RESULTS

The results of this work could be classified into:

A- The results of the diagnostic studies and primary management.

B- Results of the surgery only **(group A):**

- Operative findings, management.
- Post - operative results, complications and management.

C- Results of the endoscopy/ laparoscopic surgery **(group B):**

- Results of the endoscopy procedures and their complications.
- Results of the operative laparoscopic procedures and their complications.
- The overall results of the (group B).

D- Results of the observation.

E- Results of the follow - up.

A. The Results of the Diagnostic studies and Primary Management

This work included 50 patients with choledocholithiasis suspected from the history, laboratory investigations and confirmed by ultrasound and ERCP.

Among the fifty cases of calcular obstructive jaundice included in this study, 32 were females (64%) and 18 males (36%). The female to male ratio is 2.1 : 1. The sex distribution of patients in both groups is shown in Table(12) and Fig.(75). There was no significant sex difference between the two groups (P value > 0.05).

Table (12) The sex distribution of patients involved in these thesis :

Group	Females		Males		Total	
	No.	%	No.	%	No.	%
A	15	60	10	40	25	100
B	17	68	8	32	25	100
Both	32	64	18	36	50	100

P>0.05

The ages of the patients varied from 22 to 70 years with a mean age of 45.46 as shown in Table (13). There was no significant age difference between the two groups (P value > 0.05).

Table (13) The mean age of patients involved in the study:

Group	Age (mean)
A	45. 68±11.33
B	45.24±11.84
Both	45.46±11.59

p-value > 0.05

Diagnosis:

A history of jaundice was positive in all patients. The incidence of associated symptoms is shown in Table (14) and Fig. (76).

Table(14)The symptoms associated with jaundice in both groups of patients included in the study:

Symptoms	Group A		Group B		P-Value
	No.	%	No.	%	
Colicky pain	20	80	18	72	>0.05
Fever	5	20	4	16	>0.05
Pruritis	13	52	12	48	>0.05
Pale stools	13	52	12	48	>0.05
Dark urine	18	72	21	54	>0.05

The family history of cholelithiasis in the patients studied was found in 30 patients (60%).

Contraceptive pills were taken at the time of the study by 3 females only (4.4% of the 32 females). While the history of contraceptive pills taken was found in 6 of the females (18.7%).

Past history results weres shown in table (15) :

Item	Number	%
Past medical :		
- Viral hepatitis	5	10%
- Treated bilharziasis	10	20%
- Typhoid fever	4	8%
- Repeated parasitic infestations.	15	30%
Past surgical :		
- Appendectomy	2	4%
- Tonsillectomy	5	10%
- Anal operations.	4	8%

From the history, examination and investigations, the following associated diseases were found :

-Cardiovascular diseases in 25 patients (50%)

-Chest diseases in 4 patients (8%).

-Renal diseases with creatinin over 3 mg/dl in 5 patients (10%).

-Diabetes mellitus was found in 16 patients (32%).

-Liver cirrhosis (with no ascitis or marked portal hypertension) in 3 patients (6%).

-The associated. diseases are listed in table(16).

Table (16) Distribution of patients according to associated disease:

Associated Disease	No.	%
Cardiovascular:	25	50
Rheumatic Heart Disease	5	20
Hypertension	13	52
Coronary Artery Disease	7	28
Chest Diseases	4	8
Renal Disease	5	10
Diabetes Mellitus	16	32
Liver Cirrhosis	3	6

By examination, all the patients were jaundiced on presentation. The important associated findings during abdominal examination are shown in Table (17) and Fig. (77).

Table(17) The important abdominal findings associated with jaundice in patients of both groups:

Signs	Group A		Group B		P-value
	No.	%	No.	%	
-Fever & Chills.	15	60	13	52	>0.05
-Hepatomegaly.	7	28	5	20	>0.05
-Tenderness in the right hypo-chondrium.	5	20	5	20	>0.05
-Scars of previous operations.	5	20	7	28	>0.05
-Scratch marks.	10	40	12	48	>0.05

-The results of laboratory investigations done are shown in Table (18) and Fig.(78-80).

Table (18) laboratory investigations:

Item	Group A		Group B		P-value
	Mean	S.D.	Mean	S.D.	
Hemoglobin	12.14	1.57	12.08	1.63	>0.05
White cell count	93.86	5651.9	8480	3112.7	>0.05
Fasting blood sugar	113.92	53.43	111.04	30.35	>0.05
Postprandial blood sugar	362.5	82.6	294.6	81.6	>0.05
Serum creatinine	1.27	1.089	0.91	0.2688	0.06
Total bilirubin	7.73	5.79	6.44	4.47	>0.05
Direct bilirubin	5.77	3.827	4.99	3.785	>0.05
Alkaline phosphatase	940.92	394.64	890.52	269.53	>0.05
ALT (SGPT)	103.82	88.16	98.68	48.829	>0.05
AST (SGOT)	86.08	45.89	83.68	43.44	>0.05
Albumin	3.92	0.64	3.72	0.66	>0.05
P.T.	12.92	1.027	12.9	0.93	>0.05
P.C.	86.8	14.49	86.8	13.53	>0.05

Ultrasonography was diagnostic of surgical obstructive jaundice in all the cases of both groups. Dilated intrahepatic bile ducts and common bile ducts were seen by ultrasonography in 47 patients (94%).

The other manifestations of diagnostic importance seen by ultrasonography were the presence of stones in the common bile duct, the presence of calcular gall bladder, the presence of thick walled gall bladder with pericholecystic adhesions (signs of inflammation), and the presence of

bilharzial liver fibrosis. These manifestations are demonstrated in Table (19) and Fig. (81).

Table (19) The important ultrasonographic findings in patients of both groups:

Signs detected by ultrasonography	Group A		Group B		P-value
	No.	%	No.	%	
-Dilated IHBD	24	96	23	92	>0.05
-Calcular GB	25	100	25	100	>0.05
-Stones in CBD	15	60	13	52	>0.05
-Severe inflammation of the G.B.	4	16	3	12	>0.05
- Bilharzial liver	2	8	3	12	>0.05

Thus ultrasonography was diagnostic of calcular obstructive jaundice in 28 patients (56%). Five patients (10%) belonging to group (A) were managed on the evidence of ultrasonography alone. In four of them, this was due to technical problems in ERCP. The fifth case was a pregnant lady in the first trimester. It was decided to avoid exposing the fetus to irradiation hazards.

