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The study was conducted on a total number of sixty patients divided into two groups. Results are expressed as the mean \pm SD of the mean.

Patients and operative parameters table (1 a&b)

Patients in both groups, hemofilter and control group showed no statistical significant difference as regards age, sex and cardiopulmonary bypass time.

Hematological results in hemofilter and control groups allover the study:

Both groups showed no significant difference between them preoperatively and prebypass.

Hemoglobin concentration table (2), figure (18)

Postbypass, the Hb concentration dropped markedly with significant difference in both groups. Hemofilter group (10.84 ± 1.07 gm/dl) compared to control group (9.05 ± 0.86 gm/dl), (P value ≤ 0.001).

24 hours postoperatively the Hb concentration was still significantly decreased, in hemofilter group Hb concentration was higher (12.29 ± 1.12 gm/dl) than in control group (11.44 ± 0.94 gm/dl), (P value ≤ 0.01).

Hematocrit (Hct %) table (3), figure (19)

The hematocrit percentage decreased significantly postbypass in both groups. The Hct % showed significant difference as in hemofilter group it was

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(32.28 ± 3.24 %), while in control group it was (26.92 ± 2.6 %), (P value ≤ 0.001).

Platelet count ($\times 10^3 /mm^3$) table (4), figure (20)

Platelet count showed marked decrease in both groups both postbypass and 24 hours postoperatively. Postbypass, there was no significant difference between count in both groups as in hemofilter group it was (172.62 ± 56.76), in control group it was (157.32 ± 28.44), (P value > 0.05).

24 hours postoperatively, in hemofilter group it was (210.30 ± 42.34), in control group it was (200.62 ± 38.12), (P value > 0.05).

Coagulation profile in hemofilter and control group:

Prothrombin time (PT) table (5), figure (21)

PT was normal in both groups before giving heparin. Prebypass i.e. after heparin, it was prolonged with insignificant difference between both groups. Postbypass the PT was prolonged with significant difference between the hemofilter group in which it was (21.36 ± 2.74 sec.), while in control group it was (30.05 ± 2.5 sec.), (P value ≤ 0.05). It was significantly different between both groups 24 hours postoperative, hemofilter group was (17.63 ± 1.6 sec.), while in control group it was (20.52 ± 1.91 sec.), (P value ≤ 0.001).

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Activated partial thromboplastin time (APTT) table(6), figure (22)

APTT was prolonged in prebypass i.e. after heparin, but with no significant difference. Postbypass values were still prolonged and showed significant difference between hemofilter group which was (61.32 ± 5.05 sec), control group was (74.25 ± 5.08 sec), (P value ≤ 0.001).

24 hours postoperative APTT was near normal values but still significantly different between hemofilter group (49.19 ± 3.31 sec.), while control group (53.39 ± 3.89 sec.), (P value ≤ 0.001).

Fibrinogen concentration table (7), figure (23)

Fibrinogen concentration showed significant decrease in postbypass samples with significant difference between both groups as hemofilter group showed fibrinogen concentration of (206.93 ± 20.11 mg/dl), control group was (146.8 ± 18.4 mg/dl), (P value ≤ 0.001). While 24 hours postoperatively concentration increased in both groups with no significant difference between them, hemofilter group (364.73 ± 19.78 gm/dl), control group (361.23 ± 15.69 gm/dl), (P value > 0.05).

Fibrinogen degradation products (FDPs) table (8)

FDPs estimation was semiquantitative. Levels increased postbypass from prebypass values in both groups but with no significant difference, as it was found to be approximately 20 μ g/ml in both groups. 24 hours postoperative

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FDPs concentration returned to preoperative normal values in both groups, it was $< 10 \mu\text{g/ml}$.

Antithrombin III determination table (9 a&b), figure (24)

ATIII percentage decreased significantly in both groups from prebypass values, the decrease was significantly different between both groups, as postbypass, hemofilter group was $(60.67 \pm 5.01 \%)$, control group was $(52.37 \pm 2.76 \%)$. 24 hours postoperative the percentage was still decreased with significant difference between both groups, hemofilter group $(66.00 \pm 4.73 \%)$, control group $(58.9 \pm 4.67 \%)$, (P value ≤ 0.001).

D-Dimer estimation table (10), figure (25)

Concentration of D-Dimer increased in both groups in postbypass samples with significant difference between hemofilter group which was $(408.83 \pm 63.27 \text{ ng/ml})$, control group was $(479.93 \pm 74.49 \text{ ng/ml})$, (P value ≤ 0.001).

24 hours postoperative both groups showed high normal values with no significant difference between them as in hemofilter group it was $(290.20 \pm 55.64 \text{ ng/ml})$, control group was $(297.87 \pm 67.81 \text{ ng/ml})$, (P value > 0.05).

Blood loss table (11) figure (26)

Postoperative blood loss recordings showed a decrease in amount of blood loss in hemofilter group $(280 \pm 120 \text{ ml})$, while in control group it was $(405 \pm 94 \text{ ml})$, (P value ≤ 0.001).

