RESULTS

The results of baseline clinical and laboratory data of group A & B are shown in (Table I).

Age:

In-group A age ranged between 42-62 years, mean 49.8±5.5 years. While in-group B age ranged between 40-61 years, mean 48.8±5.8 years. There was no statistically significant difference between the two groups (P>0.05).

Sex:

In-group A, 34 (68%) patients were males and 16 (32%) were females. Meanwhile, in-group B, 14 (70%) patients were males and 6 (30%) were females. There was no statistical difference between the two groups.

History of systemic hypertension:

In-group A, 20 (40%) patients had a history of hypertension, while in group B, 6 (30%) patients had a history of hypertension. There was no statistical difference between the two groups.

History of diabetes:

In-group A, 12 (24%) patients were diabetics. While in group B, 6 (30%) patients were diabetics. There was no statistical difference between the two groups.

History of smoking:

In group A history of smoking was present in 29 (58%) patients. While in-group B, it was present in 9 (45%)

patients. There was no statistical difference between the two groups.

History of old myocardial infarction:

In group A, 25 (50%) patients had a history of old myocardial infarction, while in group B none of the patiens had a previous myocardial infarction.

Heart rate:

In group A, heart rate was 83.2±18/ min., while in group B it was 79.3±13/ min. There was no statistical difference between the two groups.

Blood pressure:

In-group A systolic blood pressure was 136±14 mmHg and diastolic blood pressure was 83±12 mmHg. While in group B, systolic blood pressure was 134±15 mmHg and diastolic blood pressure 77±12 mmHg. There was no statistical difference between the two groups.

Hemoglobin and creatinine:

In group A hemoglobin was 12.1±1 mg/dl and creatinine was 0.91±0.18 mg/dl, while in group B, hemoglobin was 12.3±1 mg/dl and creatinine was 0.91±0.16 mg/dl. There was no statistical difference between the two groups.

Among the fifty patients in-group A there was 25 (50%) patients without total LAD occlusion (subgroup 1) and 25 (50%) patients with total LAD occlusion (subgroup 2). The baseline clinical and laboratory findings of the two subgroups are shown in **Table (2)**.

Age:

In subgroup (1) age ranged between 42-62 years, mean 49.7±5.5, while in subgroup (2) age ranged between 42-60 years, mean 49.9±5.5. There was no statistical difference between the two subgroups.

Sex:

In subgroup (1) 17 (68%) patients were males and 8 (32%) patients were females. The same results was also found in subgroup (2).

History of hypertension and diabetes:

In subgroup (1), 10 (40%) patients had a history of hypertension and 6 (24%) patients had a history of diabetes. The same results were also found in subgroup (2).

History of smoking:

In subgroup (1), 14 (56%) patient had a history of smoking, while in subgroup (2), 15 (60%) patients were smokers. There was no statistical difference between the two subgroups.

History of old myocardial infarction:

In subgroup (1), 6 (24%) patients, had a previous myocardial infarction, while in subgroup (2), it was present in 19 (76%) patients. There was a highly significant difference between the two subgroups.

Heart rate:

In subgroup (1), heart rate was 77.9±16.1/min, while in subgroup (2), it was 88.6±18.4/min. Heart rate was significantly higher in subgroup (2).

Blood pressure:

In subgroup (1), systolic blood pressure was 135.4±12.16 mmHg and diastolic blood pressure was 85.2±11.32 mmHg, while in subgroup (2), systolic blood pressure was 136.2±15 mmHg and diastolic blood pressure was 81±11.8 mmHg. there was no statistical difference between the two subgroups.

Hemoglobin and creatinine:

In subgroup (1), hemoglobin was 12.2±1 mg/dl and creatinine was 0.89±0.15 mg/dl, while in subgroup (2), hemoglobin was 11.9±1.1 mg/dl and creatinine was 0.92±0.21 mg/dl. there was no statistical difference between the two subgroups.

Results of coronary angiography:

1- severity of the lesions (Fig. 1):

In group A 25 patients had no total occlusion (subgroup 1) and 25 patients had total occlusion (subgroup 2). In subgroup (1) there was:

a. 10 patients with a stenosis level of 50%-<70%.

b. 8 patients with a stenosis level of 70%-<90%.

c. 7 patients with a stenosis level of 90%-<100%.

2- Site of the lesions (Fig. 2):

a. Proximal lesion was present in 25 patients, 12 in subgroup (1) and 13 in subgroup (2).

b. Mid lesion was present in 25 patients, 13 in subgroup (1) and 12 in subgroup (2).

c. None of the patients had a significant distal LAD lesion.

3- Grades of coronary collaterals (Fig. 3):

a. Grade 1 was present in 13 (26%) patients in group A, all were present in subgroup (1) (52%), while in subgroup (2) no patient had grade 1 coronary collaterals.

b. Grade 2 was present in 24 (48%) patients in group A, 9 (36%) in subgroup (1) and 15 (60%) in subgroup (2).

c. Grade 3 was present in 13 (26%) patients in group A, 3 (12%) in subgroup (1) and 10 (40%) in subgroup (2).

4- Corrected TIMI frame count (CTFC) (Fig. 4):

In subgroup (1) 17 (68%)patients had a normal CTFC ($\leq$27) and 8 (32%) patients had abnormal CTFC (>27).

5- length of the lesion (Fig. 5):

In subgroup (1) 15 (60%) patients had discrete lesions (<10mm) and 10 (40%) patients had tubular lesions (10-20mm). None of the patients had a diffuse (>20mm) lesion.

Among the 6 patients in subgroup (1) who had a history of old myocardial infarction, 4 patients had abnormal coronary flow (>27) and 2 patients had normal coronary flow (Fig. 6). In subgroup (2) among the 19 patients who had a history of old myocardial infarction, 15 patients had grade 2 coronary collaterals and 4 patients had grade 3 coronary collaterals. The 6 patients in subgroup (2) who had

no previous myocardial infarction all had grade 3 coronary collaterals (Fig. 7).

Results of ventriculograms and LVEDP (Table 3, Fig. 8)

Ejection fraction (EF):

In group A mean was 55.1±10.94%, while in-group B, it was 69.35±4.85%. There was a highly significant difference between the two groups.

Anterobasal area (AB):

In group A mean was 12.7±6.03%, while in-group B it was 19.85±2.5%. There was a highly significant difference between the two groups.

Anterolateral area (AL):

In group A mean was 7.86±4.1%, while in group B it was 13.79±2.07%. There was a highly significant difference between the two groups.

Apical area:

In group A mean was 2.86±2.07%, while in group B it was 5.16±0.83%. There was a highly significant difference between the two groups.

Diaphragmatic area (Diaph.):

In group A mean was 14.12±1.83%, while in group B it was 13.99±2.2%. There was no statistical difference between the two groups.

Posterobasal area (PB):

In-group A mean was 17.52±1.9%, while in group B it

was 16.56±2.46%. There was no statistical difference between the two groups.

Left ventricular end-diastolic pressure (LVEDP):

In-group A mean was 12.7±4.66 mgHg, while in group B it was 8.25±1.59 mmHg. There was a highly significant difference between the two groups.

Effect of history of myocardial infarction on ventricular function (Table 4, Fig. 9):

Ejection fraction:

In patients with old MI mean was 47.88±9.28%, while in patients without old MI it was 62.32±7.06%. A highly significant difference was present.

Anterobasal area:

In patients with old MI mean was 8.82±4.99%, while in patients without old MI it was 16.65±4.16%. A highly significant difference was present.

Anterolateral area:

In patients with old MI mean was 5.45±3.54%, while in patients without old MI it was 10.28±3.11%. A highly significant difference was present.

Apical area:

In patients with old MI mean was 1.76±2.08%, while in patients without old MI it was 3.96±1.36%. A highly significant difference was present.

LVEDP:

In patients with old MI mean was 15.48±4.65 mmHg,

while in patients without old MI it was 9.92±2.56 mmHg. A highly significant difference was present.

Effects of coronary angiographic findings on ventricular function:

1. Effect of site of lesion on ventricular function:

In group A (Table 5, Fig. 10):

Ejection fraction:

In proximal lesions mean was 51.64±12.11%, while in mid lesion it was 58.56±8.54%. A significant difference was present.

Anterobasal area:

In proximal lesions mean was 10.68±6.87%, while in mid lesions it was 14.78±4.28%. A significant difference was present.

Anterolateral area:

In proximal lesions mean was 7.42±4.22%, while in mid lesions it was 8.31±4.01%. No statistical difference was present.

Apical area:

In proximal lesions it was 2.73±2.11%, while in mid lesions it was 2.99±2.05%. No statistical difference was present.

LVEDP:

In proximal lesions it was 13.72±5.04 mmHg, while in mid lesions it was 11.68±4.08 mmHg. Although higher in proximal lesions, no statistical was present.

In subgroup (1) (Table 6, Fig. 11):

In subgroup (1) there was no statistical significant difference as regard systolic function and LVEDP between patients with proximal stenosis and patients with mid stenosis.

In subgroup (2) (Table 7, Fig. 12):

In subgroup (2) ejection fraction and anterobasal function were highly significantly higher in patients with mid lesions compared to patients with proximal lesions.

2. Effect of % diameter stenosis on ventricular function:

Effect of total occlusion (Table 8, Fig. 13):

Ejection fraction:

In subgroup (1) mean was 61.68±8.74, while in subgroup (2) it was 48.52±8.83. There was a highly significant difference between the two subgroups.

Anterobasal area:

In subgroup (1) mean was 16.48±4.57, while in subgroup (2) it was 8.98±4.9. There was a highly significant difference between the two subgroups.

Anterolateral area:

In subgroup (1) mean was 10.01±3.54, while in subgroup (2) it was 5.72±3.49. There was a highly significant difference between the two subgroups.

Apical area:

In subgroup (1) mean was 3.44±2.1, while in subgroup (2) it was 2.28±1.89. There was a significant difference

between the two subgroups.

LVEDP:

In subgroup (1) mean was 10.76±3.7, while in subgroup (2) it was 14.64±4.77. there was a highly significant difference between the two subgroups.

Correlation between percent diameter stenosis and ventricular function in group A (Table 9, Fig. 14-18):

There was a highly significant negative correlation between percent diameter stenosis and ejection fraction in group A (r=-0.582/ P=<0.01). There was also a highly significant negative correlation between percent diameter stenosis and anterobasal area (r=-0.607, P<0.01), between percent diameter stenosis and anterolateral area (r=-0.559, P<0.01) and between percent diameter stensosis and apical area (r=-0.389, P<0.01). A highly significant correlation was present between percent diameter stenosis and LVEDP (r=0.477, P<0.01).

Correlation between percent diameter stenosis and ventricular function in subgroup (1) (Table 10, Fig. 19-23):

There was no significant correlation between percent diameter stenosis and ejection fraction in subgroup (1) (r=-0.342, P=>0.05). Also, there was no significant correlation between % diameter stenosis and anterobasal area (r=-0.387, P=>0.05) or apical area (r=-0.370, P=>0.05). A significant negative correlation was found between % diameter stenosis and anterolateral area (r=-0.406, P=<0.05. Also, a significant correlation was found between % diameter stenosis and LVEDP (r=0.44, P=<0.05).

3. Effect of coronary flow velocity on ventricular function (Table 11, Fig. 24):

Ejection fraction:

In patients with normal flow (CTFC ≤27) mean was 66.71±3.33%, while in patients with abnormal flow (CTFC >27) it was 51±6.68%. A highly significant difference was present.

Anterobasal area:

In patients with normal flow mean was 18.94±2.37%, while in patients with abnormal flow it was 11.26±3.62%. A highly significant difference was present.

Anterolateral area:

In patients with normal flow mean was 12.16±1.68%, while in patients with abnormal flow it was 5.44±1.18%. A highly significant difference was present.

Apical area:

In patients with normal flow mean was 4.62±0.41%, while in patients with abnormal flow it was 0.96±1.81%. A highly significant difference was present.

LVEDP:

In patients with normal flow mean was 8.59±1.62 mmHg, while in patients with abnormal flow it was 15.68±2.26 mmHg. A highly significant difference was present.

Correlation between CTFC and ventricular function in subgroup (1) (Table 12, Fig. 25-29):

There was a highly significant negative correlation

between CTFC and EF in subgroup (1) (r= -0.864, P<0.01.

There was also a highly significant negative correlation between CTFC and anterobasal area (r=-0.781 /P=<0.01), between CTFC and anterolateral area (r==-0.889/P=<0.01) and between CTFC and apical area (r=-0.815/P=<0.01). A highly significant correlation was present between CTFC and LVEDP (r=0.819/P=<0.01).

4. Effect of coronary collaterals on ventricular function:

In group A (Table 13, Fig. 30):

Ejection fraction:

In patients with well developed (grade3) collaterals mean was 52.62±5.53%, while in patients with absent or poor (grade 1,2) collaterals it was 55.97±12.24%. No statistical difference was present.

Anterobasal area:

In patients with well developed collaterals mean was 7.65±1.61%, while in patients with absent or poor collaterals it was 7.94±4.69%. No statistical difference was present.

Apical area:

In patients with well developed collaterals mean was 3.06±1.81%, while in patients with absent or poor collaterals it was 2.79±2.17%. No statistical difference was present.

LVEDP:

In patients with well- developed collaterals mean was 11.69±2.53 mmHg, while in patients with absent or poor

collaterals it was 13.05±5.19 mmHg. No statistical difference was present.

In subgroup (1) (Table 14, Fig. 31):

Ejection fraction:

In patients with well- developed collaterals mean was 47±3.08%, while in patients with absent or poor collaterals it was 63.68±6.98%. A highly significant difference was present.

Anterobasal area:

In patients with well- developed collaterals mean was 8.67±2.71%, while in patients with absent or poor collaterals it was 17.55±3.65%. A highly significant difference was present.

Anterolateral area:

In patients with well- developed collaterals mean was 5.1±0.8%, while in patients with absent or poor collaterals it was 10.68±3.22%. A highly significant difference was present.

Apical area:

In patients with well developed collaterals mean was 0.7±2.49%, while in patients with absent or poor collaterals it was 3.82±1.8%. A highly significant difference was present.

LVEDP:

In patients with well- developed collaterals mean was 15.33±1.53 mmHg, while in patients with absent or poor collaterals it was 10.14±3.47 mmHg. A highly significant

difference was present.

In subgroup (2) (Table 15, Fig. 32:

Ejection fraction:

In patients with well- developed collaterals mean was 54.3±4.35%, while in patients with poor collaterals it was 44.67±9.04%. A highly significant difference was present.

