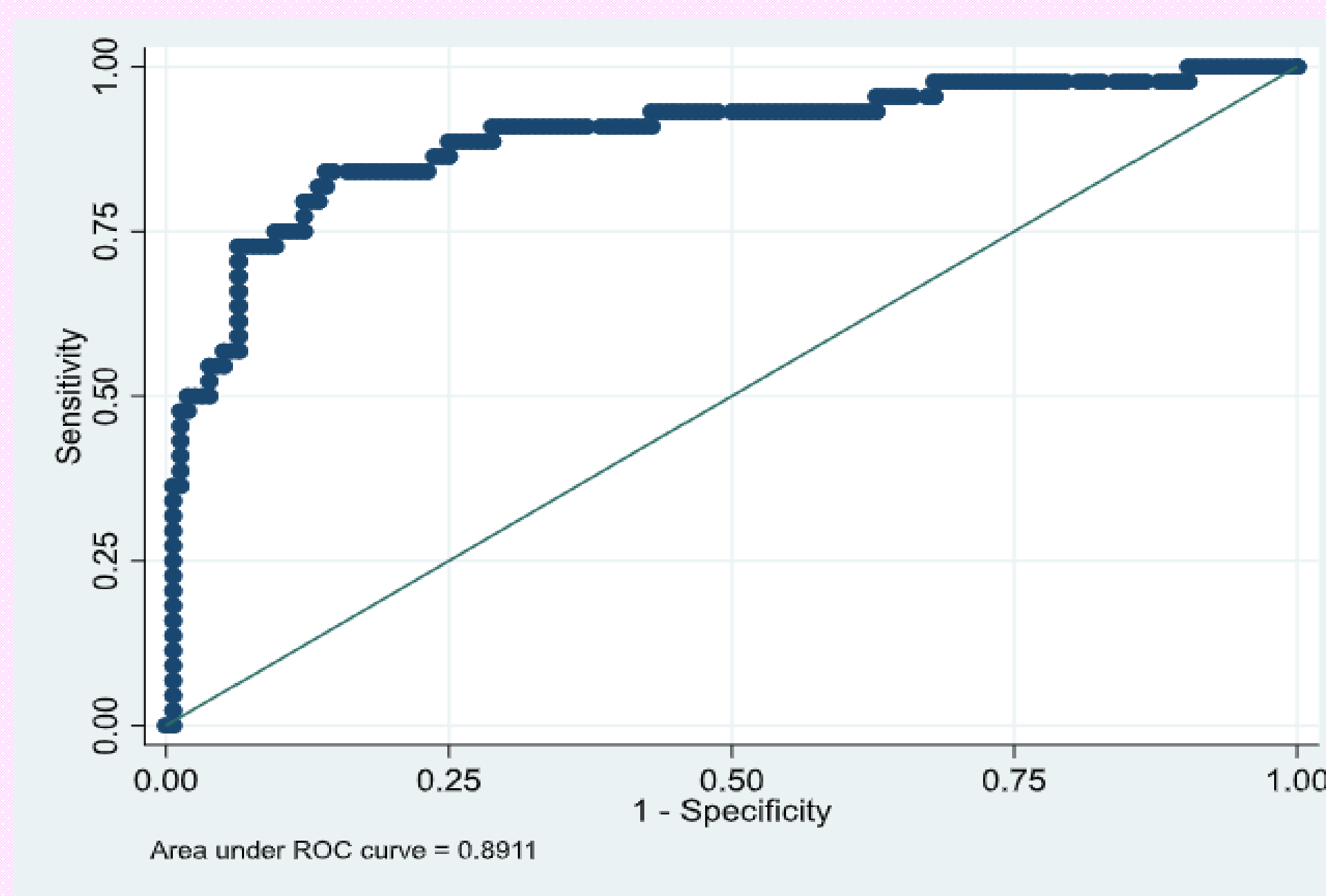
Lipid accumulation product (LAP): Another easily obtainable index, that is emerging as a reliable marker of insulin resistance among PCOS women. Cut offs varied widely.
LAP for women = (WC [cm] - 58) × (TG concentration [mmol/L])

Study design: Cross-sectional; **Setting:** Department of Obstetrics & Gynaecology, All India Institute of Medical Sciences, New Delhi, India, **Sample Size:** 200

PRIMARY OBJECTIVES:

- To evaluate Visceral Adiposity Index (VAI) and Lipid Accumulation Product (LAP) in PCOS women
- To correlate VAI and LAP with metabolic and endocrine markers across PCOS women