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Table (1a): Comparison between patients' age (in years), CPB time (in minutes) values in the control and hemofilter group.

	Control group	Hemofilter group	t-test	P value
Age	7.52 ± 4.14	7.24 ± 3.52	0.68	> 0.05 (NS)
CPB time	63.90 ± 24.48	60.82 ± 26.62	0.38	> 0.05 (NS)

* Data are represented as mean ± S.D.

Table (1b): Comparison between patients' sex (♂ : ♀) in the control and hemofilter group.

	Control group	Hemofilter group	Chi-square	P value
Sex (♂ : ♀)	18 : 12	17 : 13	0.19	> 0.05 (NS)

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Table (2a): Hb concentration (gm/dl) within the control and hemofilter group.

	Control group			Hemofilter group		
	Prebypass	postbypass	24 hrs. p.o.	Prebypass	postbypass	24 hrs. p.o.
Mean	12.50	9.05	11.44	12.74	10.84	12.29
± S.D.	0.85	0.86	0.94	0.68	1.07	1.12
Paired - t		22.37	5.20		10.82	2.26
P value		≤ 0.001 (Sig.)	≤ 0.001 (Sig.)		≤ 0.001 (Sig.)	≤ 0.05 (Sig.)

Table (2b): Comparison between Hb concentration (gm/dl) in the control and hemofilter group.

	Control group	Hemofilter group	Unpaired - t	P value
Prebypass	12.50 ± 0.85	12.74 ± 0.68	1.20	> 0.05 (NS)
Postbypass	9.05 ± 0.86	10.84 ± 1.07	7.14	≤ 0.001 (Sig.)
24 hrs. postop.	11.44 ± 0.94	12.29 ± 1.12	3.21	≤ 0.01 (Sig.)

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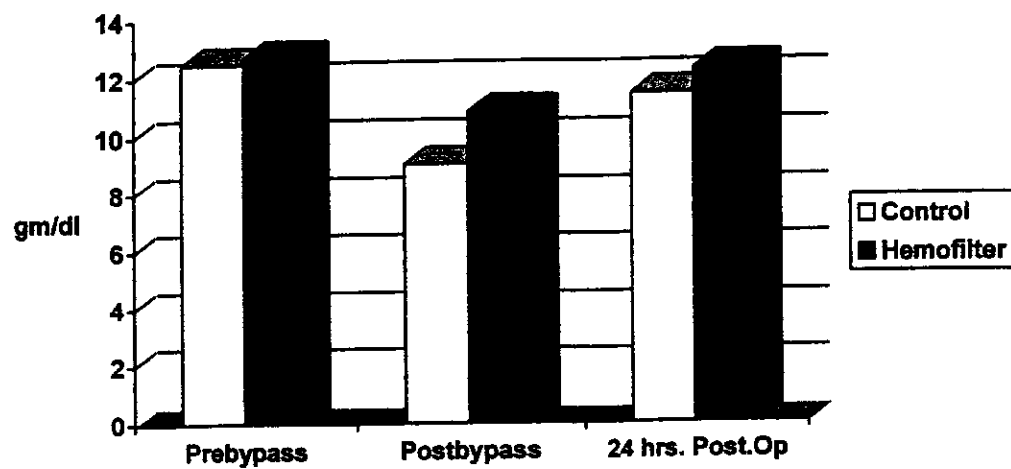


Figure (18): Comparison between Hb. concentration (gm/dl) in patients of control and hemofilter group.

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Table (3a): Hct % within the control and the hemofilter group.

	Control group			Hemofilter group		
	Prebypass	Postbypass	24 hrs. p.o.	Prebypass	Postbypass	24 hrs. p.o.
Mean	37.36	26.92	33.83	37.91	32.28	36.43
± S.D.	2.51	2.60	3.30	2.06	3.24	3.15
Paired - t		22.13	5.58		10.64	2.93
P value		≤ 0.001 (Sig.)	≤ 0.001 (Sig.)		≤ 0.001 (Sig.)	≤ 0.01 (Sig.)

Table (3b): Comparison between Hct .% in the control and hemofilter group.

	Control group	Hemofilter group	Unpaired - t	P value
Prebypass	37.36 ± 2.51	37.91 ± 2.06	0.92	> 0.05 (NS)
Postbypass	26.92 ± 2.60	32.28 ± 3.24	7.05	≤ 0.001 (Sig.)
24 hrs. postop.	33.83 ± 3.30	36.43 ± 3.15	3.12	≤ 0.01 (Sig.)

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Table (3a): Hct % within the control and the hemofilter group.

	Control group			Hemofilter group		
	Prebypass	Postbypass	24 hrs. p.o.	Prebypass	Postbypass	24 hrs. p.o.
Mean	37.36	26.92	33.83	37.91	32.28	36.43
± S.D.	2.51	2.60	3.30	2.06	3.24	3.15
Paired - t		22.13	5.58		10.64	2.93
P value		≤ 0.001 (Sig.)	≤ 0.001 (Sig.)		≤ 0.001 (Sig.)	≤ 0.01 (Sig.)