Anterobasal area:

In patients with well- developed collaterals mean was 11.95±2.67%, while in patients with poor collaterals it was 7±5.1%. A highly significant difference was present.

Anterolateral area:

In patients with well- developed collaterals mean was 8.41±0.71%, while in patients with poor collaterals it was 3.92±3.44%. A highly significant difference was present.

Apical area:

In patients with well- developed collaterals mean was 3.77±0.76%, while in patients with poor collaterals it was 1.28±1.76%. A highly significant difference was present.

LVEDP:

In patients with well-developed collaterals mean was 10.6±1.51 mmHg, while in patients with poor collaterals it was 17.33±4.25 mmHg. A highly significant difference was present.

5. Effect of lesion length on ventricular function (Table 16):

In subgroup (1) there was no significant statistical

difference as regard systolic function and LVEDP between patients with discrete (<10mm) lesions and patients with tubular (10-20mm) lesions.

Table (1)

Baseline clinical characteristics of the patients under study

Item	Gr. A (n=50)	Gr. B (n=20)	P value	Significance
Age:				
Mean	49.82	48.8		
SD	5.5	5.8	>0.05	Not significant
Sex:				
Male: No. (%)	34 (68%)	14 (70%)		
Female: No. (%)	16 (32%)	6 (30%)	>0.05	Not significant
Associated disorders:				
Hypertension				
No: No. (%)	20 (40%)	6 (30%)		
Yes: No. (%)	30 (60%)	14 (70%)	>0.05	Not significant
Diabetes mellitus:				
Absent: No. (%)	38 (76%)	14 (70%)		
Present: No. (%)	12 (24%)	6 (30%)	>0.05	Not significant
Smoking:				
No: No. (%)	21 (42%)	11 (55%)		
Yes: No. (%)	29 (58%)	9 (45%)	>0.05	Not significant
Old myocardial infarction:				
Absent: No. (%)	25 (50%)			
Present: No. (%)	25 (50%)		Not Applicable	
Heart Rate:				
Mean	83.24	79.30		
SD	17.95	13.03	>0.05	Not significant
Systolic blood pressure:				
Mean	135.8	134.3		
SD	13.6	14.98	>0.05	Not significant
Diastolic blood pressure:				
Mean	83.1	77.25		
SD	11.68	12.29	>0.05	Not significant
Hemoglobin (mg/ dl):				
Mean	12.06	12.30		
SD	1.05	1.03	>0.05	Not significant
Creatinine (mg/ dl):				
Mean	0.91	0.91		
SD	0.18	0.16	>0.05	Not significant

Gr. A= Patients with significant LAD disease
Gr. B = Normal control group

Table (2)

Comparison between the two subgroups as regard the baseline clinical characteristics

Item	Subgroup 1 (n=25)	Subgroup 2 (n=25)	P value	Significance
Age:				
Mean	49.72	49.92		
SD	5.52	5.53	>0.05	Not significant
Sex:				
Male: No. (%)	17 (68%)	17 (68%)		
Female: No. (%)	8 (32%)	8 (32%)	Not applicable	
Associated disorders:				
Hypertension				
Yes: No. (%)	10 (40%)	10 (40%)		
No: No. (%)	15 (60%)	15 (60%)	Not applicable	
Diabetes mellitus:				
Absent: No. (%)	19 (76%)	19 (76%)		
Present: No. (%)	6 (24%)	6 (24%)	Not applicable	
Smoking:				
No: No. (%)	11 (44%)	10 (40%)		
Yes: No. (%)	14 (56%)	15 (60%)	>0.05	Not significant
Old myocardial infarction:				
Absent: No. (%)	19 (76%)	6 (24%)		
Present: No. (%)	6 (24%)	19 (76%)	<0.01	Highly significant
Heart Rate:				
Mean	77.92	68.56		
SD	16.13	18.38	<0.05	Significant
Systolic blood pressure:				
Mean	135.4	136.2		
SD	12.16	15.02	>0.05	Not significant
Diastolic blood pressure:				
Mean	85.2	81		
SD	11.32	11.81	>0.05	Not significant
Hemoglobin (mg/ dl):				
Mean	12.2	11.92		
SD	1.04	1.12	>0.05	Not significant
Creatinine (mg/ dl):				
Mean	0.89	0.92		
SD	0.15	0.21	>0.05	Not significant

Subgroup 1 = Patients without total occlusion
Subgroup 2 = Patients with total occlusion

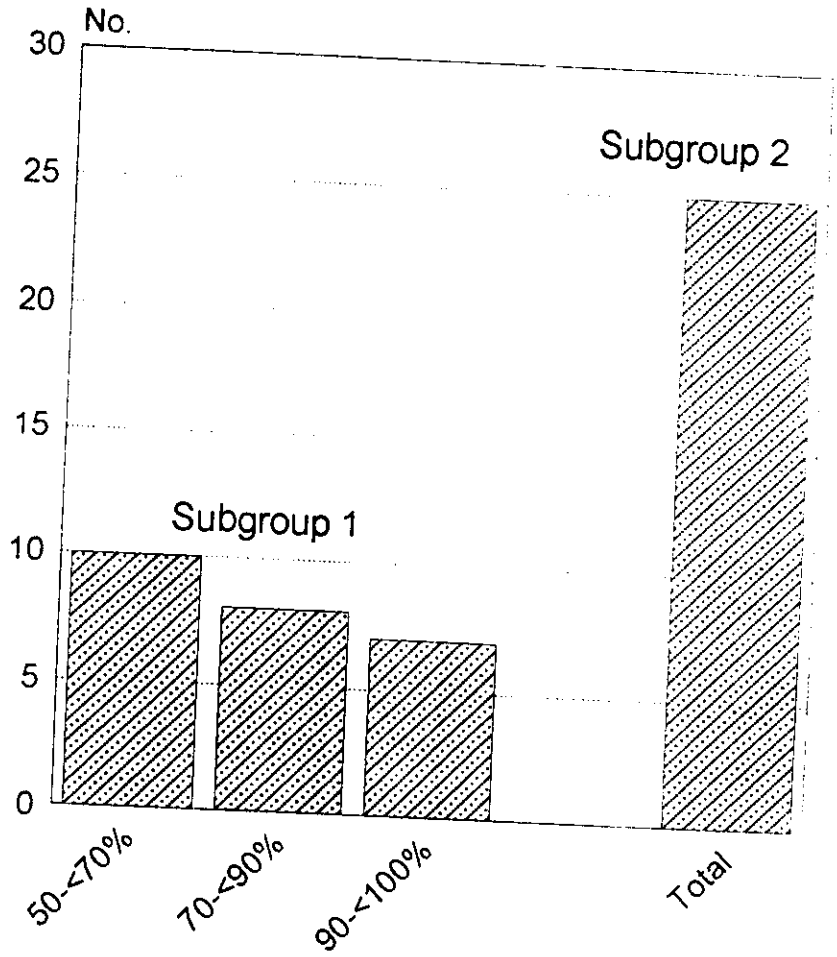

Fig. (1): Distribution of the severity of lesions in group A

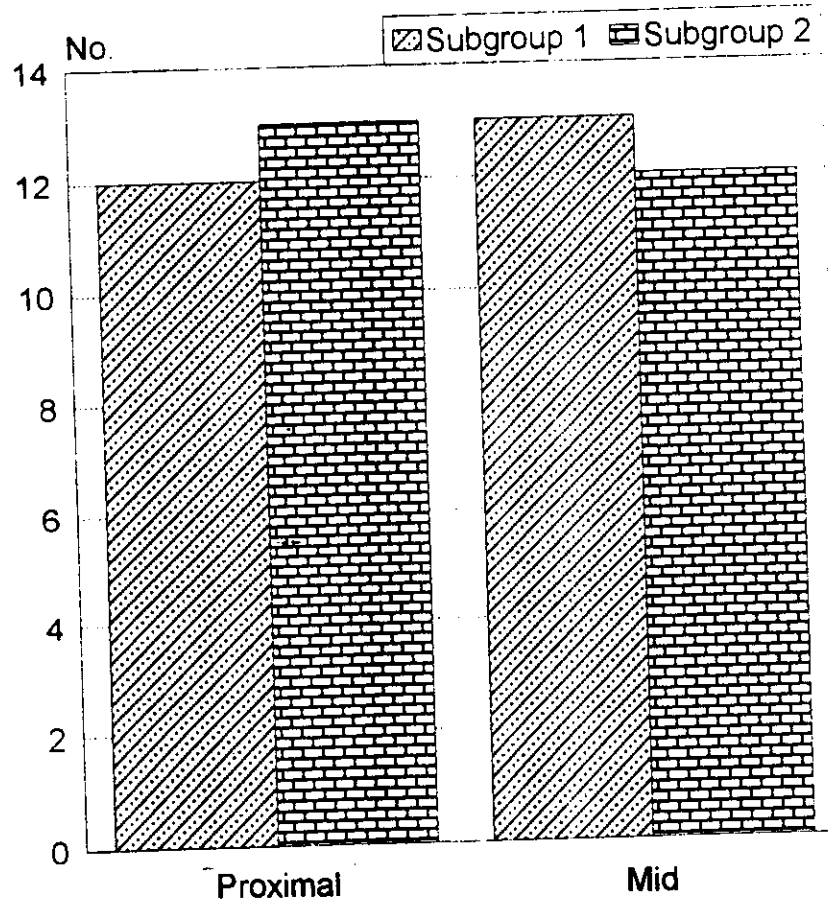

Fig. (2): Distribution of site of lesions in group A

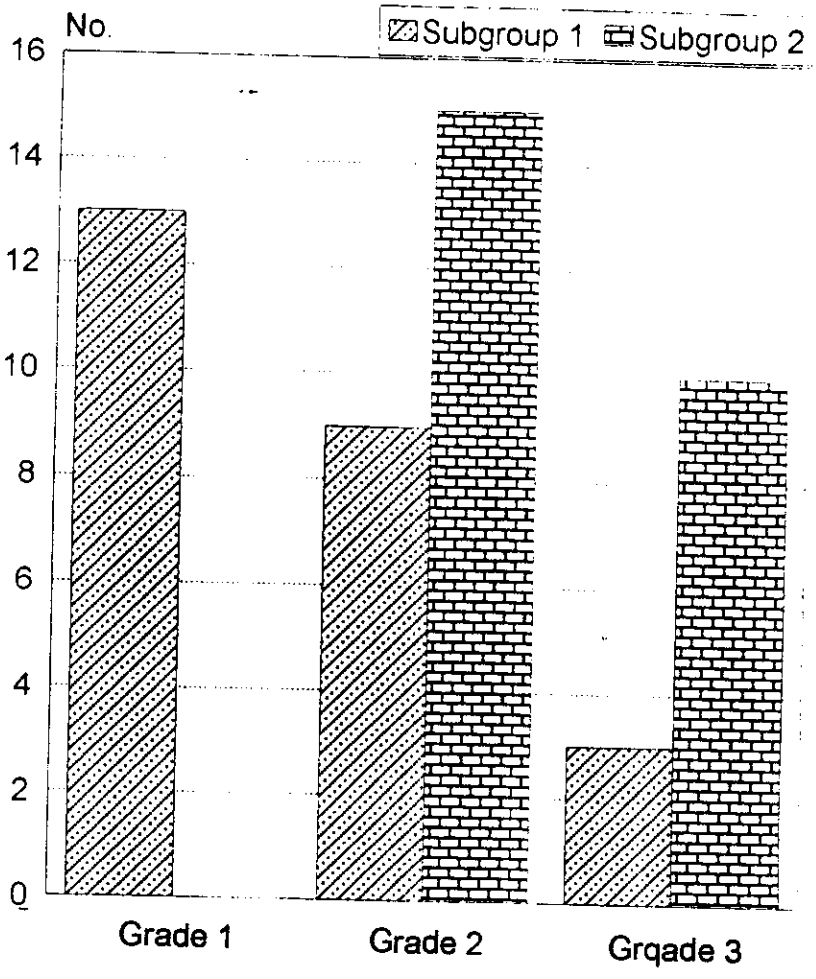

Fig. (3): Distribution of coronary collaterals in group A

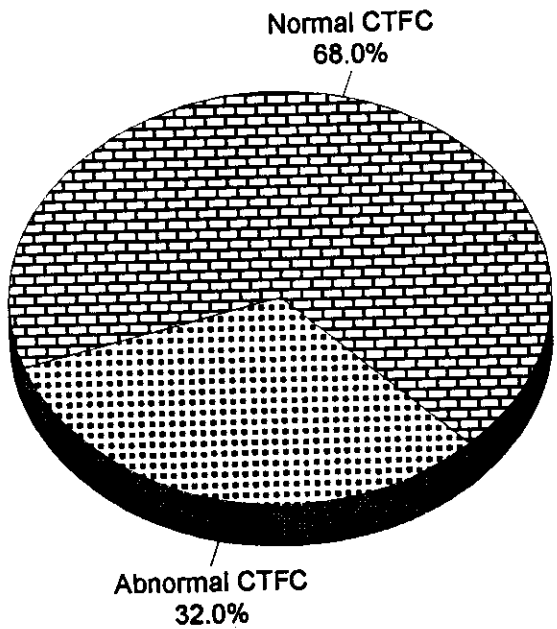

Fig. (4): Distribution of CTFC in subgroup (1)

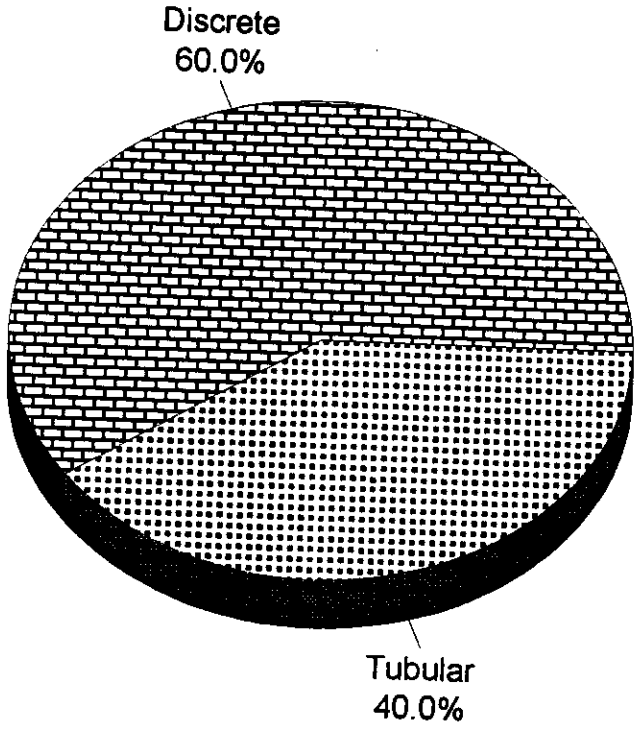

Fig. (5): Distribution of lesion length in subgroup (1)