Diagnostic endoscopic retrograde cholangio-pancreatography (ERCP) was done in 45 of the 50 patients included in this study, 20 in ***group (A)*** and the whole patients in ***group (B).*** Dilatation of the common bile duct and intrahepatic bile ducts was confirmed by ERCP in all the patients. No abnormalities of the pancreaticograms were observed. The stone of common bile duct were seen as filling defects in all the patients. However, difficult cannulation was encountered in 20 patients (45%), 13 of them due to juxtapapillary diverticula (JPD) (29%) and the remaining 7 (16%) due to swollen papilla secondary to impacted stones as shown in Table (20)

and Fig.(82). The precut papillotomy technique was used in two of these patients.

Table(20) The important findings in diagnostic ERCP in patients of both groups:

Signs detected by diagnostic ERCP	Group A		Group B		P-value
	No.	%	No.	%	
- Dilated IHBD	20	100	25	100	>0.05
- Stones in CBD	20	100	25	100	>0.05
- JPD	5	25	8	32	>0.05
- Impacted stones	3	15	4	16	>0.05

The P-value of all the diagnostic variables, used to compare group (A) and group (B), proved to be > 0.05 i.e. Insignificant. Thus, the patients were randomized without any specifications.

B-Results of the management in surgical group (Group A):

Laparotomy was carried on through Kocher's incision in 9 patients (36%) and through right paramedian incision in 16 patients (64%). Choledocholithotomy was done to the 25 cases. Then closure of the CBD required the procedures shown in Table (21).

Table(21) The different procedures used in group (A) patients after choledo-cholithotomy:

Procedure	No. of cases	%	Caliber of C.B.D diameter
T-tube	10	40	< 15 mm.
Choledochojejunostomy	11	44	> 15 mm.
Choledochoduodenostomy	3	12	> 15 mm.
Sphincteroplasty	1	4	> 15 mm.
Total	25	100	

Then, a drain was inserted in the hepatorenal pouch in all the 25 patients (100%).

Post-operative mortality of surgical group (Group A):

Mortality was encountered in one patient (4%), due to hepatorenal failure 10 hours postoperative.

Post-operative complication of surgical group (Group A) :

1-Post-operative fever due to the metabolic response to surgery occurred in all patients in the first 24 hours, but it did not exceed 37.8°C. Fevers that extended beyond 2 days were due to infective complications (table 22).

2- Infective complications - occurred in 6 out of 24 patients.

a-Wound infection, occurred in 2 patients (8.32 %), one in the patient who had empyema of the gall bladder, and the other was a 65 years old female who was hypertensive and diabetic and had bile leak around the T-tube. Both cases were managed by the proper antibiotics according to culture and sensitivity with good drainage and dressing of the wounds.

b-Chest infection, occurred in 2 patients (8.32%) and were treated by changing the antibiotics into wider spectrum cephtriaxone (Rocephin) 1 gm/24 hours I.V. with gentamycin 80 mg/12 hours I.M. In addition, mucolytics, bronchodilators and expectorants were given and the conditions were controlled.

C-Burst abdomen, occurred in one patient (4.16%), who was hypertensive, obese and diabetic. It was managed by re-closure under general anesthesia.

D-Urinary tract infection : occurred in one patient (4.16%). Culture and sensitivity to urine were done and appropriate antibiotics were given with high fluid intake were enough to cure the condition.

3- Medical problems: occurred in 3 patients :

*Clonic epileptic fits in one patient (4.16%).

*Starvation ketosis occurred in one patient (4.16%), who was diabetic.

*Respiratory embarrassment in one gross obese female (4.16%) who spent two days in the I.C.U. for this reason.

-All these 3 cases had positive explorations.

4-Prolonged ileus occurred in one patient (4.16%) who had Choledochoduodenostomy, she was a female, 65 years old, diabetic, hypertensive, obese and she had duodenal seromuscular tear during its kocherization. Ileus lasted for 5 days and the intestinal movement returned sluggishly on the sixth day post - operatively.

5-Bile leakage around the T-tube occurred in one patient (4.16%) who had also wound infection, kinked T-tube inside the C.B.D and a missed stone. The management was directed mainly to the missed stone as bile leakage stopped after 8 days by sphinctrotomy.

6-Missed stones: were found in 2 cases (8.32%) both had positive explorations and T-tubes and were discovered on the T-tube cholangiography.

Both had neither intra - operative cholangiography nor choledochoscopy.

One patient was managed by endoscopic sphincterotomy on three consecutive sessions, one week apart. The clearance of the C.B.D was confirmed by a final T-tube cholangiography.

The other case with bile leakage around the T- tube. The stone was

about 1cm in diameter. Endoscopic sphincterotomy was successful but was not large enough for spontaneous passage of the stone, so, saline

(500 cc) - heparin (5000 I.U.) wash through the T-tube was started after that as one bottle daily for 9 days and T- tube cholangiography confirmed the passage of the stone.

Table (22) The results of the incidence of morbidity in the group A:

Complications	No.	%	R%
- Infective complications :	6	20	41.7
:Wound infection	2	8.32	16.7
:Chest infection.	2	8.32	16.7
:Burst abdomen.	1	4.16	8.3
:Urinary tract infection.	1		
- Medical problems :	3	12.5	25
: Clonic epileptic fits.	1	4.16	8.3
: Starvation ketosis.	1	4.16	8.3
: ICU for respiratory problem.	1	4.16	8.3
- Prolonged ileus.	1	4.16	8.3
- Bile leakage around the T-tube.	1	4.16	8.3
- Missed stones	2	8.32	16.7
- Total morbidity	13	54.2	100

* R% = Percentage relative to the total incidence of morbidity.

Odd ratio for :

Infective complications =3.1

Medical complications =1.1

Others =1.2

Total =5.6

C-Results of Endoscopy/L.C. group (Group B):

Therapeutic E.R.C.P was attempted in all the 25 patients belonging to group (B). Sphincterotomy could be achieved in all of them (100%). Subsequent stone extraction was feasible in 23 patients (92%), 4 of them required mechanical lithotripsy. The procedure failed in the remaining two patients (8%) and were converted to the traditional open surgical management. In one of the successfully managed patients, a stent was inserted in the common bile duct for two weeks then stone extraction could be achieved in a second go. The results of therapeutic ERCP are shown in Table (23).

Table(23) The results of therapeutic E.R.C.P performed to group (B) patients:

Therapeutic E.R.C.P	No.	%
- Sphincterotomy	25	100
-Stone extraction by Dormia basket	18	72
- Lithotripsy	4	16
- Stent insertion	2	8
- Successful stone extraction	23	92
- Failed stone extraction	2	8

Results of post - endoscopic sphincterotomy period and complications:

- Complications occurred in 6 cases (24%) as follows :

***Pancreatitis:** in one patient (4%), a 55 years old female, hypertensive, diabetic and morbidly obese, as shown in table(24).