Table (3b): Comparison between Hct .% in the control and hemofilter group.

	Control group	Hemofilter group	Unpaired - t	P value
Prebypass	37.36 ± 2.51	37.91 ± 2.06	0.92	> 0.05 (NS)
Postbypass	26.92 ± 2.60	32.28 ± 3.24	7.05	≤ 0.001 (Sig.)
24 hrs. postop.	33.83 ± 3.30	36.43 ± 3.15	3.12	≤ 0.01 (Sig.)

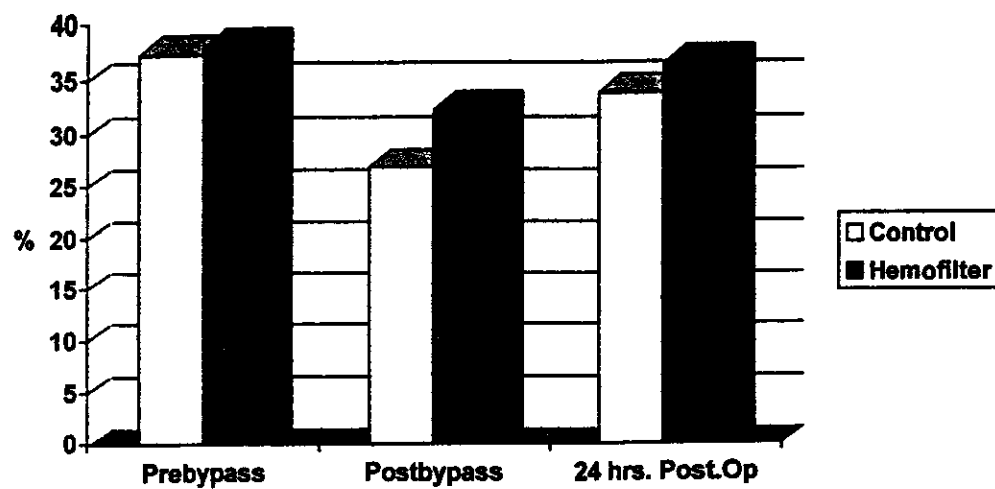
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Figure (19): Comparison between Hct. % in patients of control and hemofilter group.

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Table (4a): Platelet count ($\times 10^3 / \text{mm}^3$) within control and hemofilter group.

	Control group			Hemofilter group		
	Prebypass	Postbypass	24 hrs. p.o.	Prebypass	Postbypass	24 hrs. p.o.
Mean	220.41	157.32	200.62	207.40	172.62	21.30
\pm S.D.	31.12	28.44	38.12	46.14	54.16	42.34
Paired - t		10.92	0.82		8.84	0.76
P value		≤ 0.001 (Sig.)	> 0.05 (NS)		≤ 0.001 (Sig.)	> 0.05 (NS)

Table (4b): Comparison between platelet counts ($\times 10^3 / \text{mm}^3$) in the control and the hemofilter group:

	Control group	Hemofilter group	Unpaired - t	P value
Prebypass	220.41 \pm 31.12	207.40 \pm 46.14	0.30	> 0.05 (NS)
Postbypass	157.32 \pm 28.44	172.62 \pm 54.16	1.46	> 0.05 (NS)
24 hrs. postop.	200.62 \pm 38.12	210.30 \pm 42.34	0.66	> 0.05 (NS)