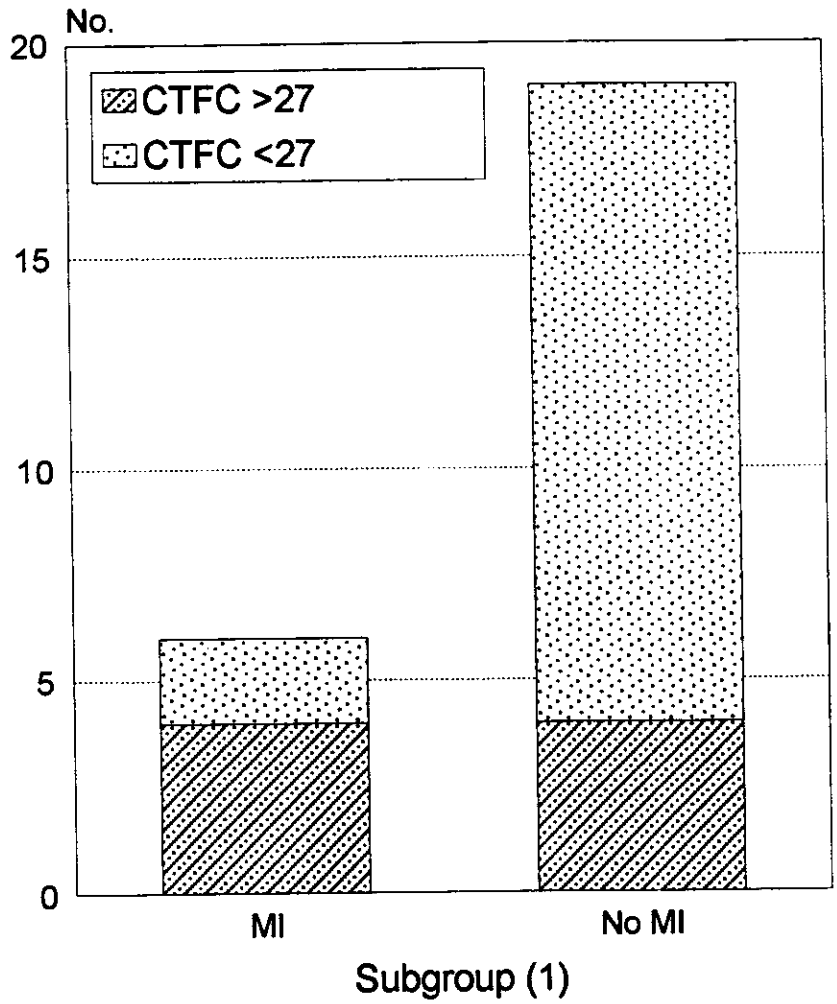

Fig. (6): Distribution of CTFC in subgroup (1) regarding history of myocardial infarction (MI)

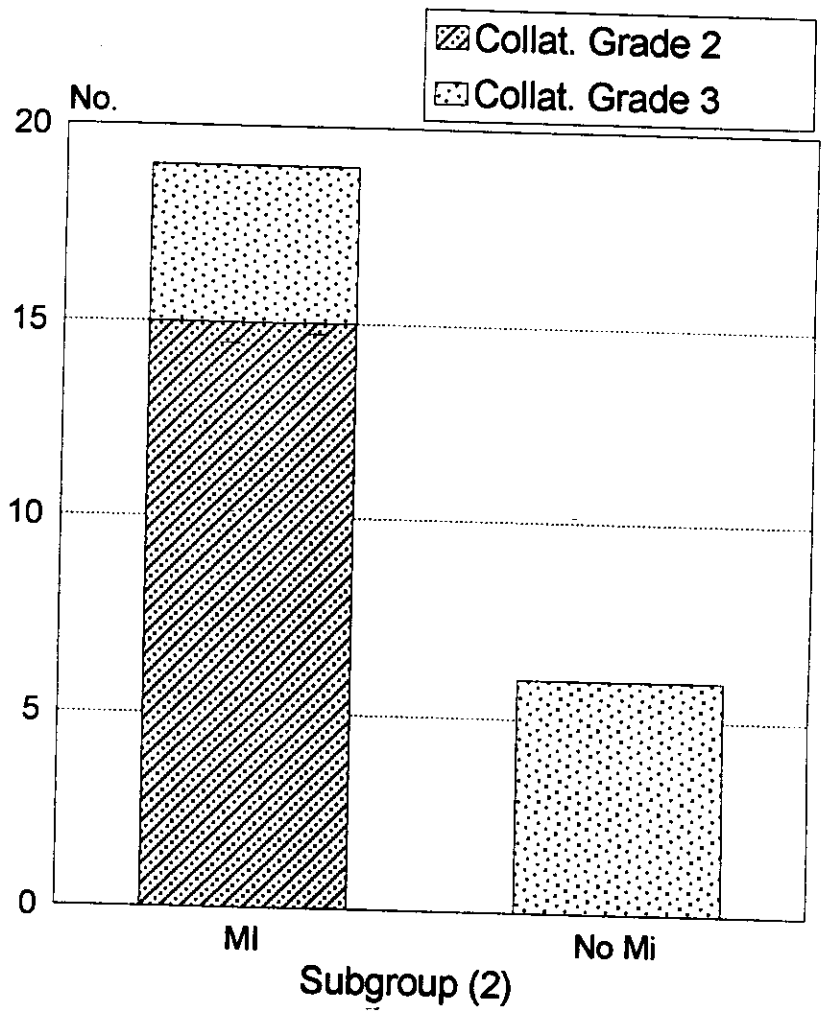

Fig. (7): Distribution of collaterals in subgroup (2) regarding history of myocardial infarction (MI)

Table (3)

Systolic function and LVEDP among the 2 groups under study

Item	Gr. A (n=50)	Gr. B (n=20)	"t" value	P value	Significance
	Mean ± SD	Mean ± SD			
Ejection fraction	55.10 ± 10.94	69.35 ± 4.85	5.589	<0.01	Highly significant
Anterobasal area	12.70 ± 6.03	19.85 ± 2.50	5.089	<0.01	Highly significant
Anterolateral area	7.86 ± 4.10	13.79 ± 2.07	6.146	<0.01	Highly significant
Apical area	2.86 ± 2.07	5.16 ± 0.83	4.805	<0.01	Highly significant
Diaphragmatic area	14.12 ± 1.83	13.99 ± 2.22	0.270	>0.05	Not significant
Posterobasal area	17.52 ± 1.90	16.56 ± 2.46	1.748	>0.05	Not significant
LVEDP	12.70 ± 4.66	8.25 ± 1.59	4.163	<0.01	Highly significant

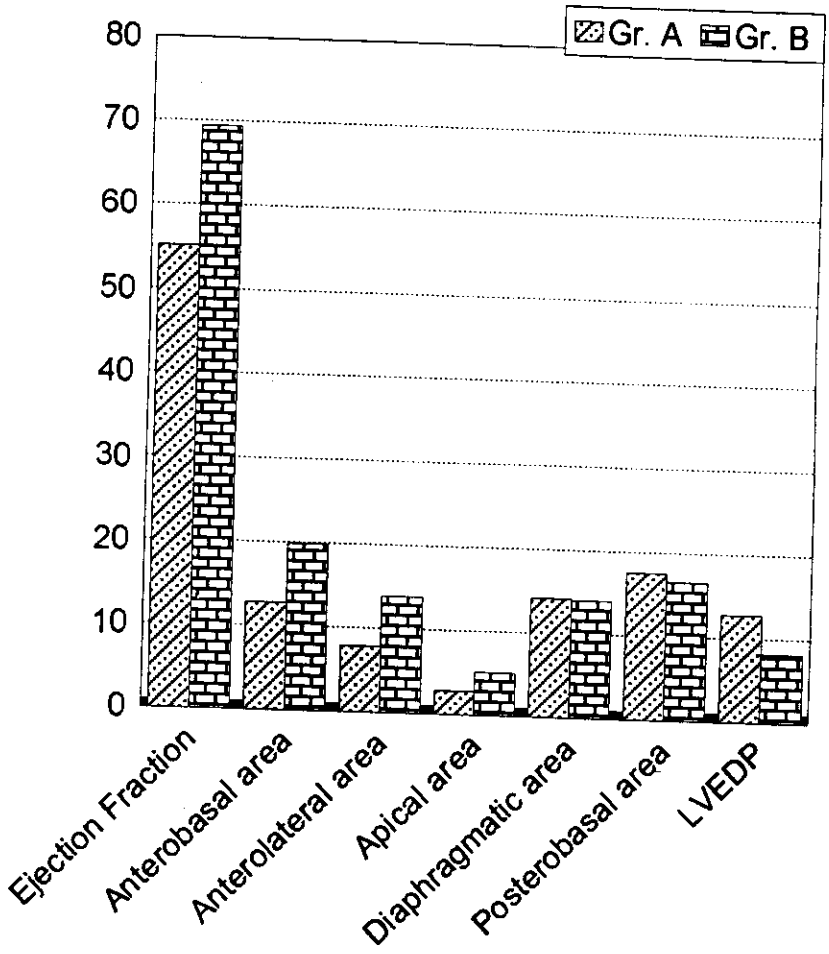

Fig. (8): Comparison between the two groups regarding systolic function and LVEDP

Table (4)

Effect of history of old myocardial infarction on systolic function and LVEDP in group A

Item	History of old MI (n=25) Mean ± SD	No history of MI (n=25) Mean ± SD	"t" value	P value	Significance
Ejection fraction	47.88 ± 9.28	62.32 ± 7.06	6.193	<0.01	Highly significant
Anterobasal area	8.81 ± 4.99	16.65 ± 4.16	6.033	<0.01	Highly significant
Anterolateral area	5.45 ± 3.54	10.28 ± 3.11	5.133	<0.01	Highly significant
Apical area	1.76 ± 2.08	3.96 ± 1.36	4.433	<0.01	Highly significant
LVEDP	15.48 ± 4.65	9.92 ± 2.56	5.238	<0.01	Highly significant

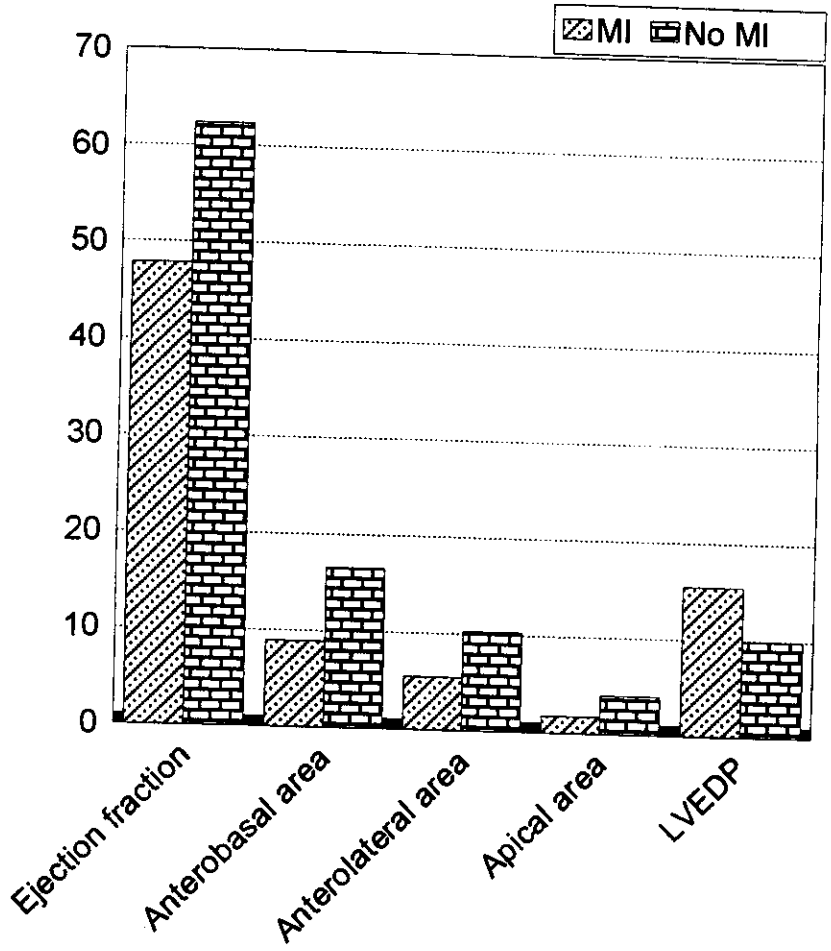

Fig. (9): Effect of history of old myocardial infarction on systolic function and LVEDP in Gr. A

Table (5)

Effect of site of lesion on systolic function and LVEDP in Group A

Item	Proximal (n=25)	Mid (n=25)	"t" value	P value	Significance
	Mean ± SD	Mean ± SD			
Ejection fraction	51.64 ± 12.11	58.56 ± 8.54	2.335	<0.05	Significant
Anterobasal area	10.68 ± 6.87	14.78 ± 4.28	2.531	<0.05	Significant
Anterolateral area	7.42 ± 4.22	8.31 ± 4.01	0.763	>0.05	Not significant
Apical area	2.73 ± 2.11	2.99 ± 2.05	0.441	>0.05	Not significant
LVEDP	13.72 ± 5.04	11.68 ± 4.08	1.572	>0.05	Not significant