Cannulation of the papilla was difficult with repeated trials of opacification of the C.B.D Classical clinical picture of pancreatitis occurred with elevated pancreatic amylase to 500 Somogyi units/dL.

Management was by nasogastric suction, i.v. fluids and calcium, continuation of the antibiotics used in the preparation of the case.

The symptoms and signs improved within 5 days and oral feeding was resumed on the sixth day. Enzymes returned to normal and the elective L.C was done 10 days after the sphincterotomy.

***Cholangitis:** occurred in two patients (8%):

a- A Female 48 years old who was obese and diabetic. At the time of sphincterotomy, she was still jaundiced and feverish (38C).

The symptoms of cholangitis increased at the night of the procedure. Antibiotic was changed into cephtriaxone (Rocephin) 1 gm/i.v/24 hours, + Gentamycin 80 mg I.M./8 hours. Analgesics, antipyretics, I.V. fluids and nasogastric suction were used. Amelioration of the condition occurred on the 5th day and L.C was done on the 10th post sphincterotomy day.

b-The other case was a female also, 35 years old with no risk factors. It was a milder attack than the previous one and was managed on the same lines as the first case. L.C was done on the 8th post sphincterotomy day.

***Bleeding:** occurred in one patient (4%):

Mild bleeding occurred in a male, 62 years old, diabetic and with creatinin 3.5 mg / dl. The bleeding was controlled endoscopically by adrenaline injection and the procedure was successfully continued.

***Failure of E.S and stone extraction:** occurred in two cases (8%):

A- A Male, 64 years who and was jaundiced on the initial sphincterotomy. Although two sessions, one week apart, and stent insertion was done to him, the backed stone did not passed due to refibrosis of the sphincter and the presence of distal stricture. He had the operation of cholecystectomy and choledochoduodenostomy 17 days after the first session of endoscopic sphincterotomy.

B- A Female, 50 years old, who had big primary stone in the C.B.D (earthy brown stone) and huge ductal dilatation. She needed a wide drainage procedure. She had an urgent operation of cholecystectomy and choledochoduodeunostomy to avoid the complication of faild stone extraction.

Table (24) will summarize the results of E.S complications in group B:

No.	Sex	Age years	Complication	Risk factors	Time from the first E.S. and surgery
1		55	Pancreatitis	Hypertensive, diabetic, obese.	10 days
2		48	Cholangitis	Diabetic, obese, resolving cholangitis.	10 days
3		35	Cholangitis	no risk factors	8 days
4		62	Minor bleeding	Hypertensive, diabetic, old and creatinin 3.5 mg/dl	8 days 4 days
5		64	Failure of E.S. + and stone extraction	Hypertensive	17 days
6		50	Big C.B.D stone	no risk factors	Same day

From the previous table:

*The age range of patients with complications was 35-64 years with a mean of 53.7 years.

*Two patients (28.5%) were above 60 years.

*Female to male ratio was 2.5 : 1.

*The time between the first sphincterotomy session and the surgery ranged from ½ to 17 days with a mean of 8.4 days.

*The periods from the first E.S to the surgery in general (23 cases) ranged from 0.5 to 14 days with a mean of 6.9 days.

*In the cases with no complications, this period ranged from 3 to 14 days with a mean of 5.8 days.

Table(25): Comparison between the mean values of patients with complications and without complications concerning age, sex and time between first E.S to surgery.

	With complication	Without complication	P-Value
Age	45.3+11.2	53.7+10.8	>0.05
Sex: F/M	1.8/1	2/1	
Time between 1st E.S and surgery	5.4+1.1	8.4+3.2	<0.05

Table (26) illustrates the period from the first sphincterotomy to surgery.

Table (26) The results of periods from the first E.S session to surgery in group B:

Group **Period between (E.S) and Surgery**

	Range (days)	Mean (days)
All patients	0.5-14	6.9
Patients without Complications	3-14	5.8
Patients with Complications	0.5-12	7.4

Laparoscopic cholecystectomy was attempted in the 23 cases with successful endoscopic C.B.D stone extraction. Difficulties were encountered in 16 (70%) of these patients in the form of difficult insufflation in two (8.7%), difficult dissection in 6 (26%), difficult control of bleeding from the gall bladder bed in one (4.3%), spilled stones in three (13%). and difficult extraction of the gall bladder through the anterior abdominal wall port in four (17.3%). These difficulties are shown in Table (27). Then a drain was inserted in the hepatorenal pouch in 9 cases (39%).

Table (27) Difficulties encountered during laparoscopic cholecystectomy:

Therapeutic E.R.C.P.	No.	%
- Difficult insufflation	2	8.7
- Difficult dissection	6	26.0
- Difficult control of bleeding from gall bladder bed	1	4.3
- Spilled stones	3	13.0
- Difficult extraction of the gall bladder	4	17.3

Thus, successful laparoscopic cholecystectomy could be achieved in 19 out of the 23 cases (82.6%) and failed in the remaining 4 cases (17.4%) as shown in Table (28). The failed cases were converted to the open surgical procedure. The causes of failure are shown in Table (29).

Table (28) The reasons for conversion of Lap. Chol. to open procedure:

Reasons for conversion	No.	%
-Severe chronic inflammation of the gall bladder with adhesions to surroundings	3	75
-Bleeding from Gall Bladder bed	1	25

Table (29) The success and failure of laparoscopic cholecystectomy:

Cases	No.	%
-Successful L.C.	19	82.6
-Failed L.C.	4	17.4

Thus successful management of calcular obstructive jaundice, by sphincterotomy and stone extraction followed by L.C., could be achieved in 19 76%)> Patients out of 25 patients. Conversion to the traditional management occurred in 6 patients (24%).

Two of them due to failure of stone extraction and 4 due to failure of laparoscopic cholecystectomy as shown in Table (30).

Table(30) The success and failure in the management of group (B) patients:

Management of Calcular Obstructive Jaundice	No.	%
- Patients involved in group (B)	25	100
- Total success of management	19	76
- Total failure :	6	24
* Failed stone extraction	2	8
* Failed lap. chol.	4	16

Analysis of the preoperative diagnostic variables of ***group (B)*** patients to compare the data of the 19 successfully managed cases with that of the 6 failed cases showed the following:

The two cases converted due to failure of stone extraction did not show significant differences except that both were positive for stone impaction in a juxtapapillary diverticula (JPD). This finding (JPD) was positive also in another 6 cases of ***group(B)*** and were managed successfully.

The four cases converted due to failure of L.C. showed significant differences in the variables demonstrated in Table (31).