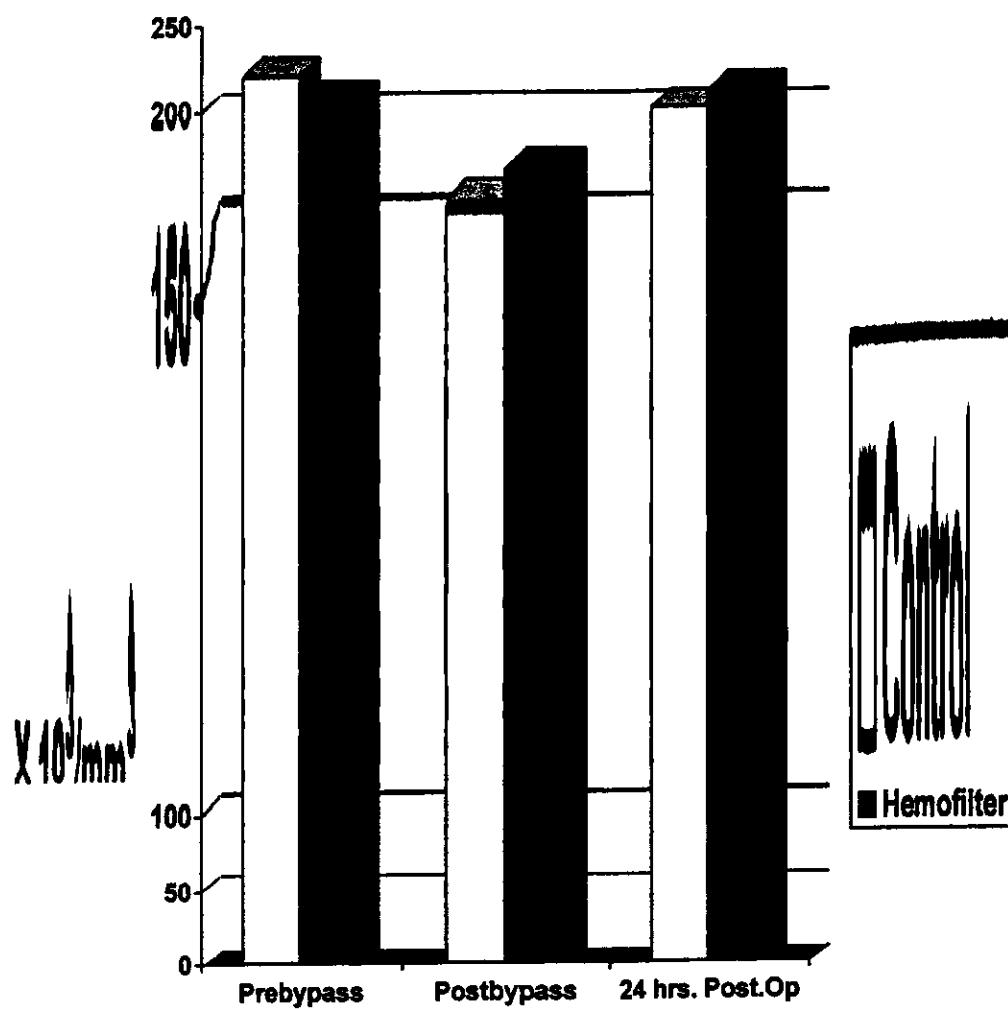
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Figure (20): Comparison between Platelet counts ($\times 10^3/\text{mm}^3$) in patients of control and hemofilter group.

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Table (5a): PT (sec.) within the control and the hemofilter group.

	Control group			Hemofilter group		
	Prebypass	Postbypass	24 hrs. p.o.	Prebypass	Postbypass	24 hrs. p.o.
Mean	16.10	30.05	20.52	15.96	21.36	17.63
± S.D.	1.36	2.50	1.91	1.20	2.74	1.60
Paired - t		18.99	13.12		10.86	4.88
P value		≤ 0.001 (Sig.)	≤ 0.001 (Sig.)		≤ 0.001 (Sig.)	≤ 0.001 (Sig.)

Table (5b): Comparison between PT values (sec.) in the control and the hemofilter group.

	Control group	Hemofilter group	Unpaired - t	P value
Prebypass	16.10 ± 1.36	15.96 ± 1.20	0.43	> 0.05 (NS)
Postbypass	30.05 ± 2.50	21.36 ± 2.74	12.83	≤ 0.001 (Sig.)
24 hrs. postop.	20.52 ± 1.91	17.63 ± 1.60	6.35	≤ 0.001 (Sig.)

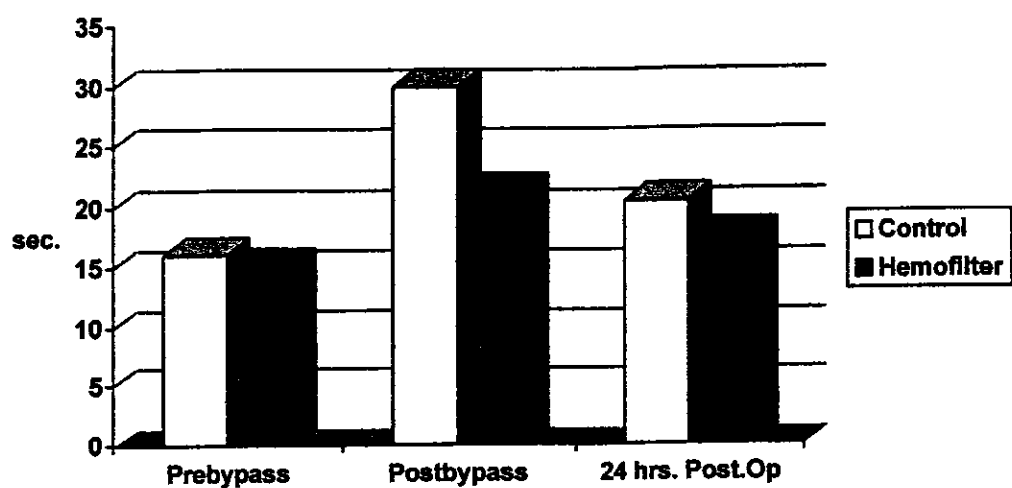
Results

Figure (21): Comparison between PT values (sec.) in patients of control and hemofilter group.

Results

Table (6a): APTT (sec.) within the control and hemofilter group.

