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EECP ORAL PRESENTATION DONE ON 30th OCT 2015 IN BEIJING 26th GREAT WALL INTERNATIONAL CONGRESS OF CARDIOLOGY

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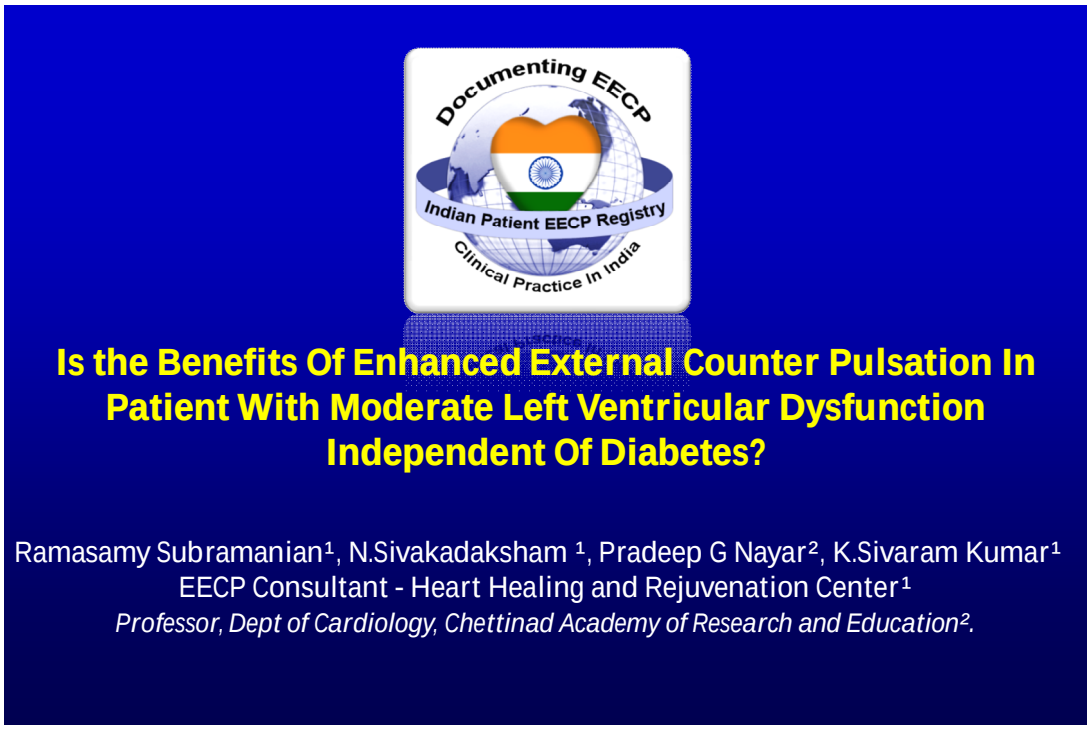

Good afternoon all. I thank the 26th great wall cardiology conference organising committee to invite me as a faculty member to present our research work in Enhanced External Counter Pulsation therapy.