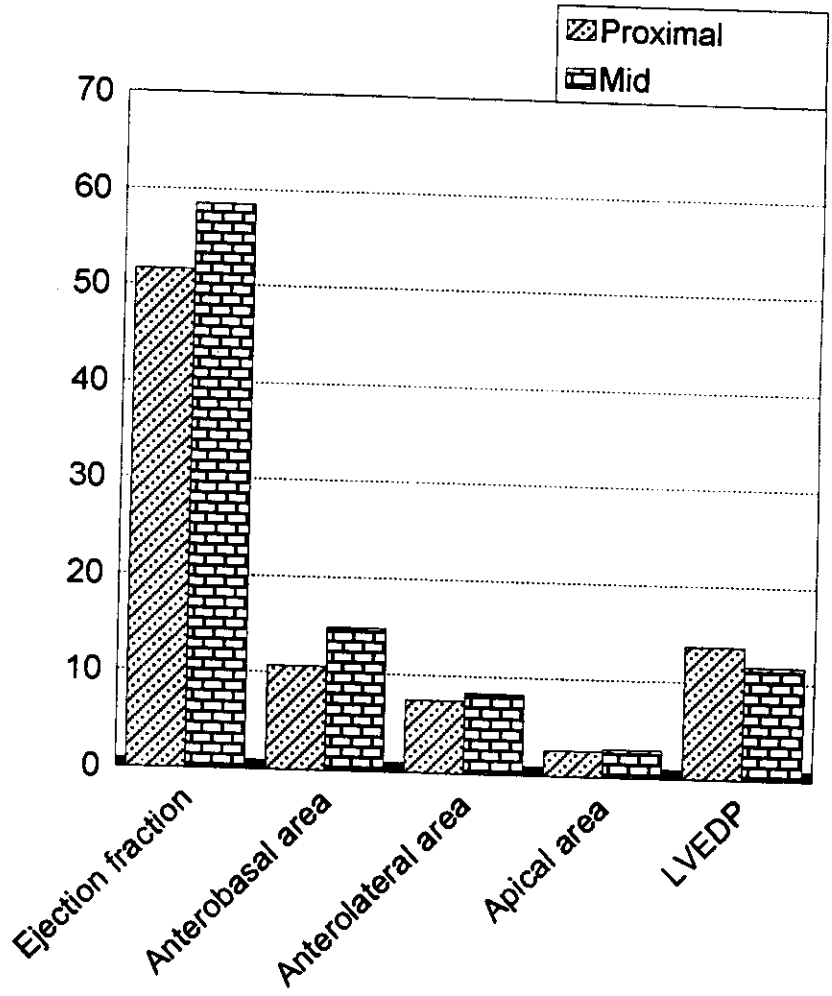

Fig. (10): Effect of site of lesion on systolic function and LVEDP in Gr. A

Table (6)

Effect of site of lesion on systolic function and LVEDP in subgroup 1

Item	Proximal (n=12)	Mid (n=13)	"t" value	P value	Significance
	Mean ± SD	Mean ± SD			
Ejection fraction	60.33 ± 8.86	62.92 ± 8.79	0.733	>0.05	Not significant
Anterobasal area	15.86 ± 4.95	17.06 ± 4.32	0.649	>0.05	Not significant
Anterolateral area	9.63 ± 3.49	10.37 ± 3.69	0.517	>0.05	Not significant
Apical area	3.52 ± 2.02	3.38 ± 2.26	0.154	>0.05	Not significant
LVEDP	11.17 ± 4.28	10.38 ± 3.20	0.520	>0.05	Not significant

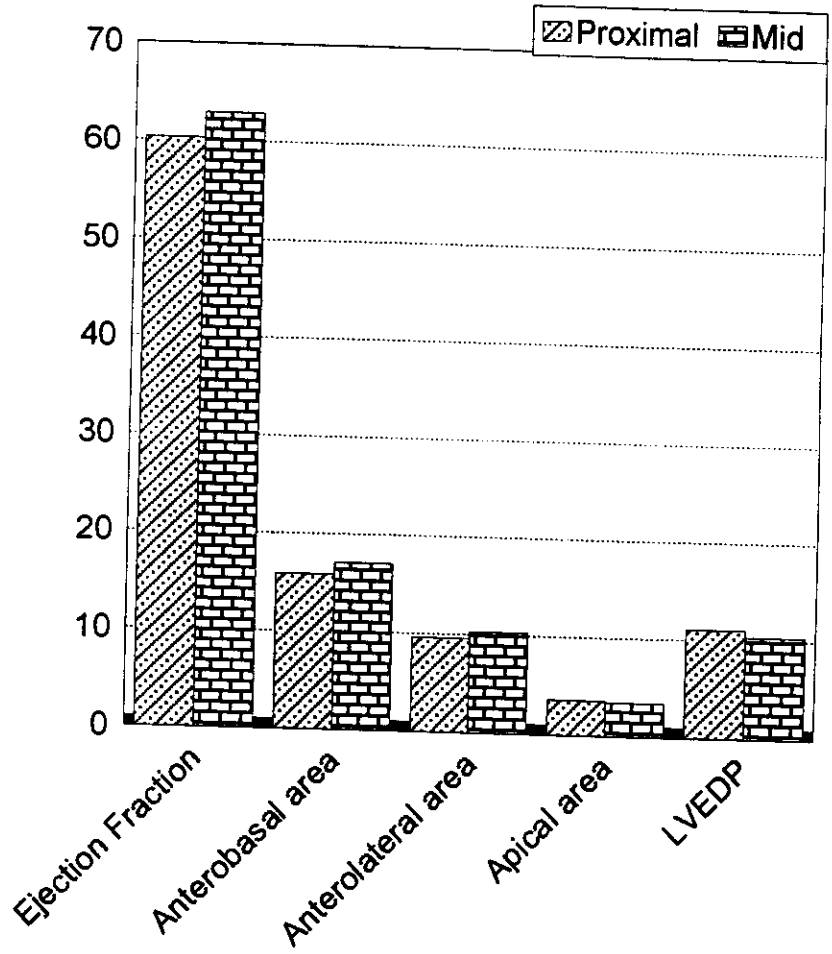

Fig. (11): Effect of site of lesion on systolic function and LVEDP in subgroup (1)

Table (7)

Effect of site of lesion on systolic function and LVEDP in subgroup 2

Item	Proximal (n=13)	Mid (n=12)	"t" value	P value	Significance
	Mean ± SD	Mean ± SD			
Ejection fraction	46.62 ± 8.72	53.83 ± 5.29	3.504	<0.01	Highly significant
Anterobasal area	5.91 ± 4.52	12.31 ± 2.61	4.286	<0.01	Highly significant
Anterolateral area	5.38 ± 3.89	6.08 ± 3.11	0.487	>0.05	Not significant
Apical area	2.01 ± 2.00	2.57 ± 1.79	0.732	>0.05	Not significant
LVEDP	16.08 ± 4.65	13.08 ± 4.58	1.620	>0.05	Not significant

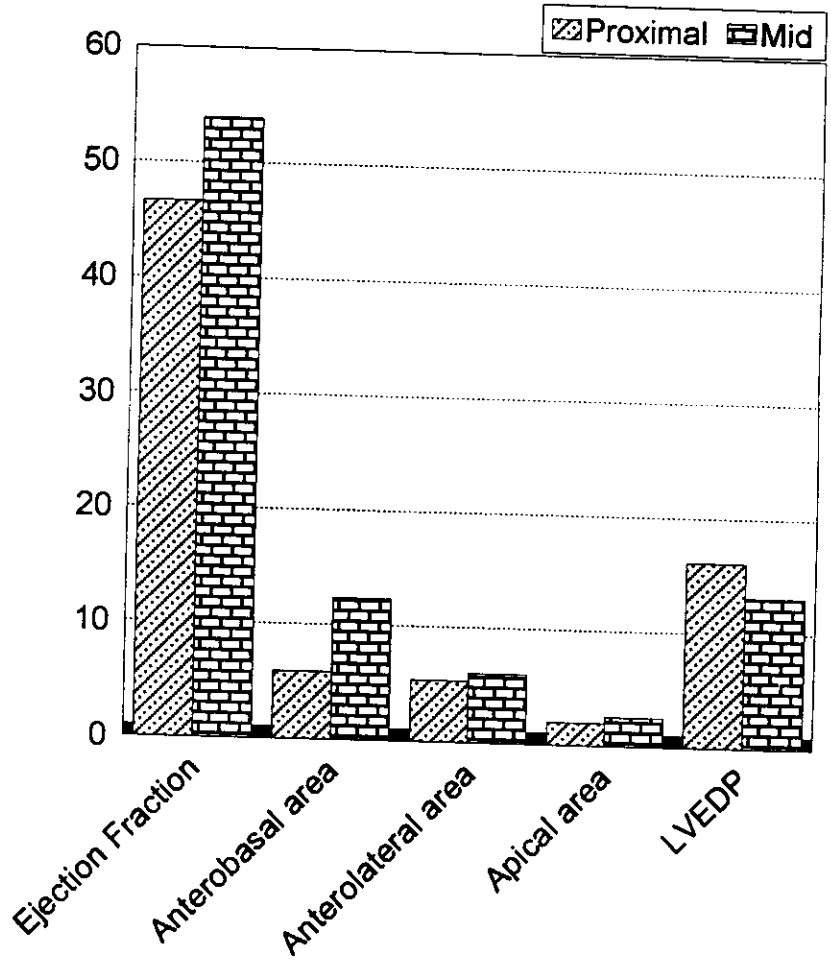

Fig. (12): Effect of site of lesion on systolic function and LVEDP in subgroup (2)

Table (8)

Systolic function and LVEDP among the 2 subgroups under study

Item	subGr. 1 (n=25)	subGr. 2 (n=25)	"t" value	P value	Significance
	Mean ± SD	Mean ± SD			
Ejection fraction	61.68 ± 8.74	48.52 ± 8.83	5.297	<0.01	Highly significant
Anterobasal area	16.48 ± 4.57	8.98 ± 4.90	5.599	<0.01	Highly significant
Anterolateral area	10.01 ± 3.54	5.72 ± 3.49	4.322	<0.01	Highly significant
Apical area	3.44 ± 2.10	2.28 ± 1.89	2.072	<0.05	Significant
LVEDP	10.76 ± 3.7	14.64 ± 4.77	3.214	<0.01	Highly significant

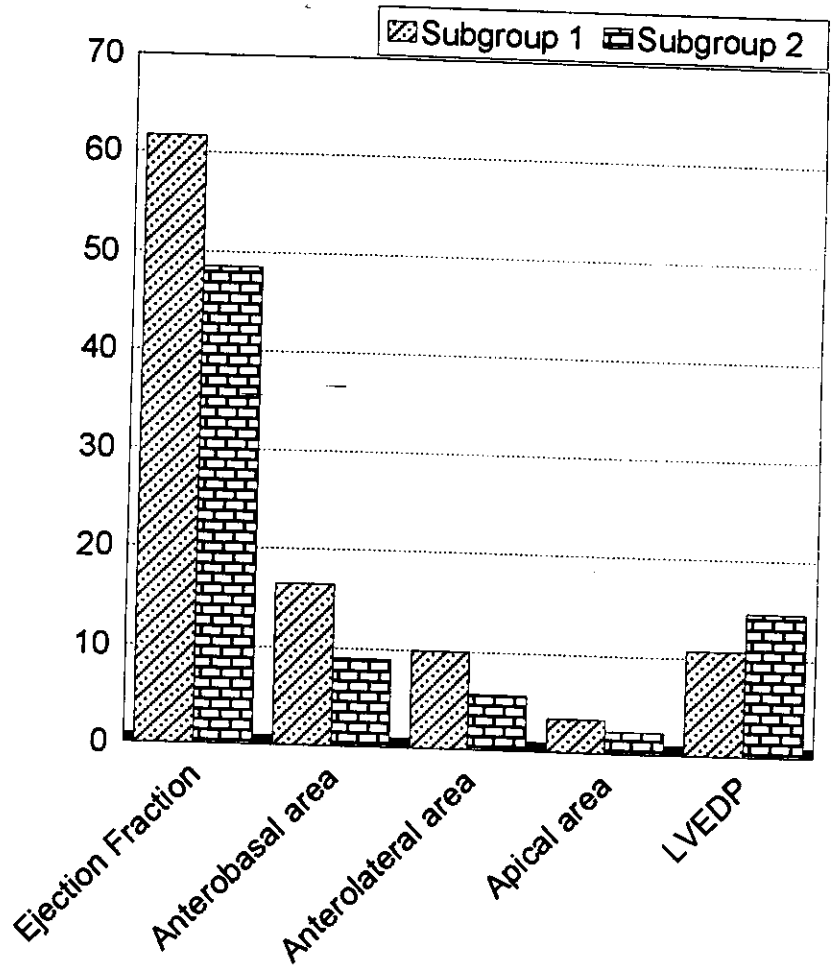

Fig. (13): Comparison between the two subgroups regarding systolic function and LVEDP

Table (9)

Correlation between % diameter stenosis and Ventricular function in Group A

Parameter	% diameter stenosis		
	Correlation Coefficient "r"	P value	Significance
EF	-0.582	<0.01	Highly significant
Anterobasal	-0.607	<0.01	Highly significant
Anterolateral	-0.559	<0.01	Highly significant
Apical	-0.389	<0.01	Highly significant
LVEDP	0.477	<0.01	Highly significant

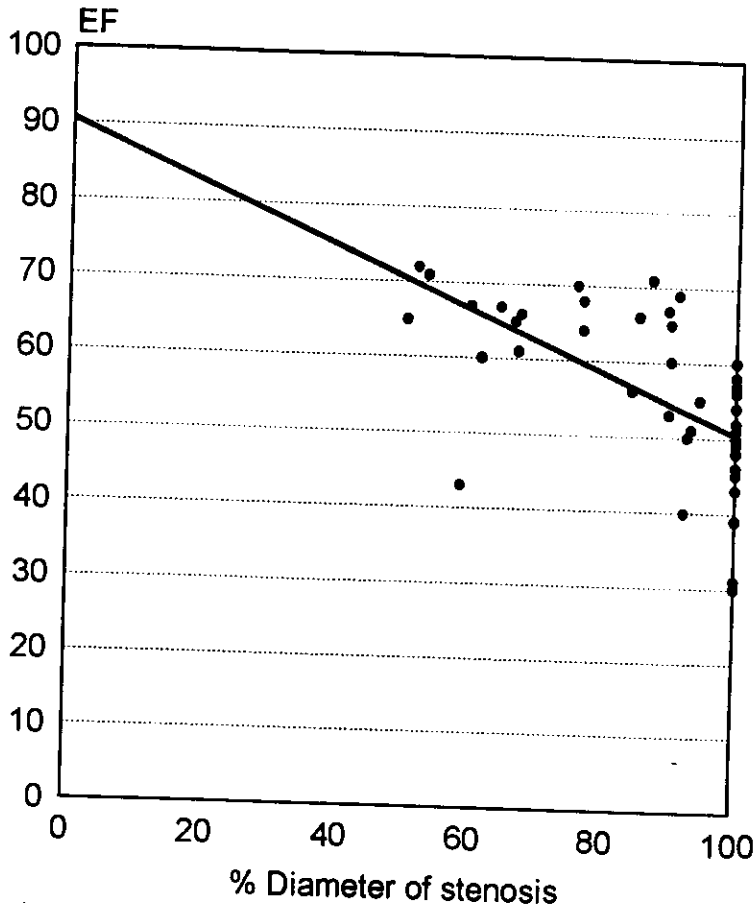

Fig. (14): Correlation between % diameter stenosis and ejection fraction in group A (n=50)