Table(31) Comparison of the diagnostic variables of the 4 failed L.C. cases with those of the 19 successfully performed cases.

Variables	Failed lap.chol.	Successful lap. chol.	Comparison	
			P-value	Signi-ficance
-Mean age	55.7±13.3	42.8±11	0.02	Sig.
-Males (sex)	1(25%)	5(26.3%)	0.47	Insig.
-Cases with fever	3(75%)	1(5.26%)	8.8 E-03	Sig.
-Cases with hepatomegaly	4(1.00%)	1(5.26%)	4.51E-0.4	Sig.
-Cases with tenderness in the right hypochondrium	3(75%)	2(10.53%)	8.8E-03	Sig.
-Diabetic cases	2(50%)	3(15.8%)	0.40	Insig.
-Mean WBC count	9975±4020	7873+3158	0.129	Insig.
-Mean serum total bilirubin	9.5±5.2	5.4+3.8	0.03	Sig.
-Cases with bilharzial liver (by ultrasonography)	1(25%)	2(10.5%)	0.97	Insig.
-Cases with signs of inflammation (Probe tenderness by ultrasound).	3(75%)	0-	8.8E-03	Sig.

Table(32) Complications of L.C in the included patients:

Complications	Number	%
(Related to the procedure)	**4**	**2**
-Common bile duct injury	**1**	**4.3**
-Bleeding:cystic artery	**2**	**8.6**
-Accessory duct leak	**1**	**4.3**

D-Observations:

The operative time: As shown in Table (33) and Fig.(83), there is a significant reduction in the mean operative time, of the successfully managed 19 cases of ***group (B).***

Table(33) Comparison between the operative time of group (A) cases and that of the successfully managed cases in group (B).

Operative time	Group (A)	Successful cases of group (B)	P-value
Mean time	153+28.4	90+18.9	90.8 E-ll
Minimum	120	60	-
Maximum	210	120	-

*A **drain*** was inserted in all the patients (100%) of ***group (A)*** at the end of the procedure. In ***group (B),*** a drain was inserted at the end of procedure in only 9 cases (39%). In addition, the mean time of drainage was significantly reduced in patients of ***group (B)*** as shown in Table (34) and Fig.(84).

Table (34) The use of a hepatorenal pouch drain:

The use of hepatorenal pouch drain	Group (A)	Group (B)	P-value
-Number of patients	25(100%)	9(39%)	-
-Mean duration of drainage (days)	5.26+4.1	1.2±0.6	1.7 E-04

The nasogastric tube was left in place for a mean of 2.86 days in ***group (A)*** patients. This tube was removed by the end of the procedure in all the successful cases of ***group (B).***

T-tube cholangiography was done in 10 patients of group (A) (40%) after a mean of 7 days, then clamping was done for two days. Removal of the T-tube was done after a mean of 10 days. Patients with successful procedure in group (B) were not subjected to these steps.

The parenteral fluids were given to patients of ***group (A)*** for a mean of 76.8 hours with a minimum of 48 hours and maximum of 144 hours, then oral fluids were allowed. In ***group (B),*** successful cases of laparoscopic cholecystectomy were given parenteral fluids for a mean of 8 hours only after which oral fluids were tolerated as shown in Fig.(85).

Postoperative pain was controlled by using pethidine 50 mg injections for 2-3 doses in the early postoperative period of all the patients of ***group (A).***

Successful cases of L.C in ***group (B)*** were given non-steroid anti-inflammatory drugs (NSAD) in association with the local anesthetics injected in the abdominal wall. This combination failed in two patients, thus pethidine was used in them.

Antibiotics were used for a mean of 10.9 days in patients belonging to ***group A*** while patients of ***group B*** successfully managed by LC, were given antibiotics for a mean of 4.8 days only. Comparison is shown in Fig. (86).

Postoperative ambulation: In ***group (A)*** patients, postoperative ambulation started after a mean of 42.5 hours. This period was significantly reduced to a mean of 11.5 hours in successfully managed cases of ***group (B)*** as shown in Table (35) and Fig.(87).

Table(35) Comparison between the duration after which postoperative ambulation started (Hours).

Postoperative ambulation	Group (A)	Group (B)	P-value
-Mean time (hours)	42.5+15.4	11.5+3.5	9.08 E-ll
- Minimum	24	8	-
- Maximum	72	20	-

Postoperative hospital stay (POHS) :

Patients of group (A) stayed in hospital for a mean of 11.66 days after surgery. Patients belonging to group (B), successfully managed by L.C showed significant reduction in this period to a mean of 1.6 days as shown in Table (36) and Fig. (88).

Table(36) Comparison between the mean postoperative hospital stay of both groups (days):

Postoperative hospital	Group (A)	Group (B)	P-value
Mean time (days)	11.66+6.11	1.6+0.4	7.13 E-ll
Minimum	9	1	-
Maximum	40	2	-

Post drainage laboratory investigations, were done after two weeks in patients of both groups. All the patients showed marked improvement in liver functions with insignificant difference between patients of both groups as shown in Table(37). Patients belonging to ***group (B)*** were subjected to general anesthesia after this improvement had been achieved, Fig.(89-91).

Table(37) Comparison between the results of post drainage laboratory studies of both groups:

Post drainage laboratory studies	Group (A)	Group (B)	P-value
- Total bilirubin	1.7+1.18	1.4+0.9	>0.05
- Direct bilirubin	1.01+0.7	0.86+0.5	>0.05
-Alkaline phosphatase	271+142	217+112	>0.05
-ALT (SGPT)	61+35	57+37	>0.05
-AST (SGOT)	57+30	48+35	>0.05

Table(38)Comparison between postoperative mortality and morbidity encountered in patients of both groups:

Mortality and morbidity	Group (A)	Group (B)	P-Value
-Mortality (renal failure)	1(4%)		
-Wound infection	2 (8%)	2(10.5%)	>0.05
-Prolonged postoperative fever	8 (33.3%)	3(15.78%)	<0.05
-Burst abdomen	1(4.16%)		
-Delayed return to oral feeding	2(8.33%)		

E. Results of follow - up

The follow up period of this study ranged from 2-29 months with a mean of 15.6 months for group A and 14.5 months for the group (B).

***For group A:**

- One patient (4%) had recurrence of symptoms. This patient was from the T-tube group after the C.B.D exploration (10%). E.R.C.P Showed retained stone that was found after 6 months of the operation. He was maneged endosopically

- Four cases had milder symptoms (16%) which occurred as fatty dyspepsia after heavy fatty meals only. Ordinary diet produced little or no symptoms. Three cases were from the T-tube group while one case had choledochoduodenostomy.
- The rest (20 case, 80%) were until the end of the study period biliary symptoms-free. But 3 of them had tolerable pain in the wound that could be easily controlled with analgesics.
- Table (39)Shows the results of the follow - up of the ***group A.***

***For group B:**

-The two patients converted into surgical operations were doing well. Both were on low fat diet. So they had symptom-free post-operative follow - up until the end of this study.