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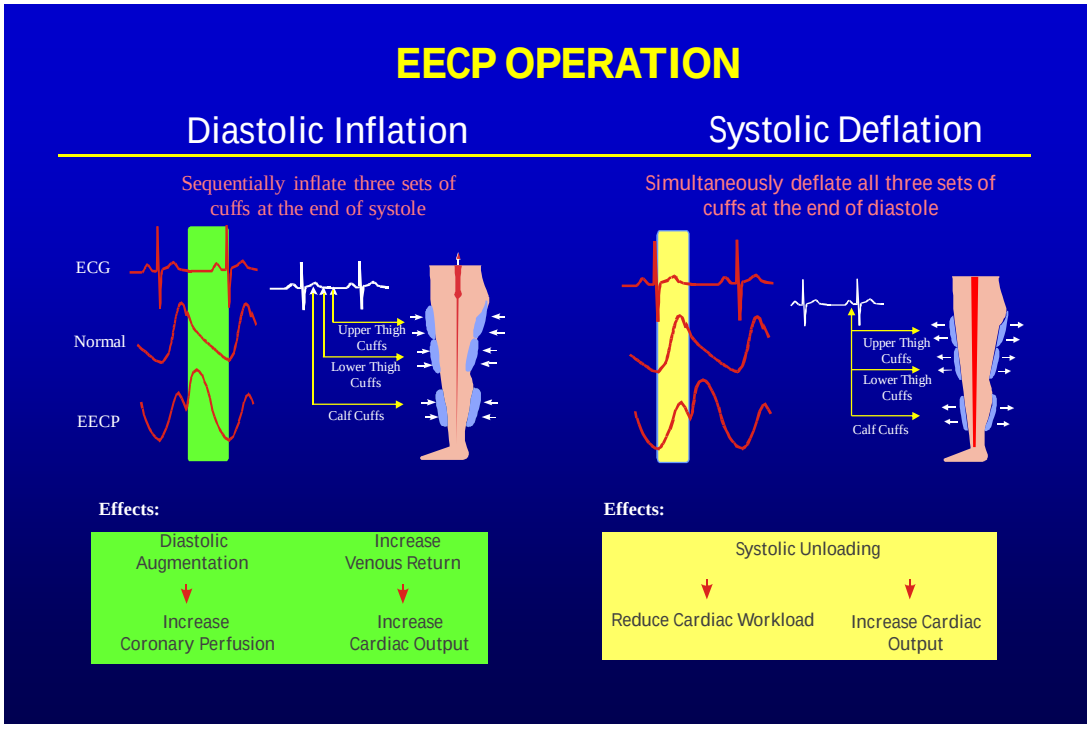

Enhanced external counter pulsation therapy is a non-invasive option for patient with refractory angina and heart failure. In India due to high prevalence of diabetes many patients have multi vessels disease with diffuse lesson which cannot be stented or grafted and are symptomatic with high ischemic burden. EECP is ben use as an alternative non invasive option for them to reduce their ischemic burden and improve their quality of life and reduce dependency on medication and hospitalisation. This Non-Invasive Ischemic Burden reduction program (NIBR-P) with EECP is currently approved by Government and reimbursed by Insurance Company.

In this study we evaluated the effect of EECP in patients with diabetes mellitus. Traditionally all the treatment for coronary artery disease have poor clinical benefit and outcome when compared to non diabetic patients. This is due to both microvascular and macro vascular complication of patient with diabetes mellitus. In our study we compared the benefit of EECP in both dieted and non diabetes in patients with moderate to severe LV dysfunction.

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Background

Enhanced External Counterpulsation (EECP) has been shown to:

- Decrease symptoms of myocardial ischemia
- Improve myocardial perfusion
- "Normalize" endovascular function
- Increase angina limited exercise tolerance

EECP treatment consist of three sets of cuffs tied to lower calves, lower and upper thighs and give sequential pressure gated by ECG to compress both arterial and venous compartment during diastolic phase. Arterial compression causes retrograde blood flow in to aorta and then increase coronary blood flow and venous compression causes increase venous rerun in right side of the heart and increase cardiac output. During systolic phase the cuff deflates causing reduction in peripheral vascular resistance and unloading of the heart.

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Objective

- Ischemic Cardiomyopathy patients has shown to improve in exercise tolerance and quality of life when treated with EECP
- In the present study we examined the effect of EECP in symptoms, exercise tolerance and ventricular function in patient with diabetic and non-diabetic ischemic Cardiomyopathy

Due this effect EECP has been shown to improve myocardial blood flow and decrease ischemic load. Many studies has shown EECP can induce angiogenesis through various growth factors and improving endothelial function. The overall effect is reduce exercise limiting cardiac symptoms and improve quality of life and reduce their dependency of in demand nitrate.