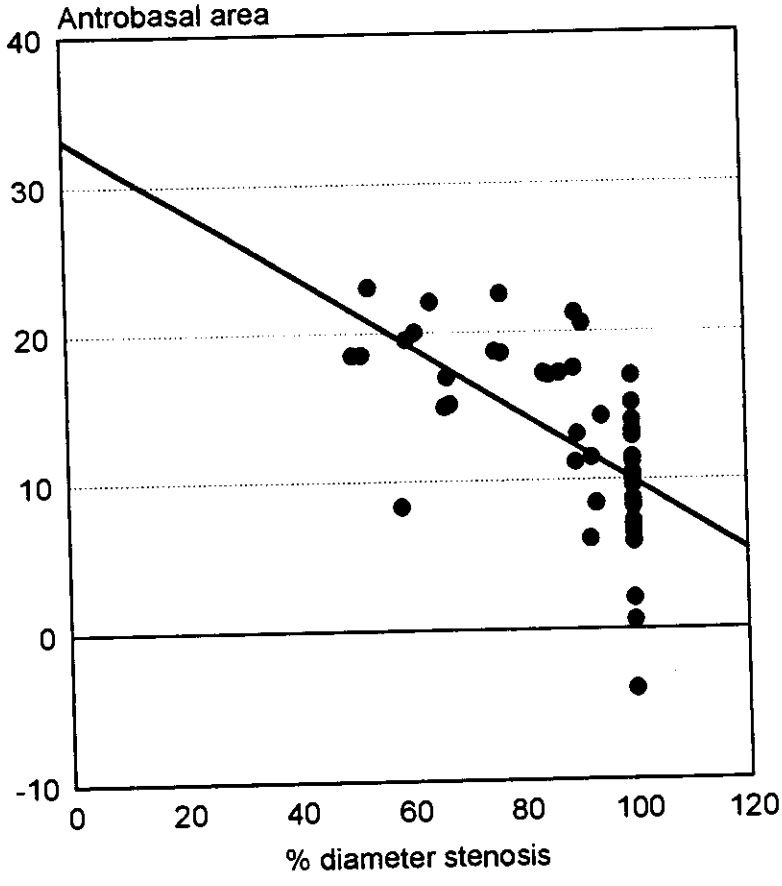

Fig. (15): Correlation between % diameter stenosis and anterobasal area in group A

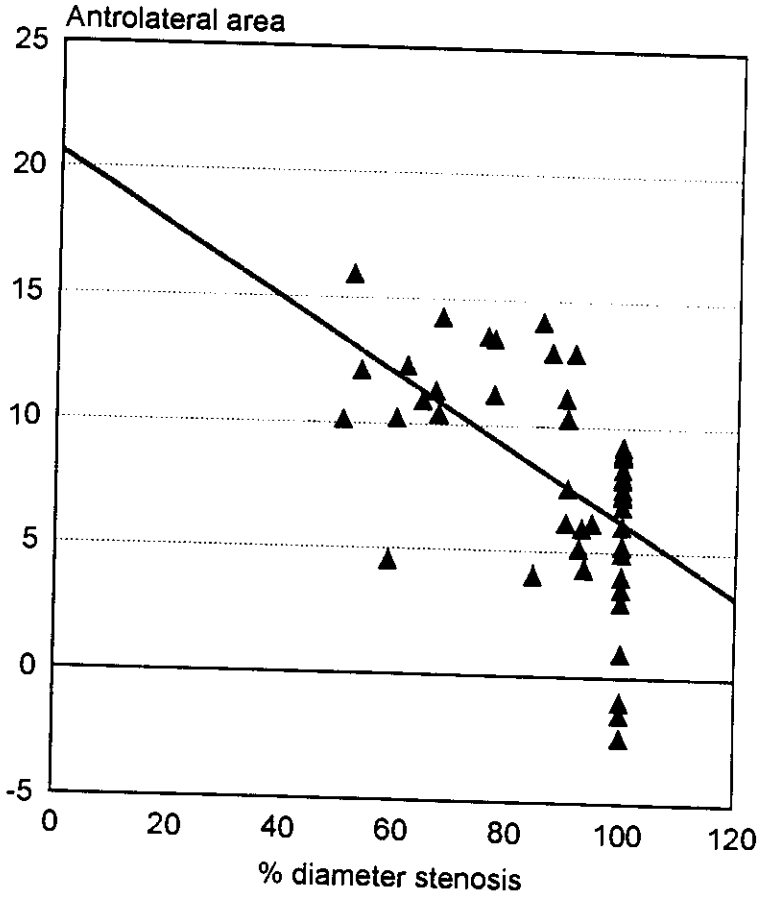

Fig. (16): Correlation between % diameter stenosis and anterolateral area in group A

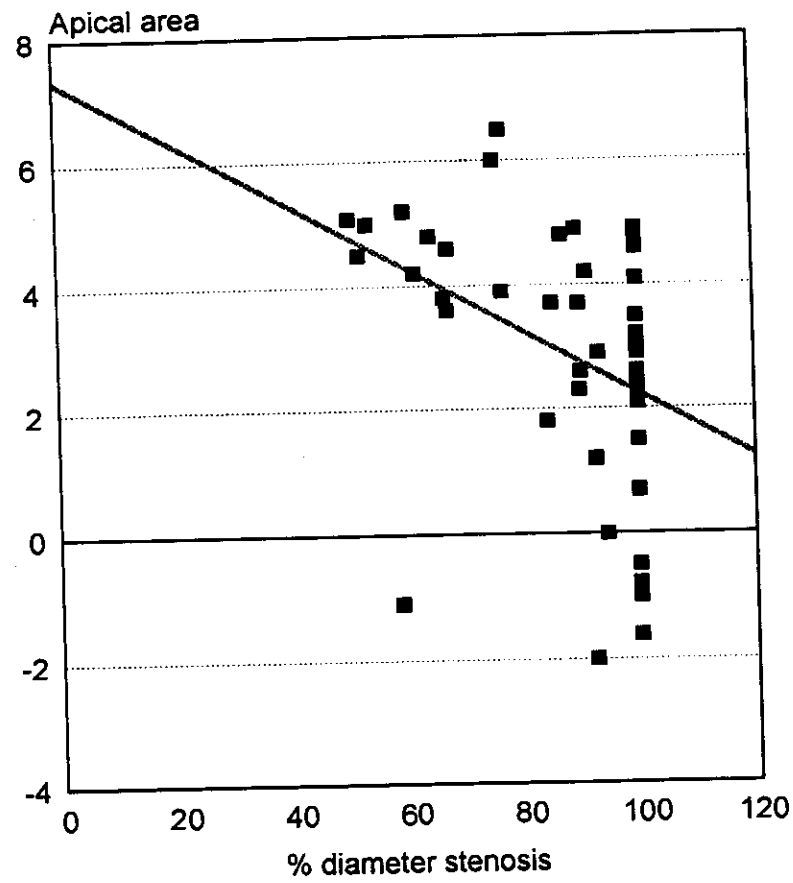

Fig. (17): Correlation between % diameter stenosis and apical area in group A

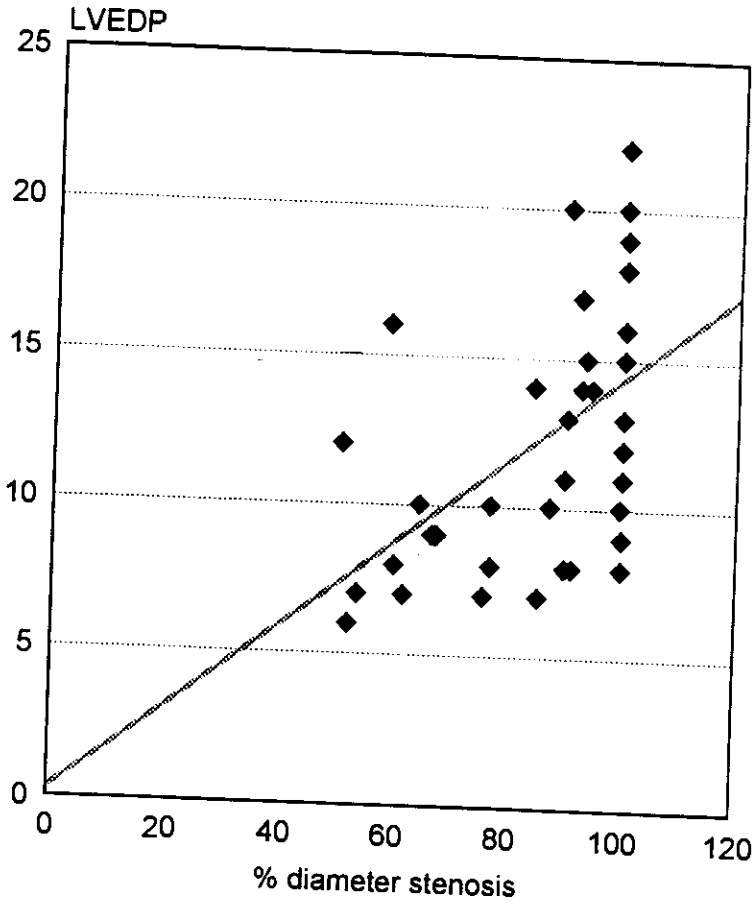

Fig. (18): Correlation between % diameter stenosis and LVEDP area in group A

Table (10)

Correlation between % diameter stenosis and ventricular function in subroup 1

Parameter	% diameter stenosis		
	Correlation Coefficient "r"	P value	Significance
EF	-0.342	>0.05	Not significant
Anterobasal	-0.387	>0.05	Not significant
Aterolateral	-0.406	<0.05	Significant
Apical	-0.370	>0.05	Not significant
LVEDP	0.440	<0.05	Significant

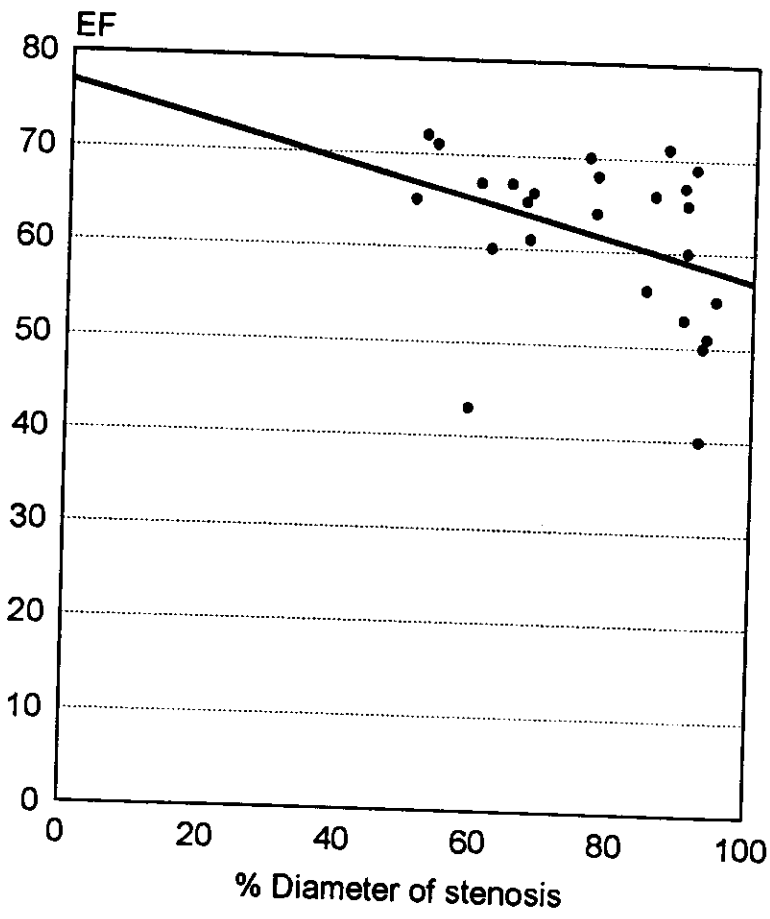

Fig. (19): Correlation between % diameter stenosis and ejection fraction in sub-group (1) (n=25)

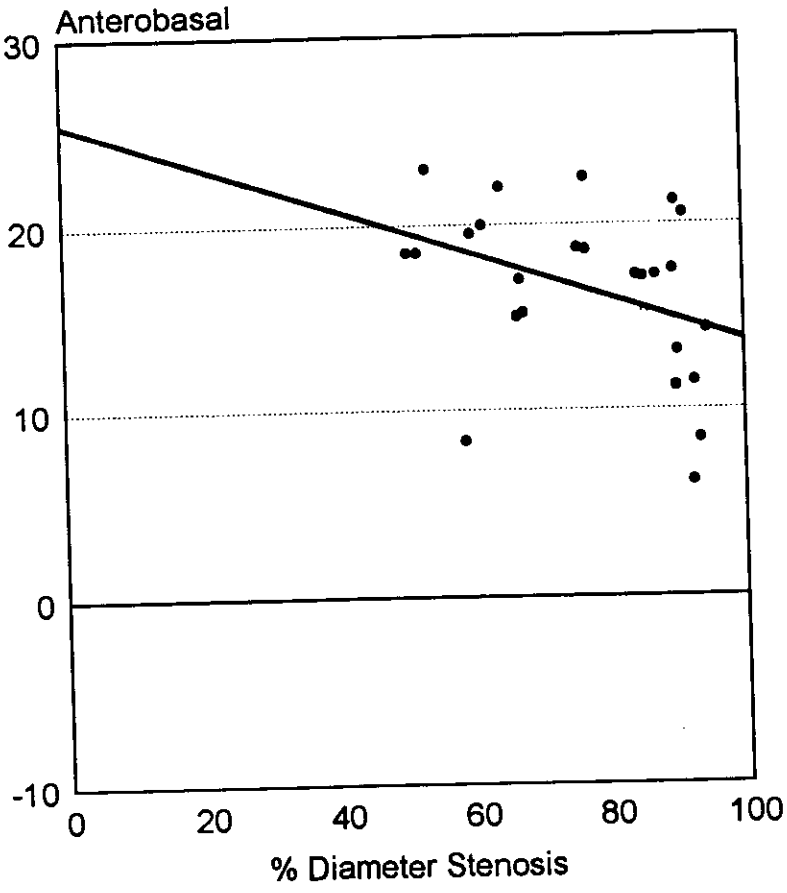

Fig. (20): Correlation between % diameter stenosis and anterobasal area in subgroup (1)