	Control group			Hemofilter group		
	Prebypass	Postbypass	24 hrs. p.o.	Prebypass	Postbypass	24 hrs. p.o.
Mean	58.26	74.25	53.39	56.24	61.32	49.19
± S.D.	2.31	5.08	3.89	3.70	5.05	3.31
Paired – t		17.26	5.86		6.67	8.14
P value		≤ 0.001 (Sig.)	≤ 0.001 (Sig.)		≤ 0.001 (Sig.)	≤ 0.001 (Sig.)

Table (6b): Comparison between APTT values (sec.) in the control and the hemofilter group.

	Control group	Hemofilter group	Unpaired - t	P value
Prebypass	58.26 ± 2.31	56.24 ± 3.70	2.53	≤ 0.05 (Sig.)
Postbypass	74.25 ± 5.08	61.32 ± 5.05	9.89	≤ 0.001 (Sig.)
24 hrs. postop.	53.39 ± 3.89	49.19 ± 3.31	4.49	≤ 0.001 (Sig.)

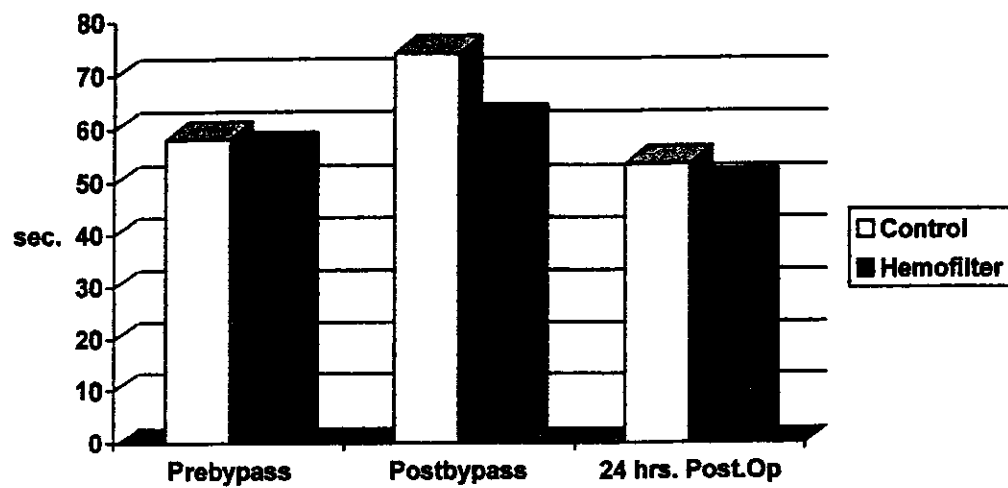
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Figure (22): Comparison between APTT values (sec.) in patients of control and hemofilter group.

Results

Table (7a): Fibrinogen (mg/dl) within the control and hemofilter group.

	Control group			Hemofilter group		
	Prebypass	Postbypass	24 hrs. p.o.	Prebypass	Postbypass	24 hrs. p.o.
Mean	261.77	146.80	361.23	259.57	206.93	364.73
± S.D.	14.13	18.40	15.69	14.71	20.11	19.78
Paired - t		20.77	18.39		13.35	25.86
P value		≤ 0.001 (Sig.)	≤ 0.001 (Sig.)		≤ 0.001 (Sig.)	≤ 0.001 (Sig.)

Table (7b): Comparison between fibrinogen concentration (mg/dl) in the control and hemofilter group.

	Control group	Hemofilter group	Unpaired - t	P value
Prebypass	261.77 ± 14.13	259.57 ± 14.71	0.59	> 0.05 (NS)
Postbypass	146.80 ± 18.40	206.93 ± 20.11	12.08	≤ 0.001 (Sig.)
24 hrs. postop.	361.23 ± 15.69	364.73 ± 19.78	0.76	> 0.05 (NS)

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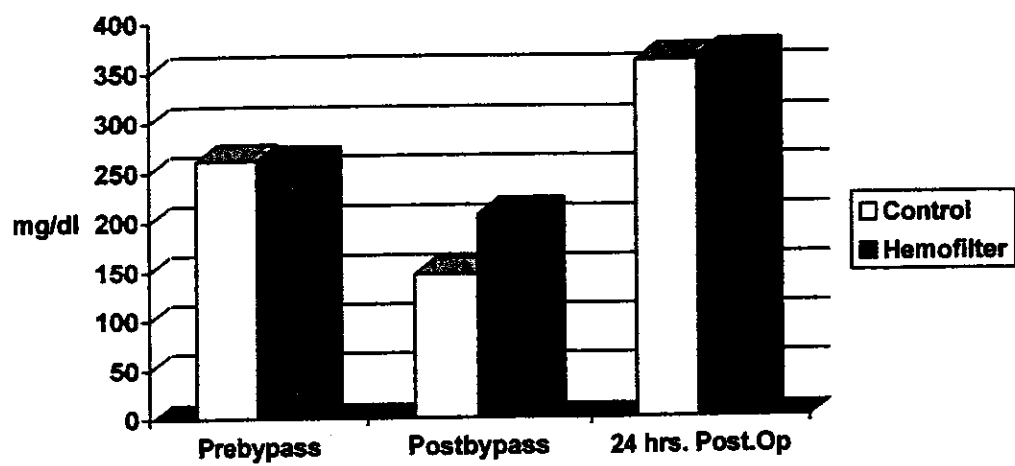


Figure (23): Comparison between Fibrinogen concentration (mg/dl) in patients of control and hemofilter group.