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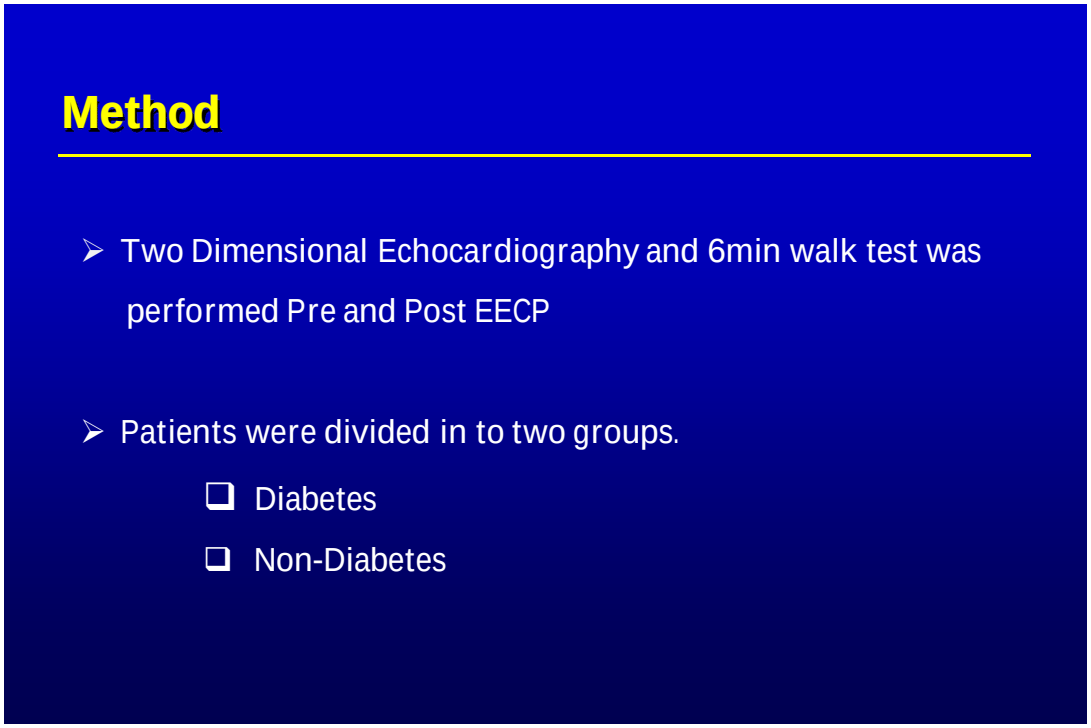

Previous studies have evaluated EECP treatment efficacy in patients with compromised LV function. We want to assess the effect of EECP in ischemic cardiomyopathy patients in functional class, 6 minutes walk test and echocardiography. Since EECP has predominant effect in micro vasculature and endothelial function we want to assess whether the benefit of EECP is similar in both diabetes and non diabetes.

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Results - Demographics

	DM(36)	NDM(21)	Significance
Age	61±11	60±10	NS
Hypertension	56%	56%	NS
Prior MI	71%	41%	P<0.001
Prior CABG	39%	41%	NS
Prior PTCA	19%	26%	NS

63 consecutive patients who are referred for EECP with ischemic cardiomyopathy with moderate to severe LV dysfunction are divided in to two groups one with diabetes (n= 36)and other group non-diabetic patients (n= 27). Their functional class New York heart association classification, 6 minutes walk test on the corridor of 30 meters length and ECHO cardiography were assessed pre and post EECP treatment.

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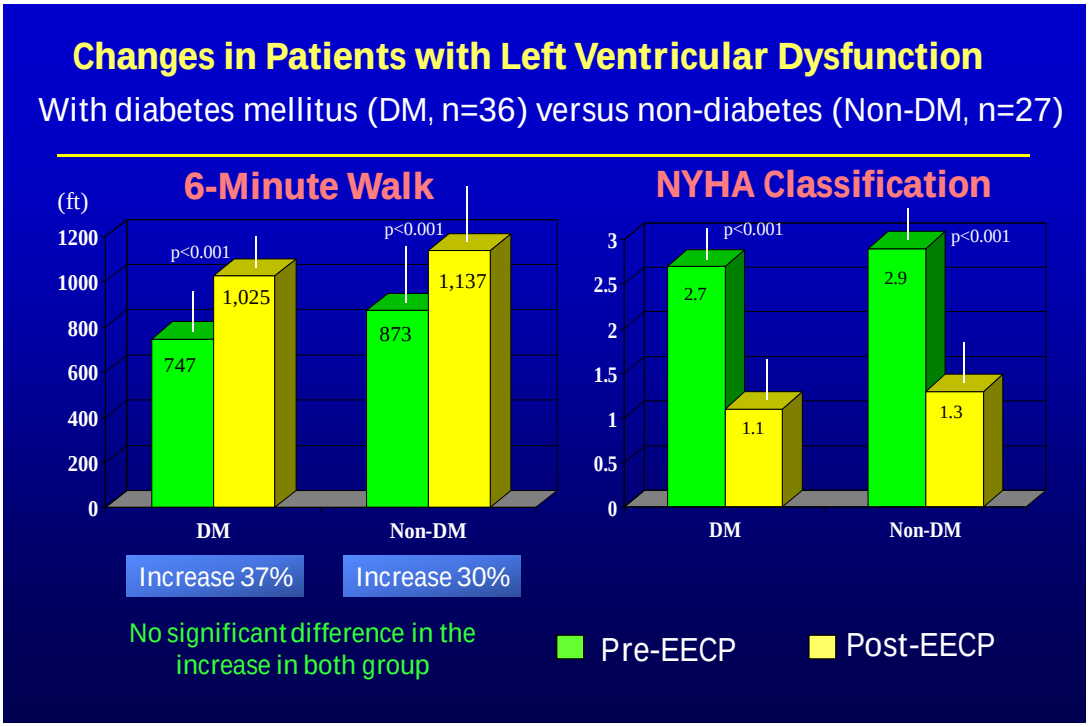