-Five cases had mild symptoms (20% of the whole group, 21.7% of the 23 operated patients) that occurred only after heavy or fatty diet. Four of them were easily treated with diet control. But one of them (one who had difficult cannulation and 2 sessions for extraction) had jaundice with biliary colic after 17 months. The ultrasound did not show any abnormality, but the

E.R.C.P showed one small stone (3 mm) for which re-sphincterotomy and extraction by Dormia basket cured the condition. The remaining 13 patients were symptom - free until the end of the study.

So, retained stone in the ***group B*** occurred in 1 case (4% of the total, 4.8%, of the 23 operated patients.

So, failure to clear the C.B.D by the E.S (if this case is considered retained and not recurrent stone) would be 3 cases (12%). One was with the impacted stone in a diverticulm encountered at sphincterotomy, the second was the case in which failure to clear the C.B.D from a big primary stone and the third was the post-operative retained stone that was found after 17 months of the operation.

- Table (40) shows the results of the follow - up of the ***group B.***

Table(39) Results of follow up of the group A

Item	No.	% to Total	Relative percentage
-Recurrent stone.	1	4	10% of the T-tube group.
-Recurrence of mild symptoms:	5	20	
T-tube group, (10)	3	12	21.4% of this group
Choledochojejunostomy group,(11)	2	8	16.7% of this group
-Biliary symptom-free patients	19	76	
T-tube group, (10)	6	24	60 % of this group
Choledochojejunostomy group,(11)	10	40	92.5 % of this group
Choledochoduodenostomy,(3)	2	8	66.5%
Sphincteroplasty,(1)	1	4	100 %
-Tolerable wound pain	3	12	16%of the symp.free group

Table(40) Results with follow-up of the group B:

Item	No.	% to Total	Relative percentage
-Biliary symptoms-free.	15	60 %	
:operated patients.	13	52 %	72.2%
:patients converted to group A	2	8 %	
-Recurrence of mild symptoms	5	20%	27.8%
: 4 treated conservatively	4	16%	22.2%
:Retained stone treated endoscopically	1	4%	5.6%
-Overall failures of the E.S. to clear the C.B.D.	3	12%	

On the other hand, table(41) compare ***group (A)*** versus ***group (B)*** as regard follow up results:

Table(41) Comparison between group(A) and group(B) as regards follow up results:

Item	Group A		Group B		P-Value
	No.	%	No.	%	
Recurrence of symptom	5/25	20%	5/25	20%	>0.05
Biliary symptoms free	20/25	80%	15/25	60%	>0.05
Retained stones	1/25	4 %	1/25	4 %	>0.05

Thus the above table shows insignificant difference in the main morbidity of either groups, i.e.. in favor of ***group (B).***