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Table (8): FDPs ($\mu\text{g/ml}$) within the control and hemofilter group.

	Control group	Hemofilter group
Prebypass	< 10	< 10
Postbypass	Approx. 20	Approx. 20
24 hrs. postop.	< 10	< 10

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Table (9a): Antithrombin III (%) within the control and the hemofilter group.

	Control group			Hemofilter group		
	Prebypass	Postbypass	24 hrs. p.o.	Prebypass	Postbypass	24 hrs. p.o.
Mean	70.20	52.37	58.90	69.77	60.67	66.00
± S.D.	5.02	2.76	4.67	4.58	5.01	4.73
Paired - t		20.38	17.05		9.73	3.89
P value		≤ 0.001 (Sig.)	≤ 0.001 (Sig.)		≤ 0.001 (Sig.)	≤ 0.001 (Sig.)

Table (9b): Comparison between Antithrombin III % in the control and the hemofilter group.

	Control group	Hemofilter group	Unpaired - t	P value
Prebypass	70.20 ± 5.02	69.77 ± 4.58	0.35	> 0.05 (NS)
Postbypass	52.37 ± 2.76	60.67 ± 5.01	7.95	≤ 0.001 (Sig.)
24 hrs. postop.	58.90 ± 4.67	66.00 ± 4.73	5.85	≤ 0.001 (Sig.)

Results

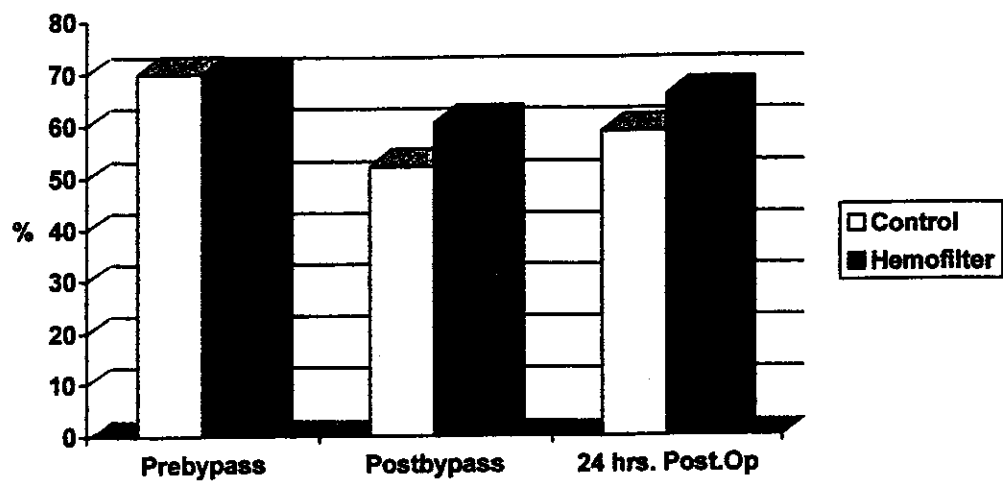


Figure (24): Comparison between AT III % in patients of control and hemofilter group.

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Table (10a): D-dimer (ng/ml) within the control and the hemofilter group.

	Control group			Hemofilter group		
	Prebypass	Postbypass	24 hrs. p.o.	Prebypass	Postbypass	24 hrs. p.o.
Mean	281.57	479.93	292.87	287.83	408.83	290.20
± S.D.	71.89	74.49	67.81	56.37	63.27	55.64
Paired - t		25.61	3.11		15.46	0.42
P value		≤ 0.001 (Sig.)	≤ 0.01 (Sig.)		≤ 0.001 (Sig.)	> 0.05 (NS)

Table (10b): Comparison between D-dimer concentration (ng/ml) in the control and hemofilter group.