Demography were explained in the table. The prevalence of hypertension, CBAG, PTCA are similar in both the groups. But surprisingly the incidence of Myocardial infarction was higher in Non diabetic group.

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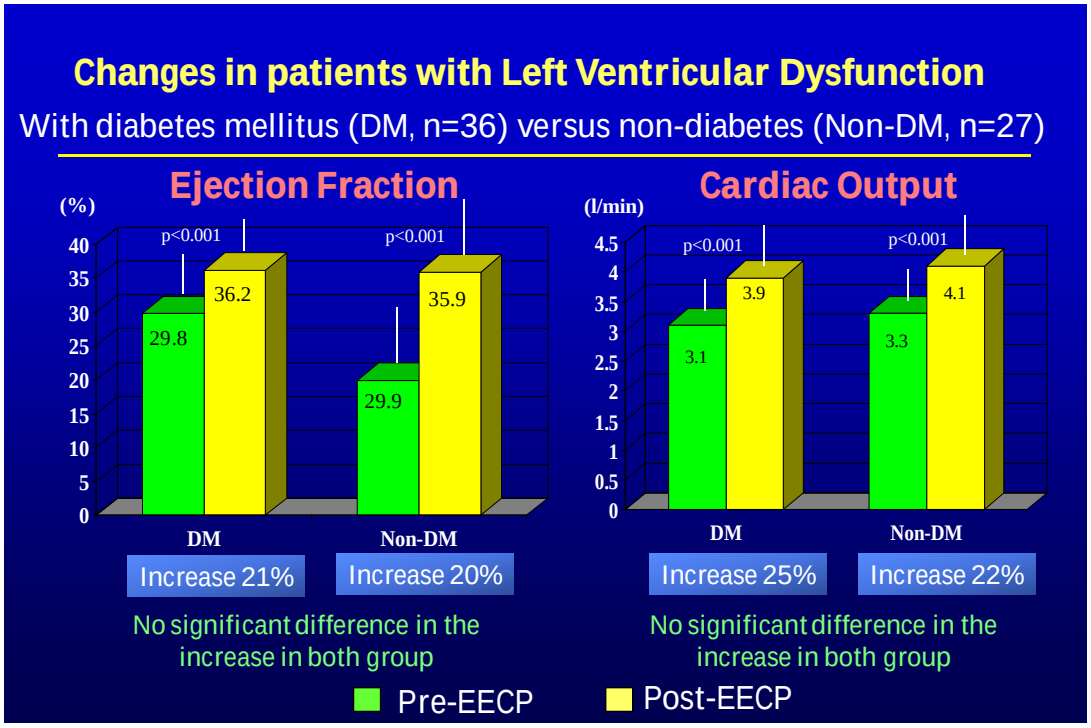

The 6 minute walk test both diabetic and non-diabetic group increase their walking distance significantly 37% in DM and 30% NDM. However the difference between both the group is not significant. The NYHA classification also significantly improved on both the DM and NDM.