FIG. (7 5) : DISRIBUTION OF PATIENTS ACCORDING TO SEX

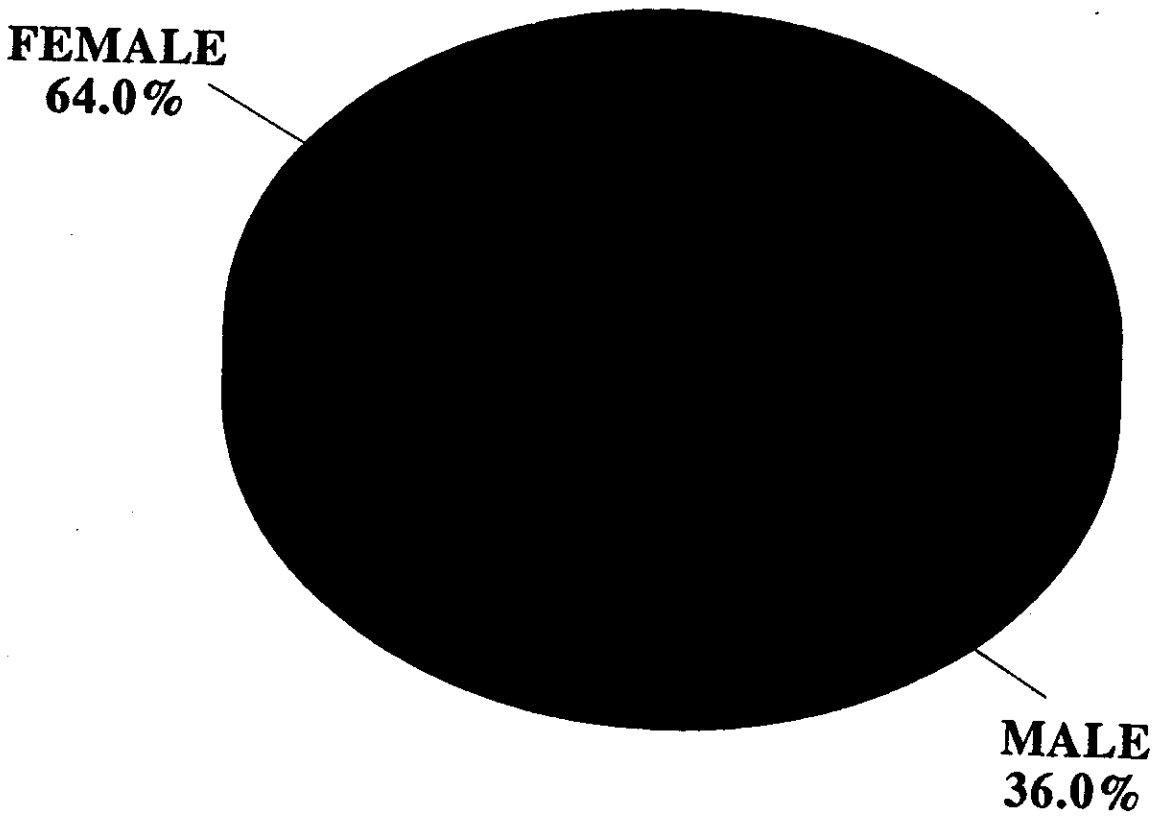


FIG. (7 6) : SYMPTOMS ASSOCIATED WITH JAUNDICE IN BOTH GROUPS OF PATIENTS

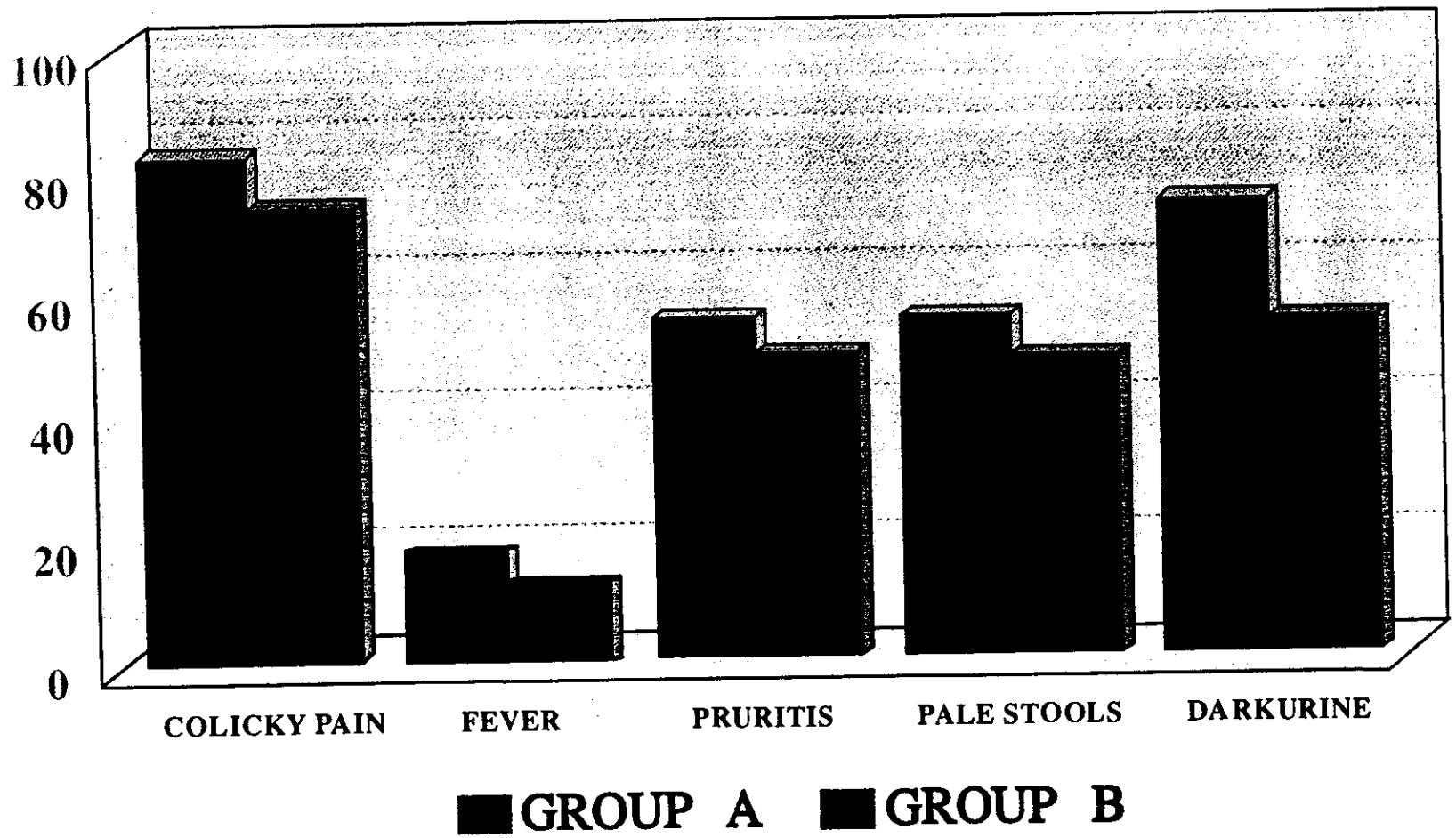


