

# EFFICACY OF ENHANCED EXTERNAL COUNTERPULSATION; IN IMPROVING SIX MINUTES WALK TEST IN HEART FAILURE PATIENTS



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## Background

Enhanced External Counterpulsation is an outpatient treatment to improve myocardial perfusion in chronic stable angina patients.

We studied, the clinical response of symptomatic heart failure patients with reduced left ventricular ejection fraction improvement in the exercise tolerance and functional class with EECP.

## Methods

We prospectively analysed 26 patients, who had undergone EECP with pre and post 6 minutes walk test, functional class assessed by the New York heart association classification, lipid profile, renal parameters and diastole to systole ratio in terms of Peak amplitude (P) and Area (A) under the curve value.

## Results

The patients mean age of 56 yrs completed 35 sessions of EECP treatment. Patients demography includes 81% male, 50% DM, 30% HT, 30% smokers, 61% TVD and mean EF of  $31.44 \pm 5.5\%$ . All these patients are high risk for invasive procedures and advised EECP treatment. The six minute walk test, pre and post EECP improved from  $340.14 \pm 68.5$  to  $385.5 \pm 73.9$  meters ( $P = 0.0004$ ). All the patients improved at least in one NYHA class improvement, creatinine decreased from  $4.6 \pm 8.0$  to  $3.76 \pm 5.1$  mg/dL ( $P = 0.62$ ), Urea decreased from  $34.37 \pm 20.28$  to  $27.24 \pm 18.73$  mg/dL ( $P = 0.002$ ). In lipid profile, only LDL reduction from  $94.41 \pm 38.66$  to  $80.51 \pm 35.09$  mg/dL reached statistical significance ( $P = 0.03$ ). In 18 patients, who had pre and post ECHO done, EF increased from  $31.44 \pm 5.5$  to  $38.38 \pm 8.69\%$  ( $P = 0.001$ ). The P and A value measured during the start, mid and towards the end of EECP sessions show a linear increase in both parameters. P value from start to mid increase from  $0.81 \pm 0.24$  to  $1.14 \pm 0.33$  ( $P = 0.0001$ ), from mid to end increase from  $1.14 \pm 0.33$  to  $1.4 \pm 0.39$ , ( $P = 0.0001$ ), A value from start to mid increase from  $0.98 \pm 0.34$ , to  $1.44 \pm 0.45$  ( $P = 0.0001$ ), from mid to end increase from  $1.44 \pm 0.45$  to end  $1.96 \pm 0.77$  ( $P = 0.0005$ ).