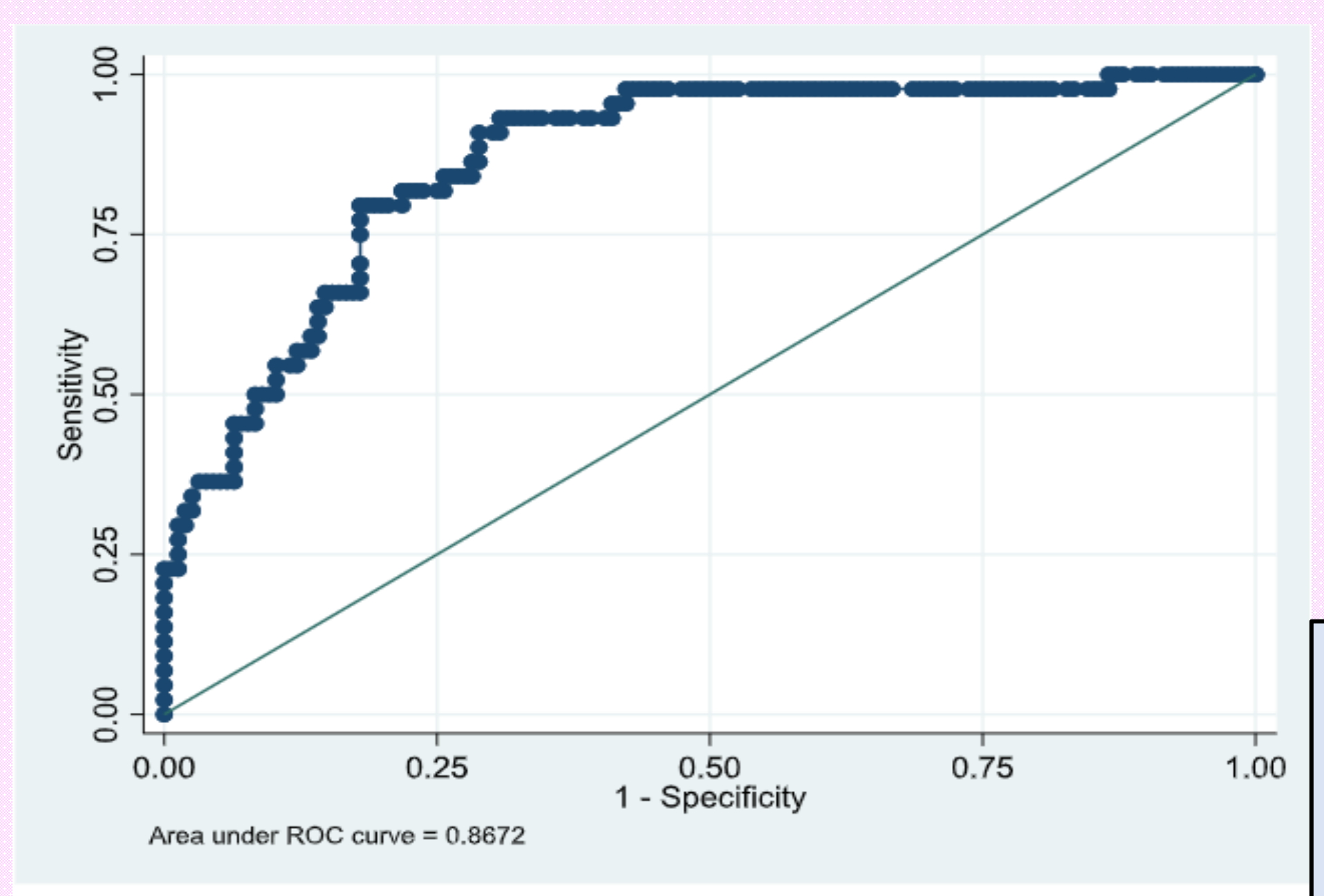
Receiver-operating characteristic (ROC), VAI = Visceral adiposity index



Receiver Operating Characteristics (ROC) analysis revealed that VAI had the good ability to correctly discriminate Metabolically unhealthy (MU-PCOS) from Metabolically Healthy (MH PCOS) {AUC (95%CI): 0.89 (0.82-0.95)}.

Sensitivity and specificity of marker corresponding to optimal cut of (≥ 2.76) based on Youden were **84.09% and 85.26% respectively.**

Receiver-operating characteristic (ROC) of LAP



This study also revealed that LAP had excellent ability to discriminate Metabolically unhealthy (MU-PCOS) from Metabolically Healthy (MH PCOS); [AUC (95% C.I. (0.81-0.92) = 0.86] correctly using ROC analysis. Sensitivity and specificity of marker corresponding to optimal cut of (≥ 48.06) based on Youden were **79.55% and 79.49% respectively**

Multivariate analysis reveals that after adjusting BMI, Total cholesterol, LDL, VLDL, VAI remained significant predictor of Metabolic syndrome.

Conclusion: The study showed that VAI and LAP are highest in most severe PCOS phenotype (phenotype A). VAI had strong positive correlation with HDL, TGL and VLDL. LAP had strong positive correlation with weight, BMI, WC, WHR, FAI, TGL and VLDL. VAI cut-off ≥ 2.76 May be used as a sensitive marker for detection of MU-PCOS and LAP with cut off of ≥ 48.06 may be used as a marker of MU-PCOS

Positive predictive value Of VAI	61.7%	95% CI (23.7%-40.3%)
Negative predictive value Of VAI	95%	95% CI (88%-99.1%)

Positive predictive value Of LAP	61.7%	95% CI (23.7%-40.3%)
Negative predictive value Of LAP	95%	95% CI (88%-99.1%)

Variable	Adjusted Odds ratio (95% C.I)	P value
LAP		
<48.06	1	
≥ 48.06	9.42 (3.25-27.26)	0.001
VAI		
<2.767	1	0.001
≥ 2.767	26.50 (8.49-82.76)	

References

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