FIG. (7 7) : ABDOMINAL FINDINGS ASSOCIATED WITH JAUNDICE IN PATIENTS OF BOTH GROUPS

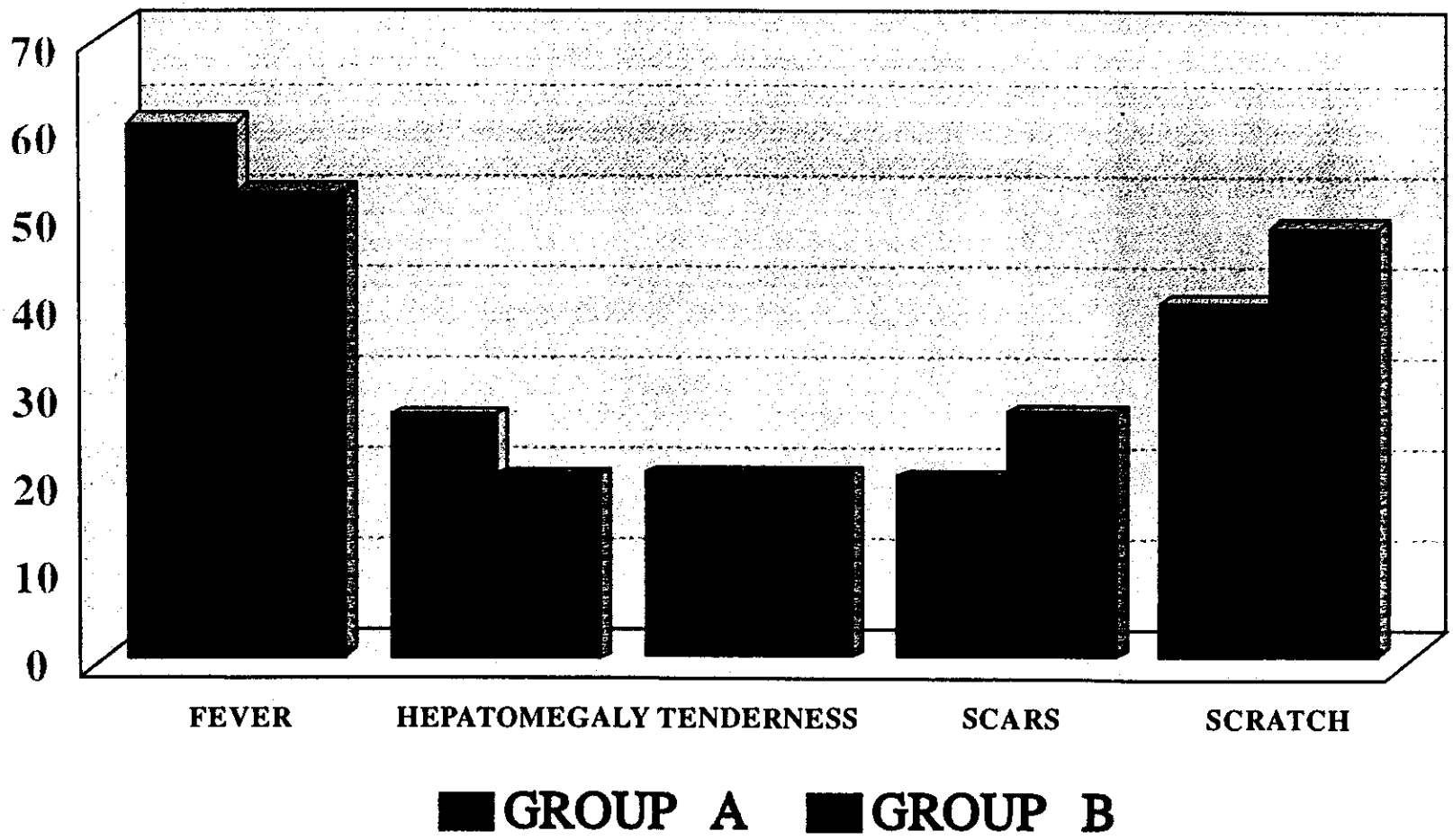


FIG .(7 8) MEAN OF HEMOGLOBIN , TOTAL BILIRUBIN DIRECT BILIRUBIN AND PT IN BOTH GROUPS

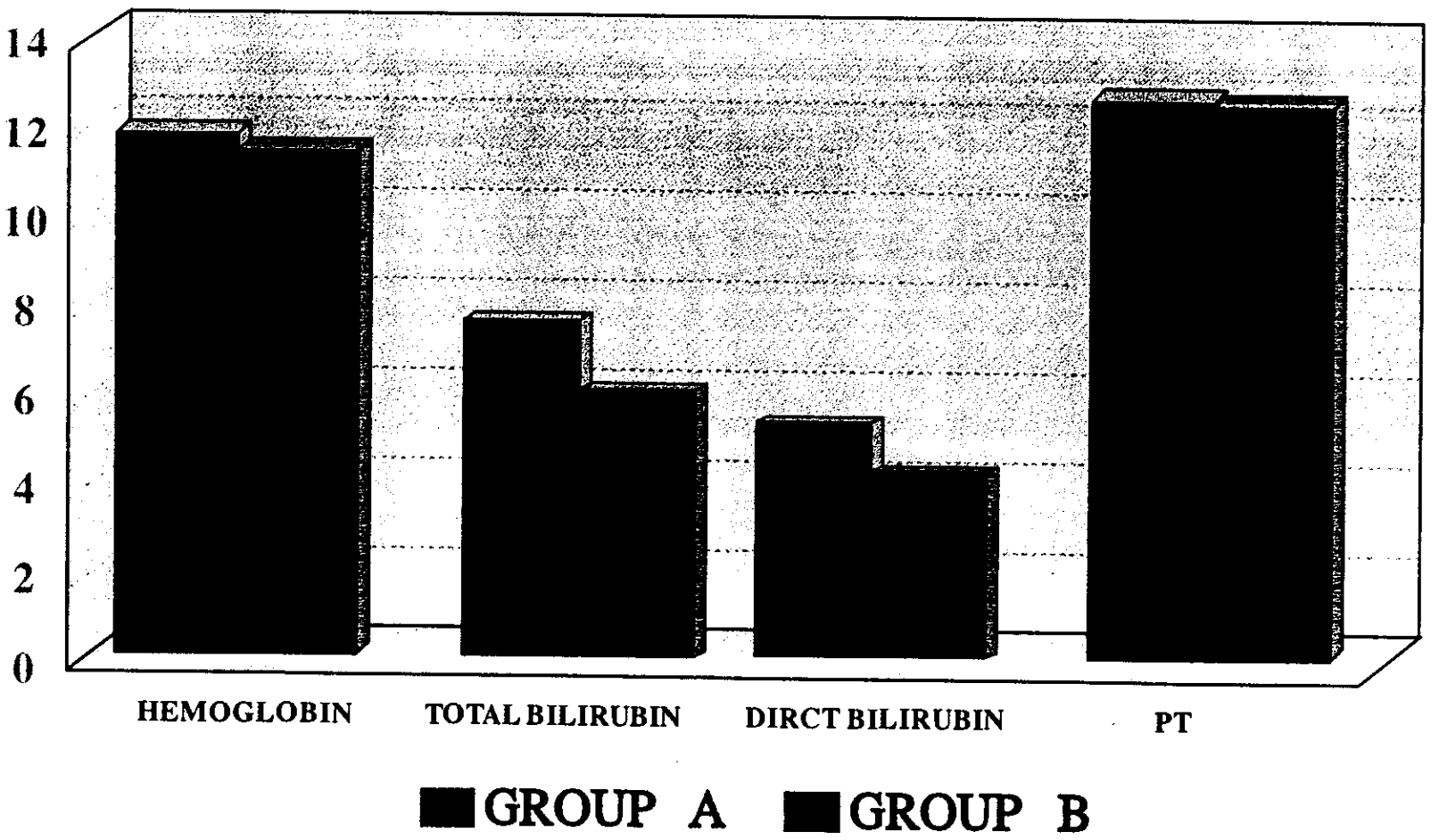