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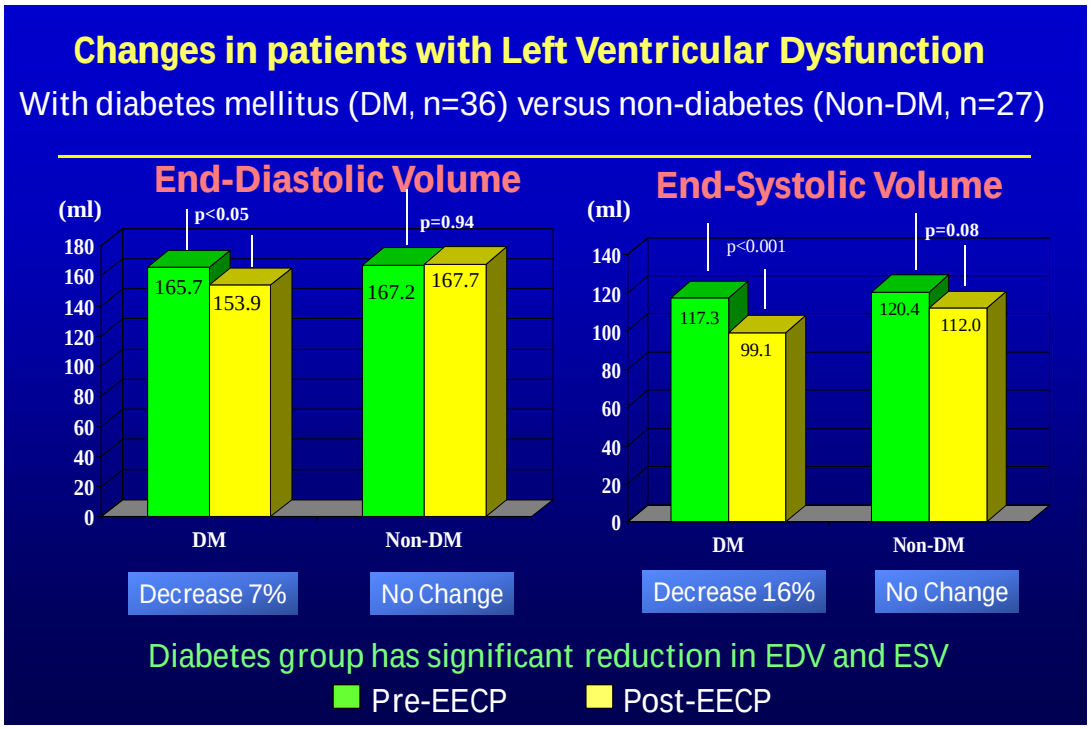

The ejection fraction improved significantly in both the group by 21% in DM and 20% NDM. Cardiac out put increase significantly in both the group 25% in DM and 22% in NDM.

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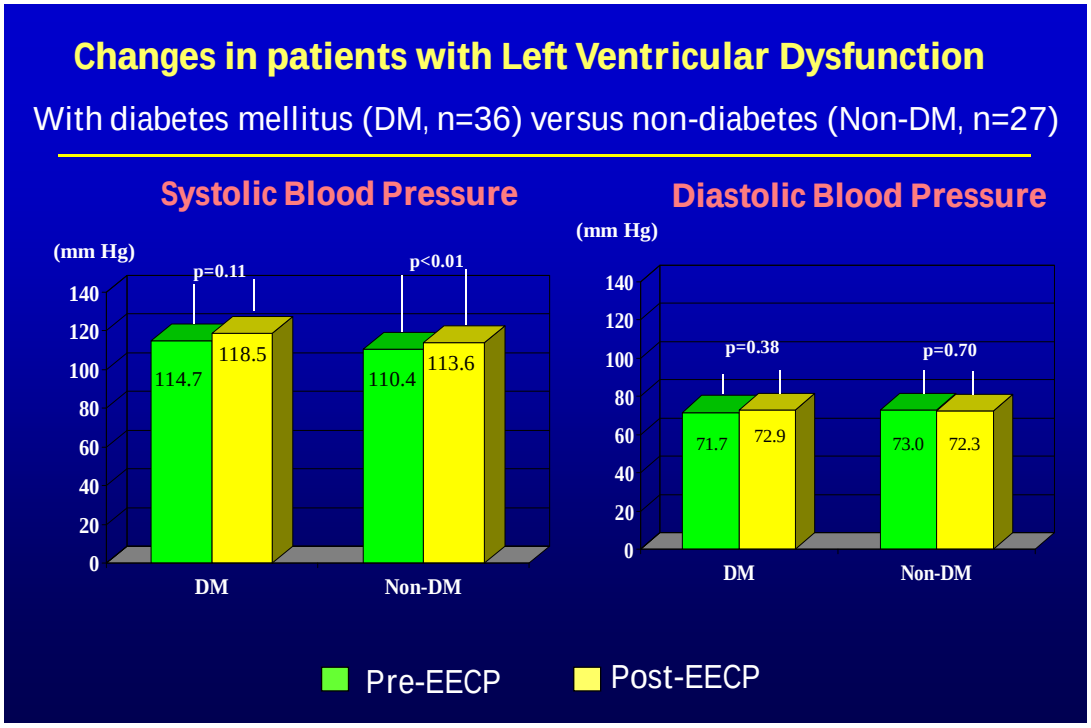