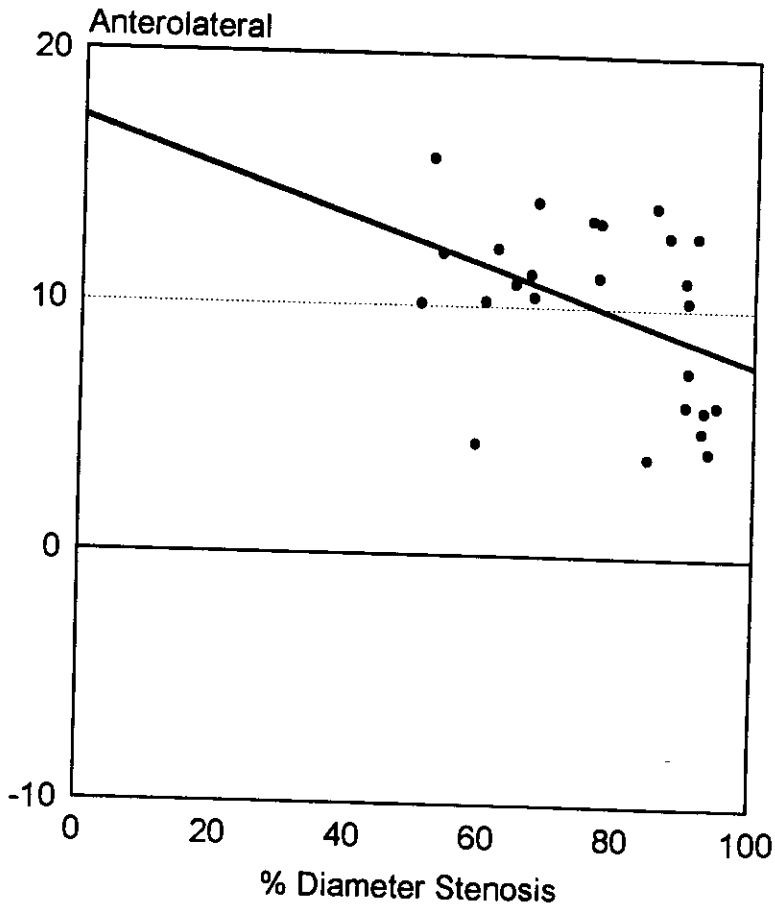

Fig. (21): Correlation between % diameter stenosis and anterolateral area in subgroup (1)

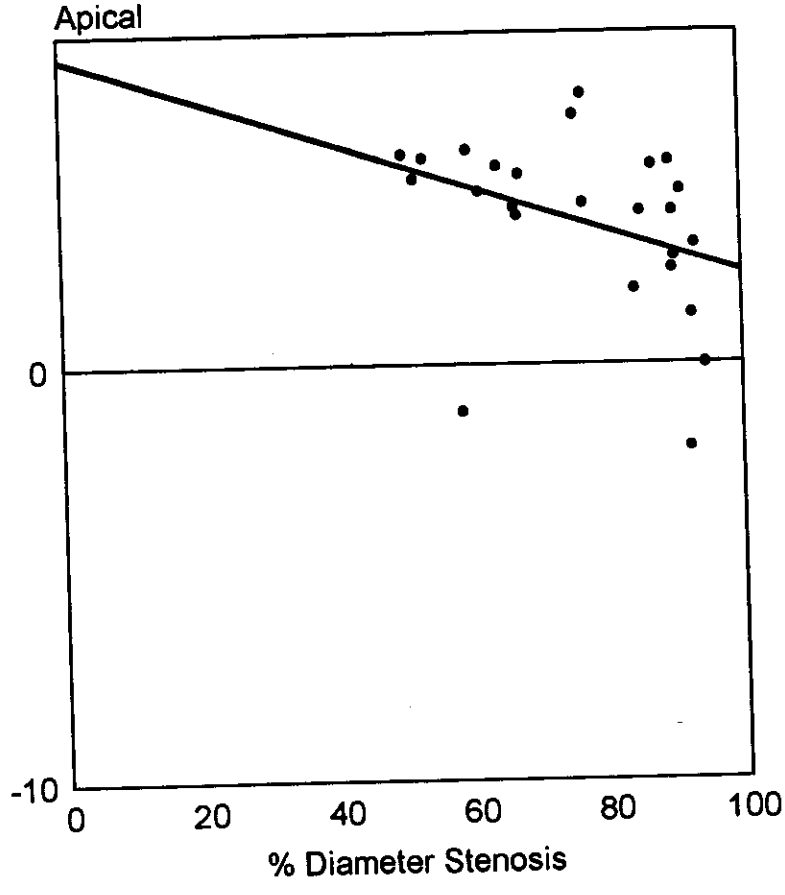

Fig. (22): Correlation between % diameter stenosis and apical area in subgroup (1)

Table (11)

Effect of CTFC on systolic function and LVEDP in subgroup 1

Item	CTFC≤27 (n=17) Mean ± SD	CTFC>27 (n=8) Mean ± SD	"t" value	P value	Significance
Ejection fraction	66.71 ± 3.33	51.00 ± 6.68	7.940	<0.01	Highly significant
Anterobasal area	18.94 ± 2.37	11.26 ± 3.62	6.378	<0.01	Highly significant
Anterolateral area	12.16 ± 1.68	5.44 ± 1.18	10.139	<0.01	Highly significant
Apical area	4.62 ± 0.41	0.96 ± 1.81	7.061	<0.01	Highly significant
LVEDP	8.59 ± 1.62	15.68 ± 2.26	8.596	<0.01	Highly significant

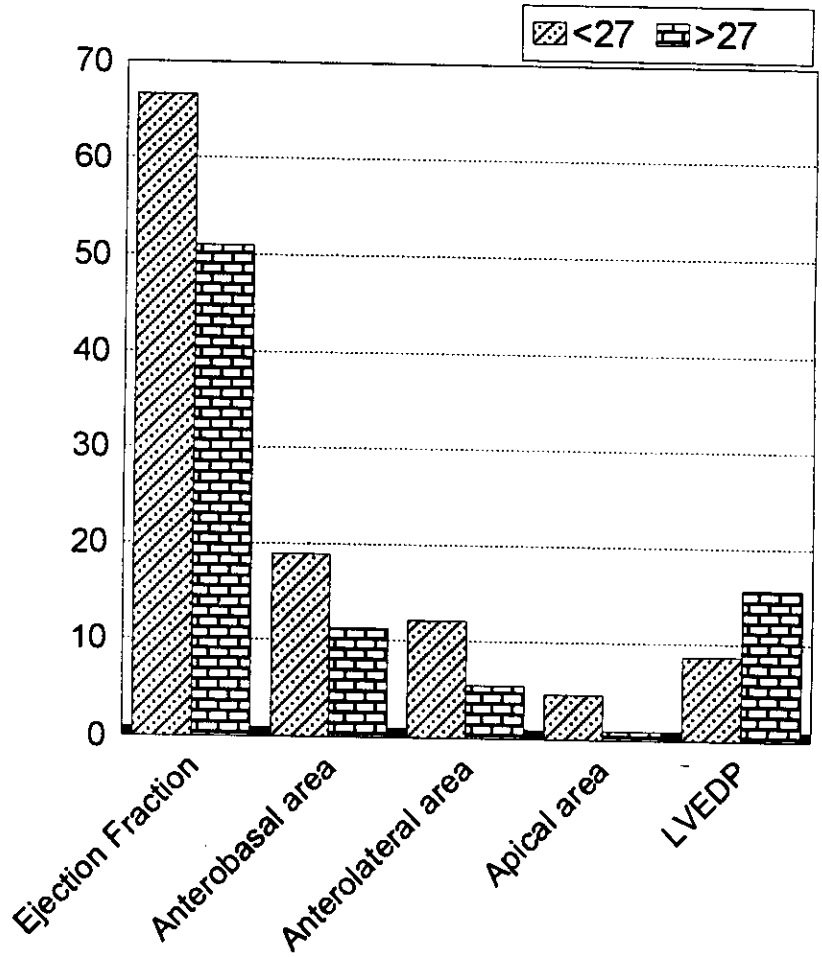

Fig. (24): Effect of CTFC on systolic function and LVEDP in subgroup (1)

Table (12)

Correlation between CTFC and ventricular function in subroup 1

Parameter	CTFC		
	Correlation Coefficient "r"	P value	Significance
EF	-0.864	<0.01	Highly significant
Anterobasal	-0.781	<0.01	Highly significant
Aterolateral	-0.889	<0.01	Highly significant
Apical	-0.815	<0.01	Highly significant
LVEDP	0.819	<0.01	Highly significant

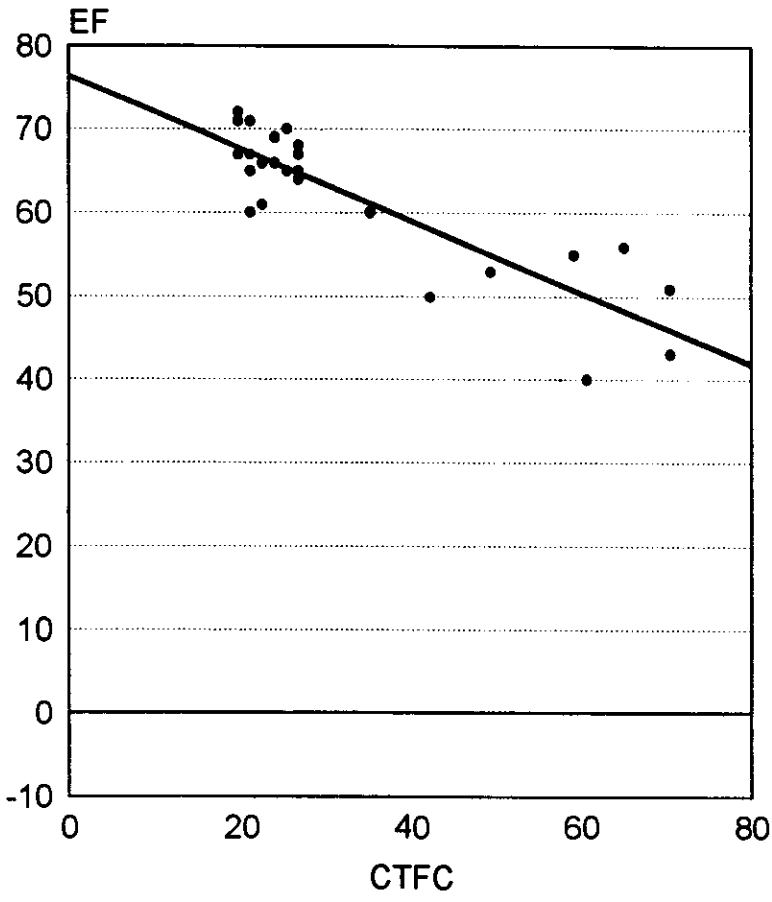

Fig. (25): Correlation between CTFC and ejection fraction in subgroup (1)

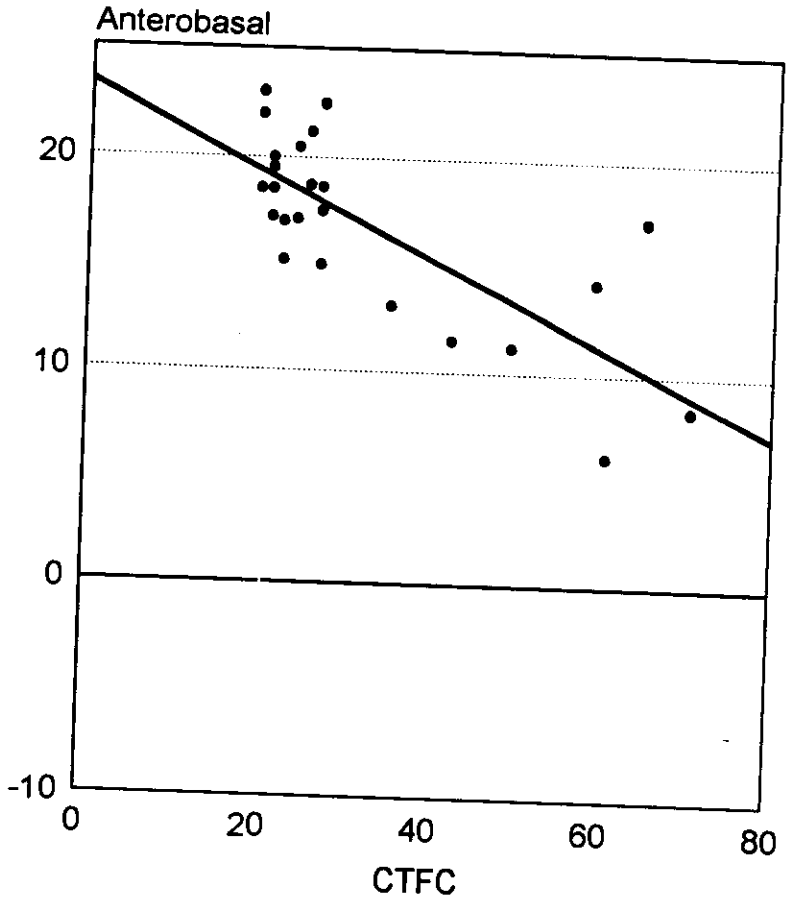

Fig. (26): Correlation between CTFC and anterobasal area in subgroup (1)