	Control group	Hemofilter group	Unpaired - t	P value
Prebypass	281.57 ± 71.89	287.83 ± 56.37	0.38	> 0.05 (NS)
Postbypass	479.93 ± 74.49	408.83 ± 63.27	3.98	≤ 0.001 (Sig.)
24 hrs. postop.	297.87 ± 67.81	290.20 ± 55.64	0.17	> 0.05 (NS)

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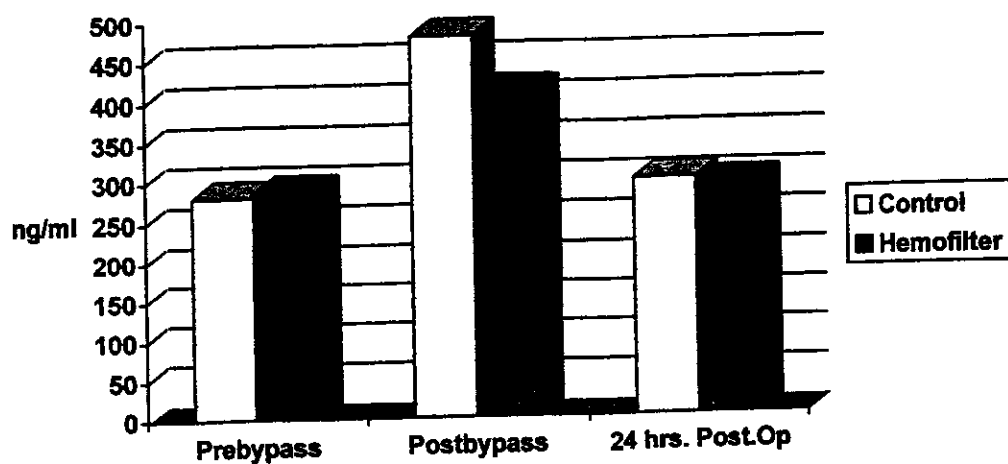


Figure (25): Comparison between D-dimer concentration (ng/ml) in patients of control and hemofilter group.

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Table (11): Comparison between control and hemofilter group as regards blood loss (ml).

	Control group	Hemofilter group	t-test	P value
Total blood loss \pm SD	405 \pm 94	280 \pm 120	8.43	≤ 0.001 (Sig.)

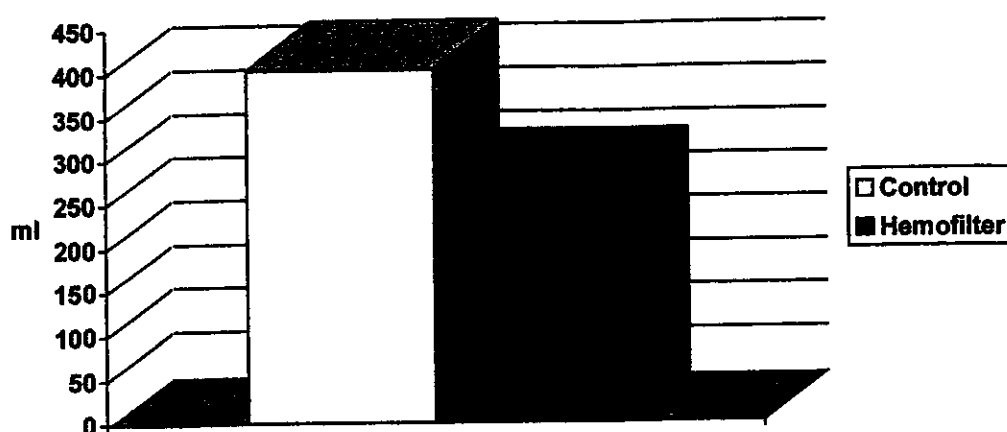


Figure (26): Comparison between patients of control and hemofilter group as regards blood loss (ml).

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Table (11): Comparison between control and hemofilter group as regards blood loss (ml).

	Control group	Hemofilter group	t-test	P value
Total blood loss \pm SD	405 ± 94	280 ± 120	8.43	≤ 0.001 (Sig.)

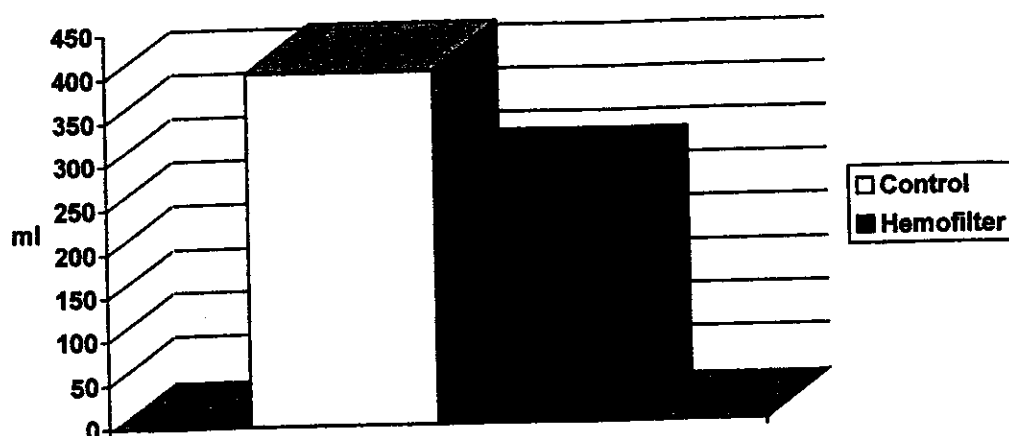


Figure (26): Comparison between patients of control and hemofilter group as regards blood loss (ml).