The end diastolic volume significantly decreased in DM by 7% while no change in NDM. The end systolic volume significantly decreased in DM by 16% while no change in NDM.

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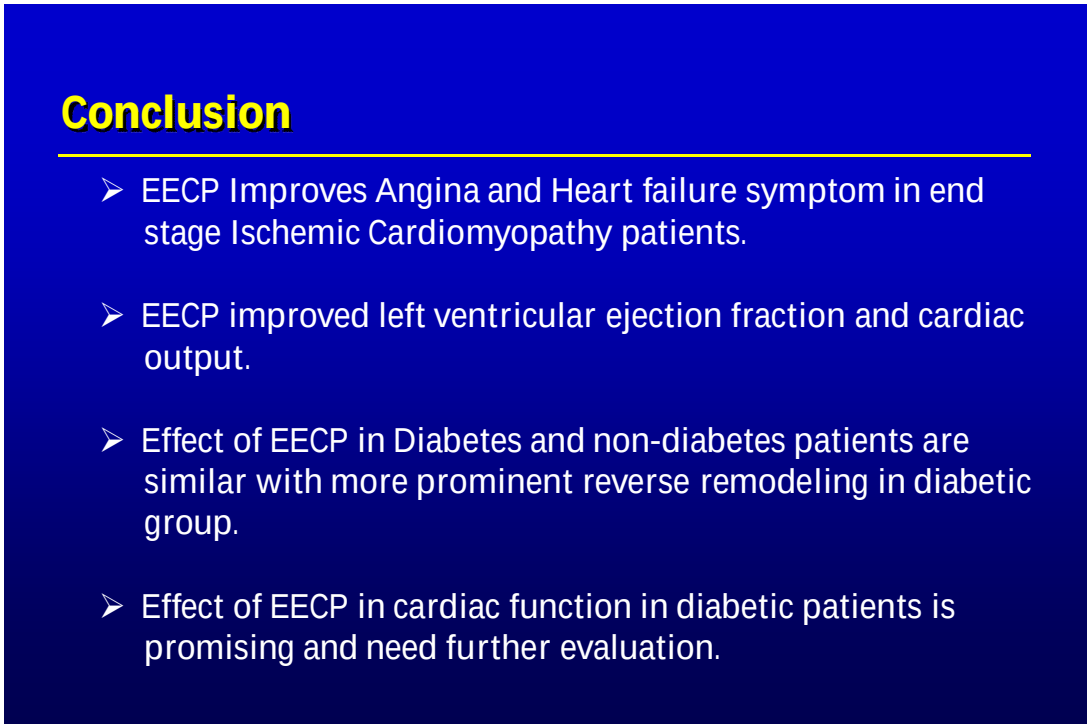

There is no change in systolic and diastolic blood pressure in DM while there is a increase in systolic blood pressure in NDM while no change in diastolic blood pressure.

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Study shows EECP significantly improve functional class along with improvement in exercise tolerance and ejection fraction in both DM and NDM similarly. The ventricular remodelling effect is more pronounced in patient with diabetes that in non diabetic shows EECP effect may be possibly reversing the microvascular ischemic effect in DM. Even though many studies have shown the blood pressure reduction after EECP due to peripheral training effect and improvement in endothelial function our study there is increase in systolic blood pressure in NDM and tired towards in crease in DM group. The possible explanation is our study patient are with severe LV dysfunction with low blood pressure baseline to start with 110-114 mmHg. The increase in myocardial contraction and cardia output might have the effect of increase in systolic blood pressure which is clinically beneficial to the patients. This same effect have also been shown by cambel and his co workers the patient with lower systolic blood pressure < 100mmHg have shown to increase in systolic pressure post EECP while patient with >110 mmHg systolic pressure have shown decrease after EECP.