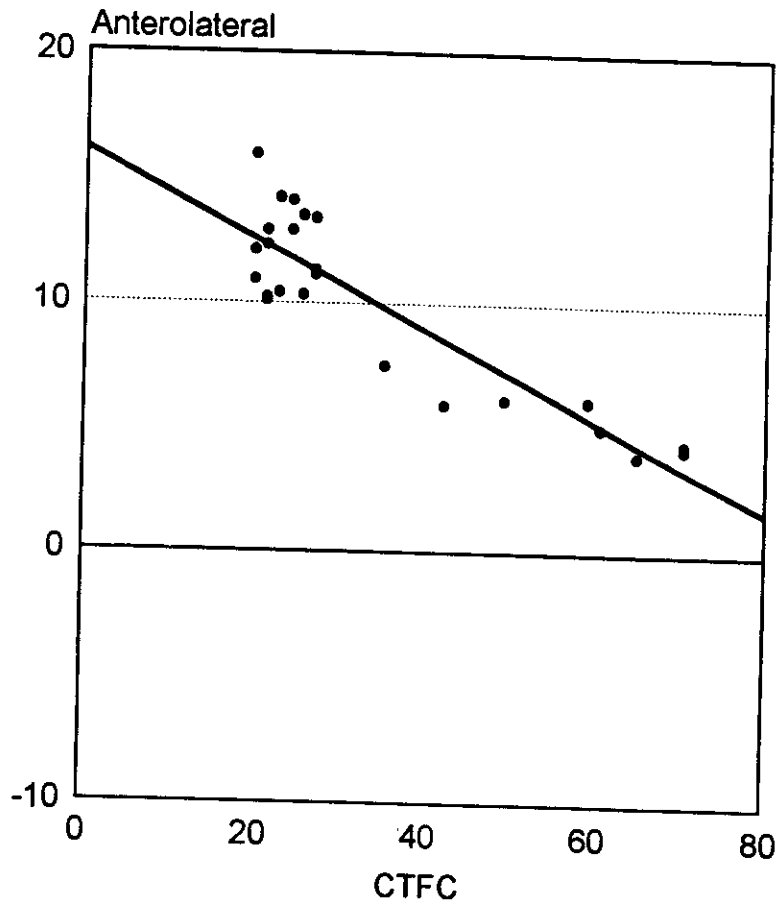

Fig. (27): Correlation between CTFC and anterolateral area in subgroup (1)

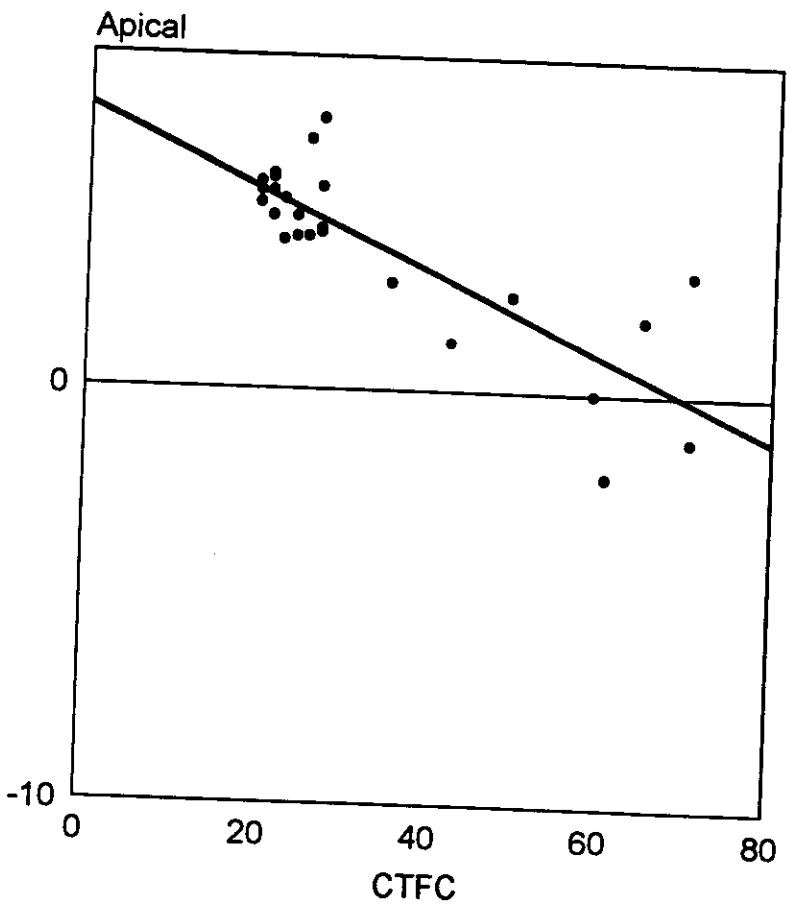

Fig. (28): Correlation between CTFC and apical area in subgroup (1)

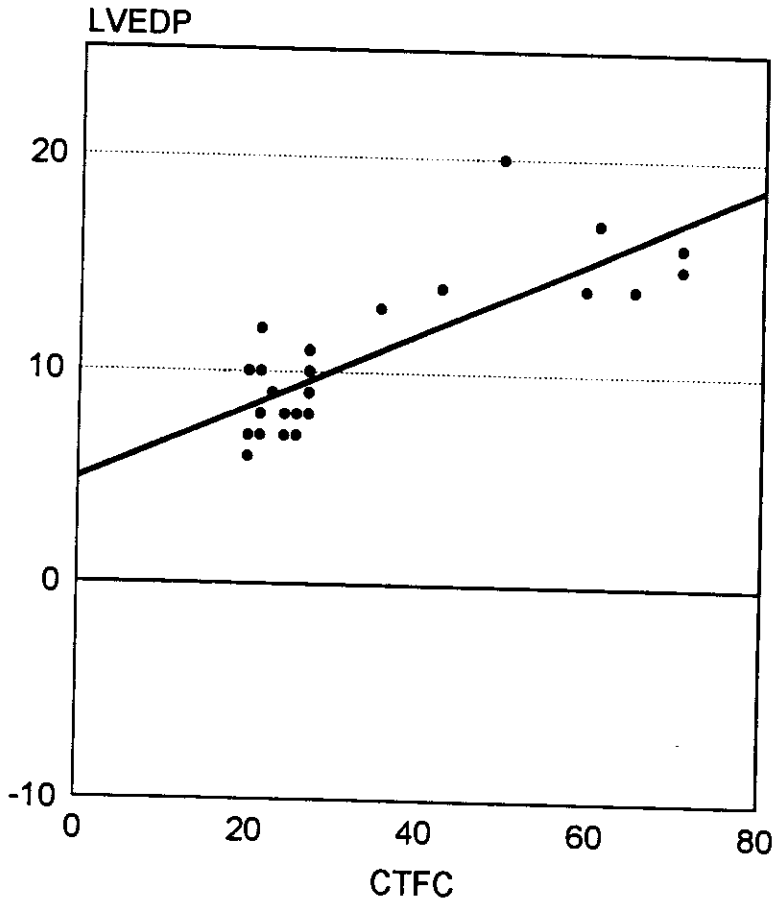

Fig. (29): Correlation between CTFC and LVEDP in subgroup (1)

Table (13)

Effect of collateral flow on systolic function and LVEDP in Group A

Item	Well developed (grade 3) (n=13) Mean ± SD	Absent or poor (grade 1,2) (n=37) Mean ± SD	"t" value	P value	Significance
Ejection fraction	52.62 ± 5.53	55.97 ± 12.24	0.951	>0.05	Not significant
Anterobasal area	11.19 ± 2.94	13.27 ± 6.71	1.072	>0.05	Not significant
Anterolateral area	7.65 ± 1.61	7.94 ± 4.69	0.221	>0.05	Not significant
Apical area	3.06 ± 1.81	2.79 ± 2.17	0.401	>0.05	Not significant
LVEDP	11.69 ± 2.53	13.05 ± 5.19	0.905	>0.05	Not significant

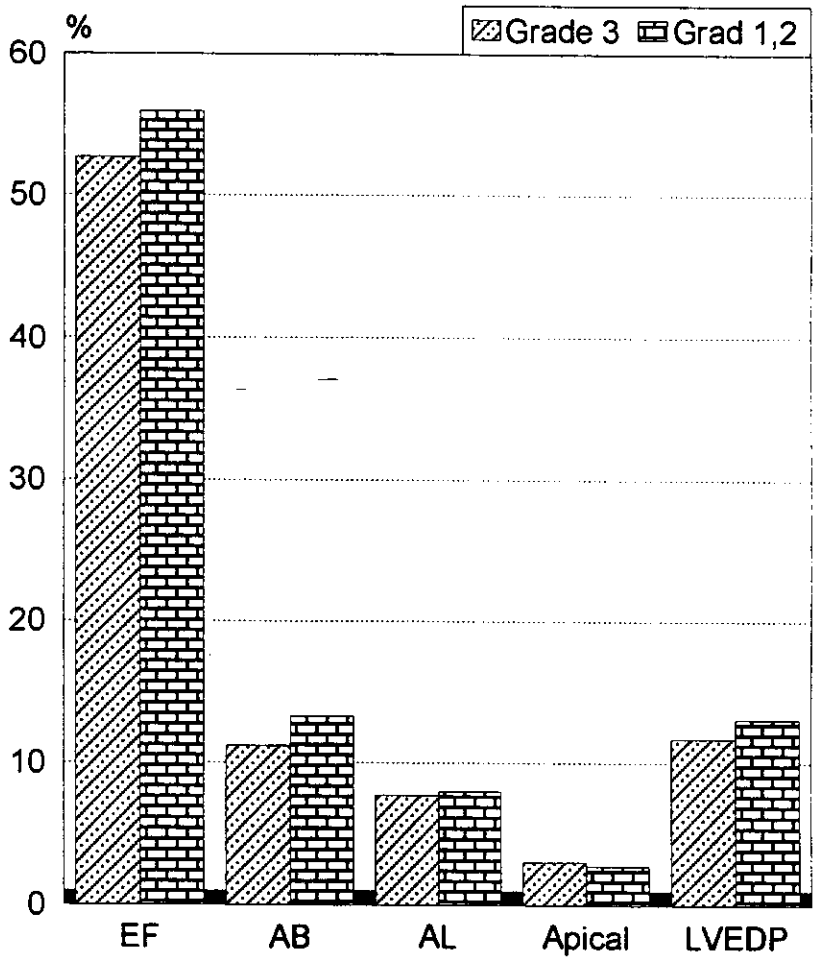

Fig. (30): Effect of coronary collateral flow on systolic function and LVEDP in group A

Table (14)

Effect of collateral flow on systolic function and LVEDP in subgroup 1

Item	Well developed (grade 3) (n=3) Mean ± SD	Absent or poor (grade 1,2) (n=22) Mean ± SD	"t" value	P value	Significance
Ejection fraction	47.00 ± 3.08	63.68 ± 6.98	3.925	<0.01	Highly significant
Anterobasal area	8.67 ± 2.71	17.55 ± 3.65	4.039	<0.01	Highly significant
Anterolateral area	5.10 ± 0.80	10.68 ± 3.22	2.939	<0.01	Highly significant
Apical area	0.70 ± 2.49	3.82 ± 1.80	2.713	<0.01	Highly significant
LVEDP	15.33 ± 1.53	10.14 ± 3.47	2.525	<0.01	Highly significant

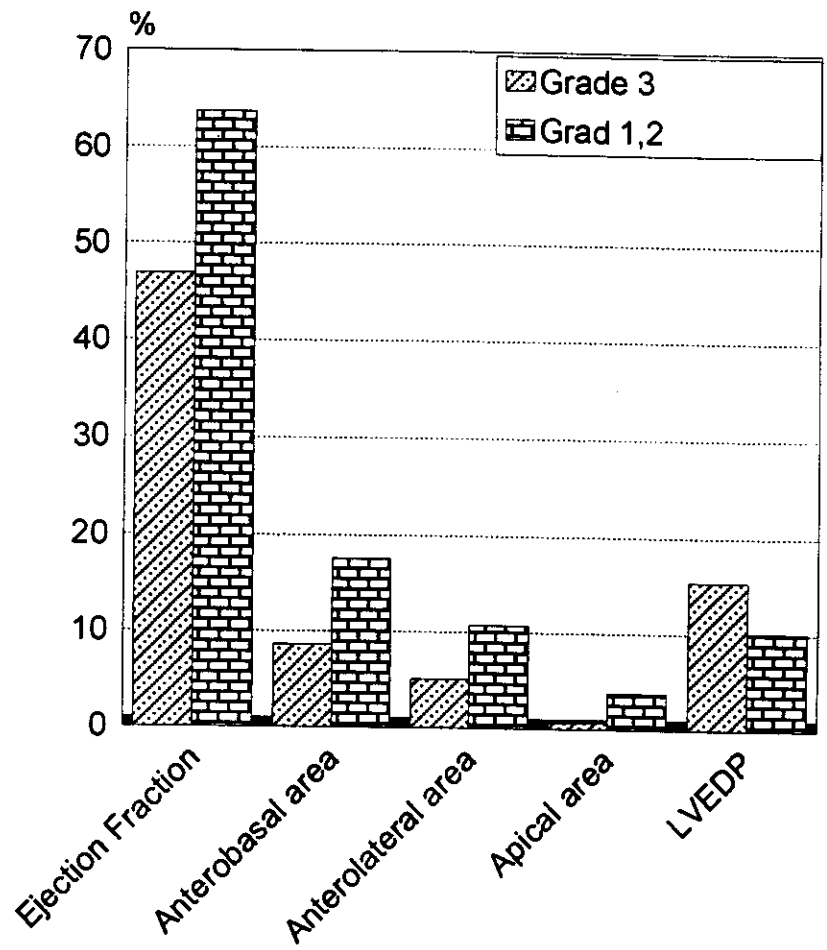

Fig. (31): Effect of coronary collateral flow on ventricular function and LVEDP in subgroup (1)

Table (15)

Effect of collateral flow on systolic function and LVEDP in subgroup 2

Item	Well developed (grade 3) (n=10) Mean ± SD	Poor (grade 2) (n=15) Mean ± SD	"t" value	P value	Significance
Ejection fraction	54.30 ± 4.35	44.67 ± 9.04	3.120	<0.01	Highly significant
Anterobasal area	11.95 ± 2.67	7.00 ± 5.10	2.809	<0.05	Significant
Anterolateral area	8.41 ± 0.71	3.92 ± 3.44	4.039	<0.01	Highly significant
Apical area	3.77 ± 0.76	1.28 ± 1.76	4.201	<0.01	Highly significant
LVEDP	10.60 ± 1.51	17.33 ± 4.25	4.781	<0.01	Highly significant