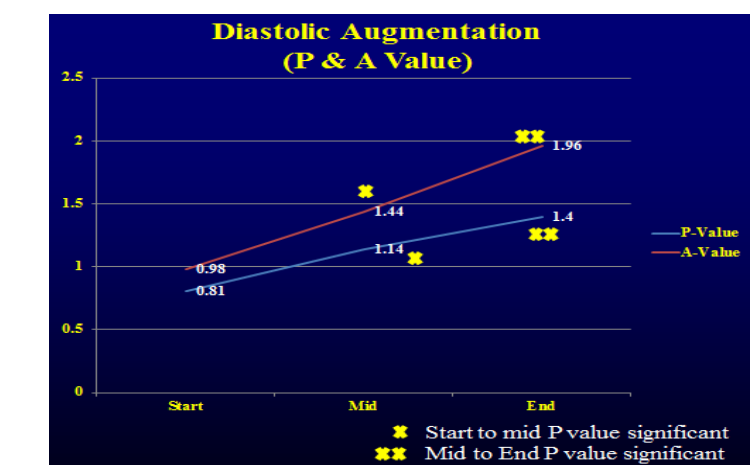
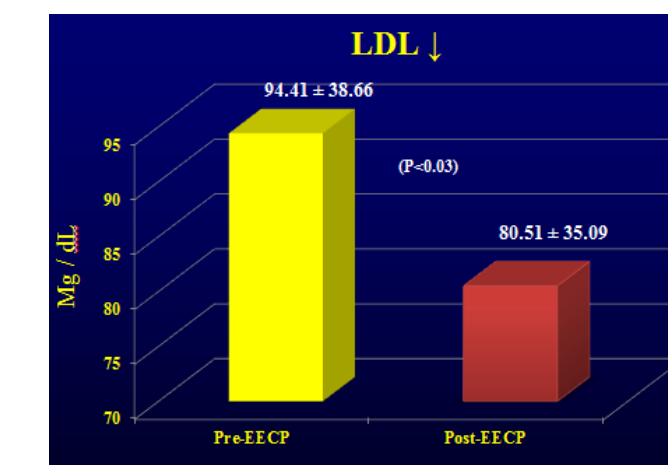
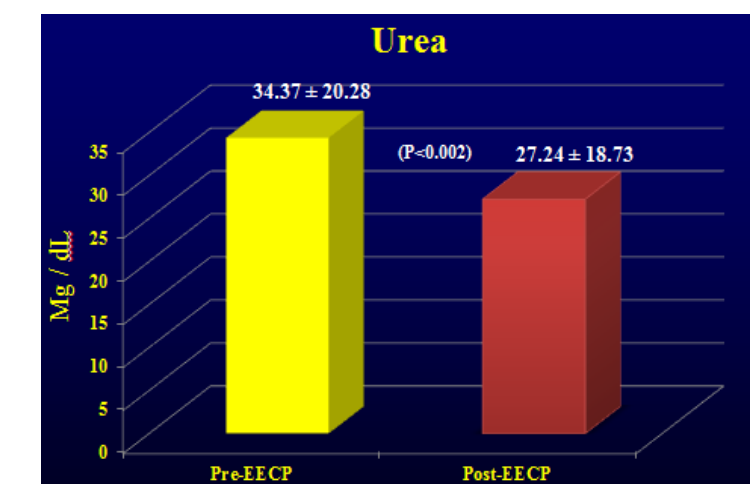
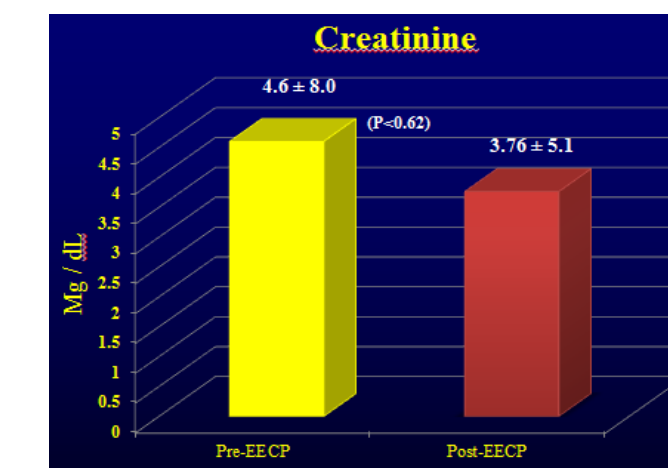
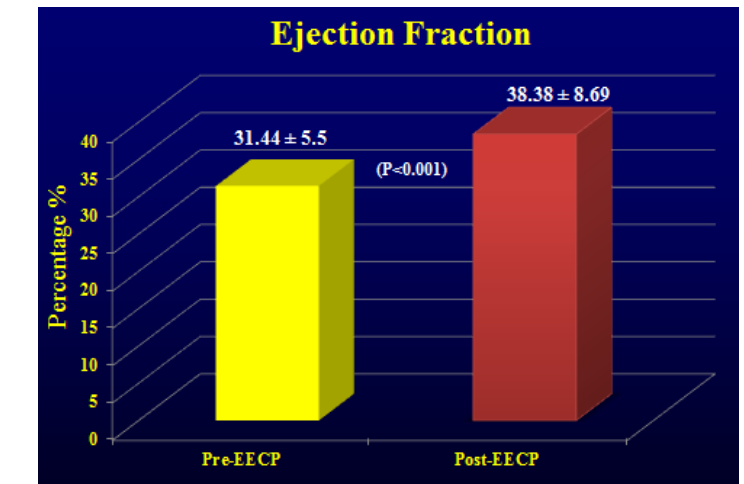
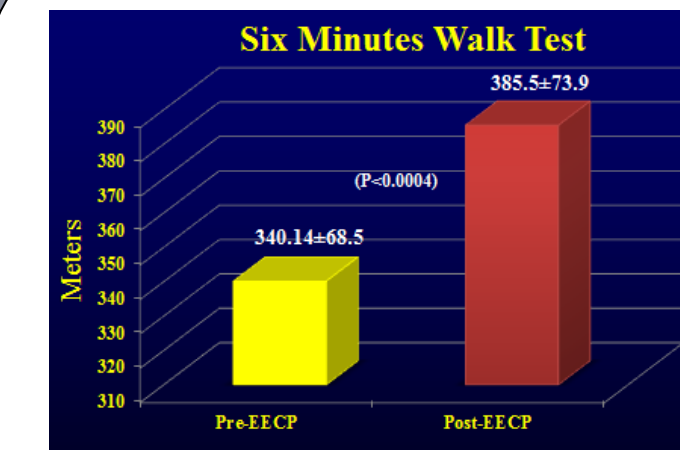
## Patient Demographics

Parameter	Value
Male	81 %
Diabetic Mellitus	50 %
Hypertension	30 %
Smokers	30 %
Triple Vessel Disease	61 %
Mean EF	$31.44 \pm 5.5\%$

**Enhanced External Counterpulsation(EECP) can act as an adjuvant supportive treatment for patients in Ischemic Heart failure with reduced ejection fraction(HFrEF).**

**The treatment can significantly improve the HFrEF patients' exercise tolerance, left ventricular function, and quality of life.**

**These benefits of EECP treatment can be directly attributed to improving myocardial blood flow and normalization of endovascular tone.**



## Conclusions

EECP treatment in heart failure patients with reduced ejection fraction improves six minutes walking distance, functional class and ejection fraction significantly. The treatment has a positive effect on the serum urea and LDL levels. These observed effects may be due hyperdynamic circulation achieved by EECP and increased ejection fraction.

## Disclosure Information

Author Disclosure - None