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Table (12): Comparison between both groups as regards ICU stay (days), ventilation time (hours) and hospital stay (days).

	Control group	Hemofilter group	Unpaired - t	P value
ICU stay	2.50 ± 0.85	1.10 ± 0.76	2.45	≤ 0.05 (Sig.)
Vent. Time	9.45 ± 2.65	8.12 ± 2.25	2.76	≤ 0.05 (Sig.)
Hosp. stay	12.50 ± 2.62	10.65 ± 1.84	2.54	≤ 0.05 (Sig.)

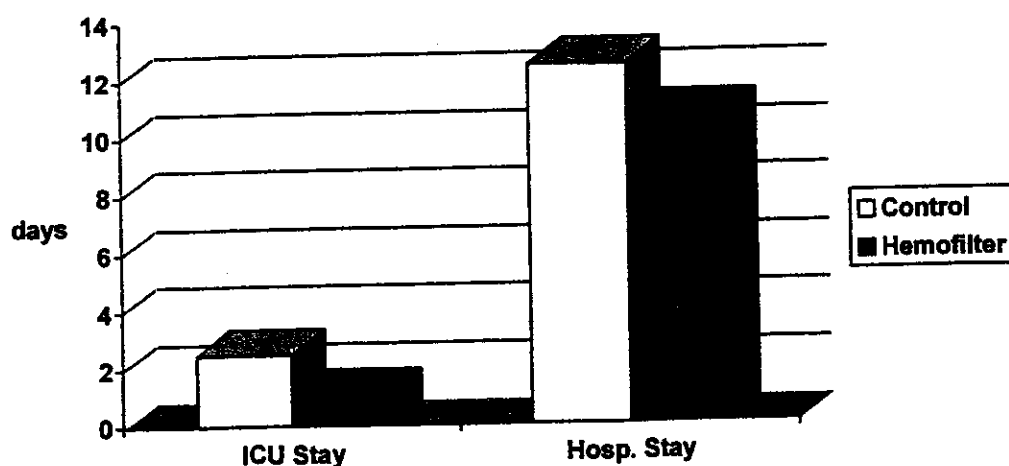


Figure (27): Comparison between patients of control and hemofilter group as regards ICU and Hospital stay (days).

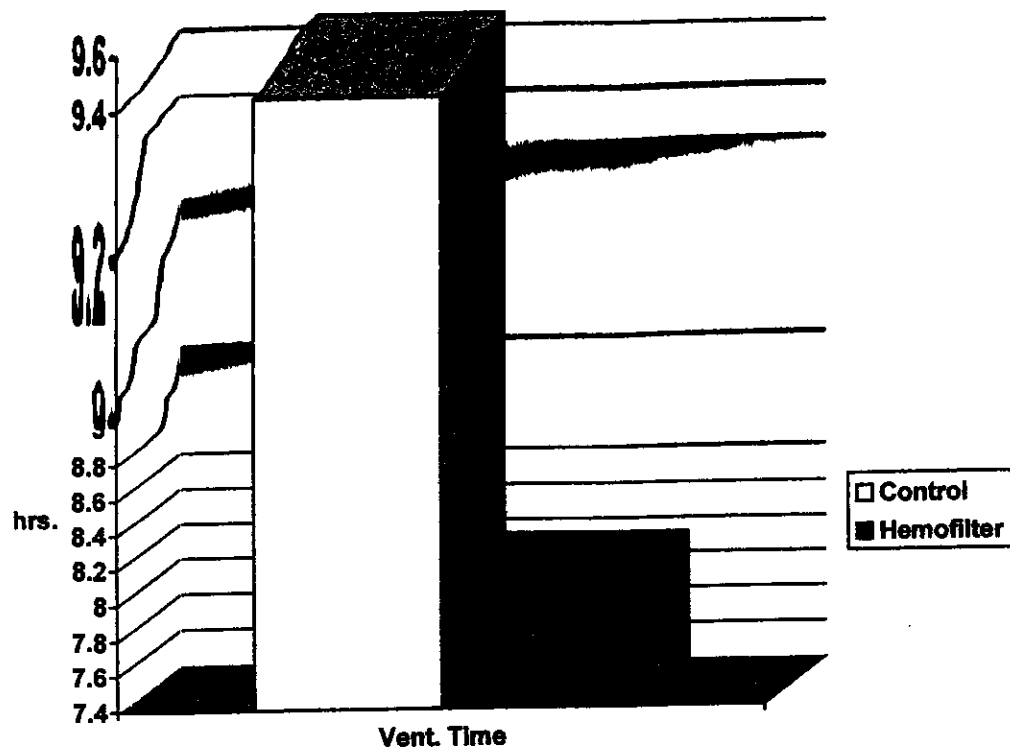
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Figure (28): Comparison between patients of control and hemofilter group as regards Ventilation time (hrs.) .