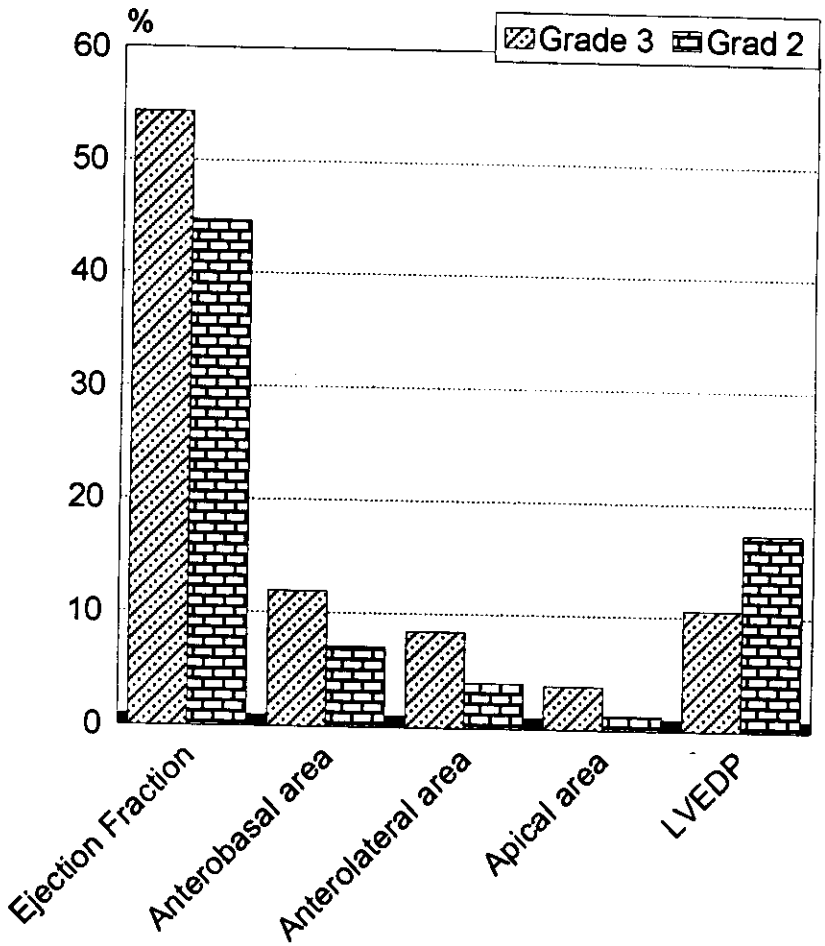

Fig. (32): Effect of coronary collateral flow on ventricular function and LVEDP in subgroup (2)

Table (16)

Effect of lesion length on systolic function and LVEDP in subgroup 1

Item	Lesion length <10mm (n=15) Mean ± SD	Lesion length 10-20mm (n=10) Mean ± SD	"t" value	P value	Significance
Ejection fraction	60.73 ± 10.35	63.10 ± 5.74	0.656	>0.05	Not significant
Anterobasal area	15.25 ± 4.70	18.33 ± 3.90	1.713	>0.05	Not significant
Anterolateral area	9.91 ± 3.84	10.16 ± 3.25	0.167	>0.05	Not significant
Apical area	3.33 ± 2.61	3.63 ± 1.08	0.347	>0.05	Not significant
LVEDP	10.93 ± 3.47	10.50 ± 4.20	0.281	>0.05	Not significant

Table (A): Clinical, laboratory and angiographic data in Group A (n=50)

No.	Age	Sex	HTN	DM	Smoke	Old MI	HR	BP-S	BP-D	Hb	Creat	Site	% Stenose
1	46	M			Yes	Yes	90	110	60	11	1.1	P	100
2	50	M			Yes		72	120	80	11	0.7	P	53.35
3	47	F	Yes				70	160	100	10	0.8	M	76.87
4	49	F	Yes			Yes	114	110	60	12	0.9	P	100
5	43	M			Yes		66	150	80	12	0.9	P	90.1
6	45	M	Yes		Yes		76	140	80	12	0.9	M	84.34
7	54	F	Yes				60	150	100	13	0.7	M	100
8	50	M			Yes		88	135	95	13	1.1	M	91.32
9	60	M	Yes	Yes		Yes	90	140	80	13	1.3	P	58.62
10	62	F		Yes		Yes	100	130	85	13	1.3	P	66.63
11	55	F	Yes	Yes		Yes	110	150	100	13	0.8	P	100
12	45	M			Yes		66	130	70	13	0.6	M	64.33
13	56	M	Yes		Yes		80	130	85	10	0.9	P	100
14	56	M	Yes		Yes	Yes	100	130	80	13	0.9	M	92.3
15	43	M			Yes		64	140	80	12	1.1	P	100
16	44	M			Yes		62	135	85	11	0.7	P	61.57
17	46	M			Yes		68	150	85	13	0.8	M	100
18	44	M			Yes	Yes	100	120	65	10	0.9	M	67.15
19	55	M		Yes		Yes	100	130	70	12	1.1	P	89.9
20	50	M	Yes	Yes		Yes	110	150	90	12	0.8	P	92.7
21	42	M			Yes		64	145	90	13	0.9	M	100
22	55	F	Yes				74	150	90	13	0.6	P	76.91
23	44	M			Yes		62	140	90	13	0.6	M	75.72
24	55	F	Yes			Yes	76	150	90	13	1	M	100
25	46	M			Yes		70	145	85	13	0.7	P	85.32

Table (A) Cont.: Clinical, laboratory and angiographic data in Group A (n=50)

No.	Length	CTFC LAD	Coll 1	Coll 2	Coll 3	EF	A-Basal	A-Lateal	Apical	Diaph	P-Basal	LVEDP
1				Yes		46	6.5	6.8	2.3	14.2	15	15
2	11.64	19.7	Yes			71	23	12.1	5	12	18.9	7
3	18.73	26.8	Yes			64	22.5	11.2	3.9	12.8	14.5	10
4				Yes		45	5.9	4.9	3.2	11.3	19.8	16
5	10.1	25.4		Yes		65	21.2	10.3	3.7	13.1	17.1	8
6	11.94	65		Yes		56	17.2	4	1.8	15.3	17.8	14
7					Yes	60	17	9.2	3.5	14.2	15	8
8	15.6	24		Yes		69	20.5	12.9	4.2	15.1	15.9	8
9	7.49	70.5	Yes			43	8.3	4.5	-1.1	15.4	16.2	16
10	7.11	26.8	Yes			65	15	11.3	3.8	14	16	9
11				Yes		30	2	-1.5	-0.5	16	18.9	22
12	6.98	19.7	Yes			67	22	10.9	4.8	14.5	15.5	10
13					Yes	49	11.2	7.9	2.9	14.3	15.2	10
14	8.26	60.7			Yes	40	6.1	5.1	-2	15.2	16.3	17
15					Yes	56	10.1	8.9	3.5	14.9	20.1	12
16	12.09	21.1	Yes			60	20	12.3	4.2	10.5	13.5	7
17					Yes	57	13.3	7.5	3.1	15.4	17.6	10
18	7.74	22.5	Yes			61	17	10.4	3.6	13.9	16.2	9
19	8.36	49.4		Yes		56	10.4	8.9	3.8	14.3	19	20
20	17.08	42.3			Yes	50	11.5	5.9	1.2	15.1	16.3	14
21					Yes	56	11.5	9.2	4.6	12	18.5	13
22	9.78	26.8	Yes			68	18.6	13.4	6.5	12.1	18	8
23	7.48	25.4	Yes			70	18.7	13.5	6	14.3	17.8	7
24				Yes		49	8.7	7.2	1.5	15	17.1	18
25	11.3	24		Yes		66	17.1	14.1	3.7	13	17.9	7

Table (A) Cont.: Clinical, laboratory and angiographic data in Group A (n=50)

No.	Age	Sex	HTN	DM	Smoke	Old MI	HR	BP-S	BP-D	Hb	Creat	Site	% Stenose
26	50	M	Yes	Yes		Yes	115	155	70	11	1	P	100
27	54	M			Yes	Yes	100	130	70	12	1	P	100
28	48	M		Yes	Yes		100	120	65	13	0.9	P	100
29	52	F		Yes			62	130	90	12	1	M	67.5
30	50	F	Yes			Yes	80	160	100	13	0.6	P	100
31	47	M			Yes	Yes	72	120	80	13	0.8	M	100
32	55	F	Yes				74	150	100	13	1	P	93.3
33	43	M			Yes	Yes	66	150	80	10	0.9	P	100
34	46	M			Yes		96	130	85	12	1	M	90.22
35	45	M			Yes	Yes	76	140	80	12	0.9	M	100
36	50	M	Yes		Yes	Yes	108	130	90	13	1.1	M	100
37	49	M			Yes		64	125	75	13	0.8	P	89.7
38	42	M			Yes		100	120	75	10	1	M	87.2
39	60	F	Yes	Yes		Yes	100	140	80	13	0.7	P	100
40	60	M		Yes		Yes	100	130	85	13	1	P	100
41	46	M			Yes		90	110	60	12	0.9	M	51.87
42	45	M			Yes	Yes	66	130	70	10	1	M	100
43	48	F	Yes				62	150	100	12	0.7	P	50.29
44	52	F	Yes			Yes	72	140	100	11	0.8	M	100
45	45	M			Yes	Yes	96	130	85	12	0.8	M	100
46	55	F		Yes		Yes	62	130	90	12	0.9	M	100
47	54	F	Yes				60	150	100	13	1	M	59.9
48	49	M			Yes	Yes	64	120	80	11	1.2	M	100
49	55	F	Yes	Yes			110	150	100	13	1	M	94.51
50	49	M			Yes	Yes	115	110	70	10	1.3	P	100

Table (A) Cont.: Clinical, laboratory and angiographic data in Group A (n=50)

No.	Length	CTFC LAD	Coll 1	Coll 2	Coll 3	EF	A-Basal	A-Lateal	Apical	Diaph	P-Basal	LVEDP
26				Yes		30	-4	0.9	0.7	13.2	19	22
27				Yes		45	7.2	7.5	2.1	12.2	15.2	20
28					Yes	48	10.2	7.3	3.1	13.9	12.8	11
29	5.48	22.5	Yes			66	15.2	14.2	4.6	14.1	20	9
30					Yes	51	8.2	8.3	4.1	13.5	16	12
31				Yes		54	13.3	3.5	3	16.6	17	20
32	9.03	70.5			Yes	51	8.4	4.3	2.9	15.9	19.5	15
33					Yes	50	9.9	9	4.8	11.5	15.2	10
34	16.13	35.2		Yes		60	13.1	7.5	2.6	16.2	20	13
35				Yes		58	14	7.5	3.1	15.3	17.8	9
36				Yes		46	9.6	6	-0.8	11.2	20	15
37	13.11	26.8		Yes		67	17.5	11.1	4.9	16.1	20.1	11
38	8.12	21.1		Yes		71	17.2	12.9	4.8	16.8	17.3	10
39				Yes		39	7	5.2	-1	12	15.8	20
40				Yes		45	2	7.2	2.5	16	16.8	20
41	3.57	19.7	Yes			72	18.5	15.9	4.5	14.1	18.8	6
42				Yes		52	10.4	3	2.6	16	20	18
43	7.76	21.1	Yes			65	18.5	10.1	5.1	12.9	18	12
44				Yes		57	8.6	4	2.9	12.4	15.3	8
45				Yes		43	13.2	-1	-0.8	13.9	17.9	20
46					Yes	58	15.2	8	4.9	12.4	16.3	11
47	9.19	21.1	Yes			67	19.5	10.2	5.2	13.9	15	8
48					Yes	56	11.5	13.5	2.5	12.1	13	9
49	8.05	59.2		Yes		55	14.3	6.1	0	15	17	14
50				Yes		31	0.6	-2.4	-1.6	15.2	19.2	19

Table (B): Clinical, laboratory and angiographic data in Group B (n=20)

No.	Age	Sex	HTN	DM	Smoke	Old MI	HR	BP-S	BP-D	Hb	Creat	Site	% Stenose
51	40	F		Yes			70	140	80	11	0.7		
52	49	M			Yes		72	150	85	13	0.8		
53	49	F					90	145	90	13	0.9		
54	52	M			Yes		82	155	80	12	1		
55	44	M	Yes				66	130	70	13	1		
56	44	M	Yes				78	120	65	13	1		
57	47	M			Yes		76	110	60	13	1		
58	46	F	Yes				78	110	60	10	1.1		
59	50	M			Yes		88	115	60	12	0.7		
60	46	M	Yes				90	150	100	13	0.8		
61	48	M	Yes				98	160	100	13	0.9		
62	50	M			Yes		110	120	80	11	1		
63	49	M			Yes		100	130	85	13	1		
64	55	F		Yes			62	150	90	12	1		
65	49	F		Yes			64	140	80	13	1		
66	45	M	Yes				66	135	75	13	1.1		
67	61	M			Yes		76	120	65	13	0.7		
68	45	F	Yes				72	130	70	10	1		
69	60	M			Yes		70	135	70	12	1		
70	55	M			Yes		78	140	80	13	0.5		

Table (B) Cont.: Clinical, laboratory and angiographic data in Group B (n=20)

No.	Length	CTFC LAD	Coll 1	Coll 2	Coll 3	EF	A-Basal	A-Lateal	Apical	Diaph	P-Basal	LVEDP
51		18.3				70	20.2	13	4.9	14.1	18	6
52		19.7				74	23.3	13.5	5.1	14.5	17.4	8
53		16.9				72	24	14.2	5.9	12.5	15.6	7
54		24				75	22.8	16	6.2	13.9	15.1	9
55		21.1				70	19.2	12	6.2	13.3	18.7	12
56		24				76	24.3	15	6.5	11.2	20	10
57		19.7				70	20.2	12.6	6.1	13	18	6
58		18.3				68	17.1	11.1	4.6	13.8	20.8	6
59		21.1				71	19.5	10.8	4.3	18.8	16.9	8
60		25.4				77	22.3	18	3	14.5	16.9	9
61		16.9				60	18.5	13.2	5	11.2	12.9	9
62		21.1				66	19.2	14.3	4.4	11.4	15.3	8
63		26.8				62	18.1	13.5	3.9	14	13.7	10
64		18.3				67	15.7	16.4	4.4	13.3	19.8	9
65		16.9				69	20.2	12.1	5.1	15.8	18.3	7
66		22.5				65	16.4	16	4.8	14.8	15.9	8
67		21.1				72	20.3	13.2	4.7	15.2	12.2	9
68		21.1				68	19.4	15	4.2	15.2	17.3	9
69		19.7				61	17.3	11.9	5	17.5	11.9	6
70		22.5				74	19.6	18.2	5.9	12.2	14.8	9