FIG. (7 9) : MEAN OF WHITE CELL COUNT , F.B.S., SGPT SGOT AND PC

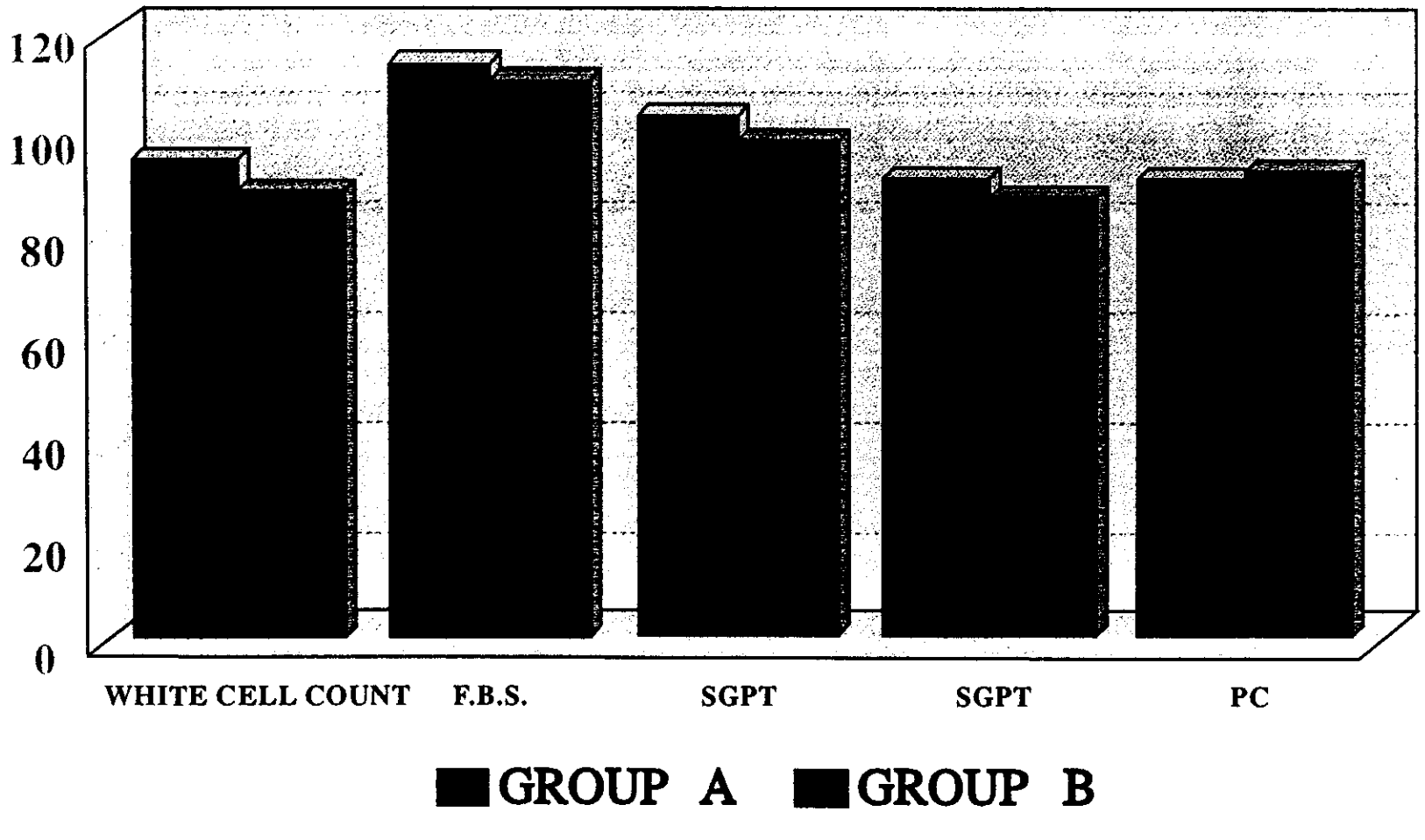


FIG. (8 0) : MEAN OF POST PRANDIAL SUGAR ALKALINE PHOSPHATASE IN BOTH GROUP

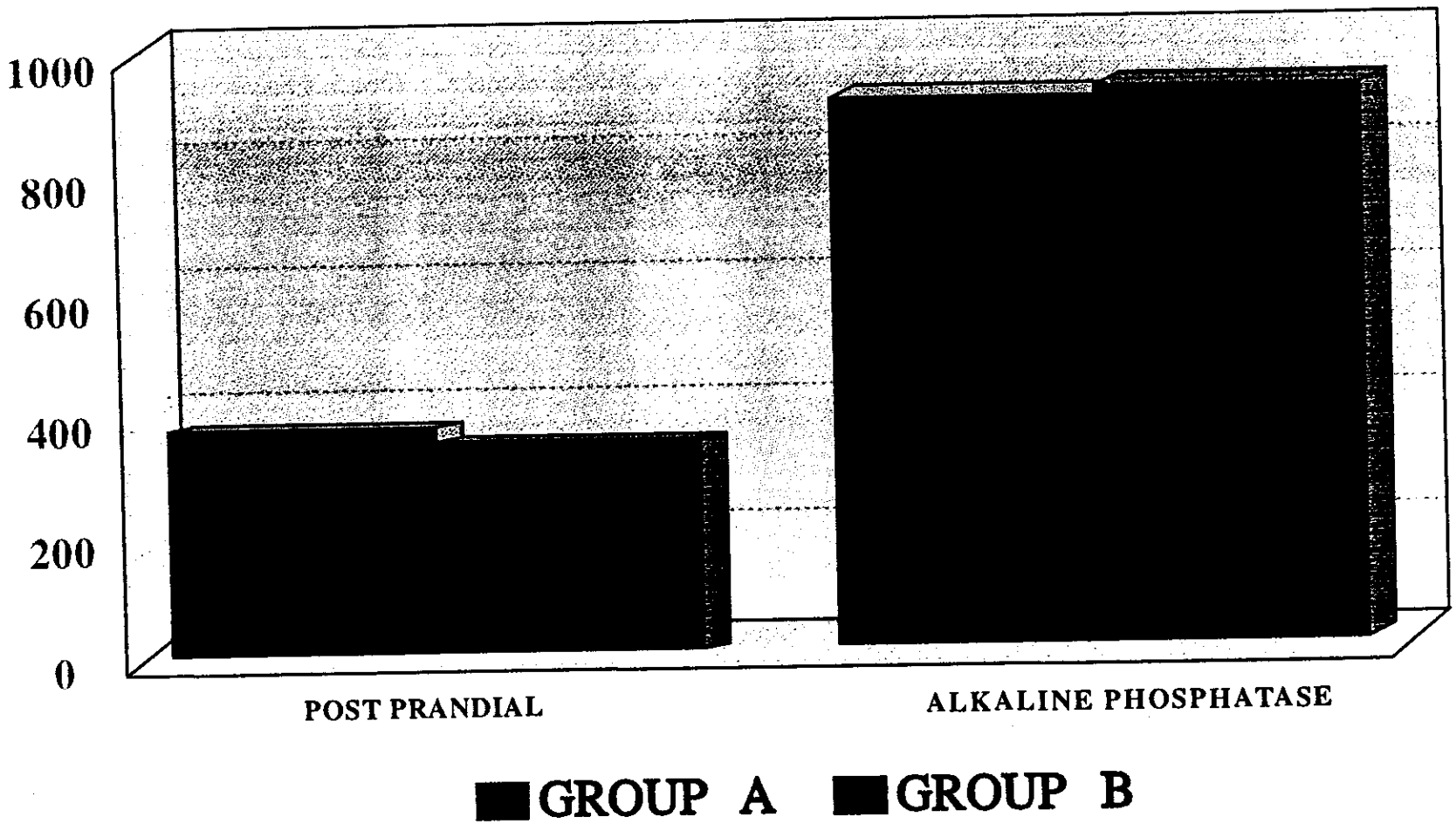


FIG. (8 1) : ULTRASONOGRAPHIC FINDINGS IN BOTH GROUPS

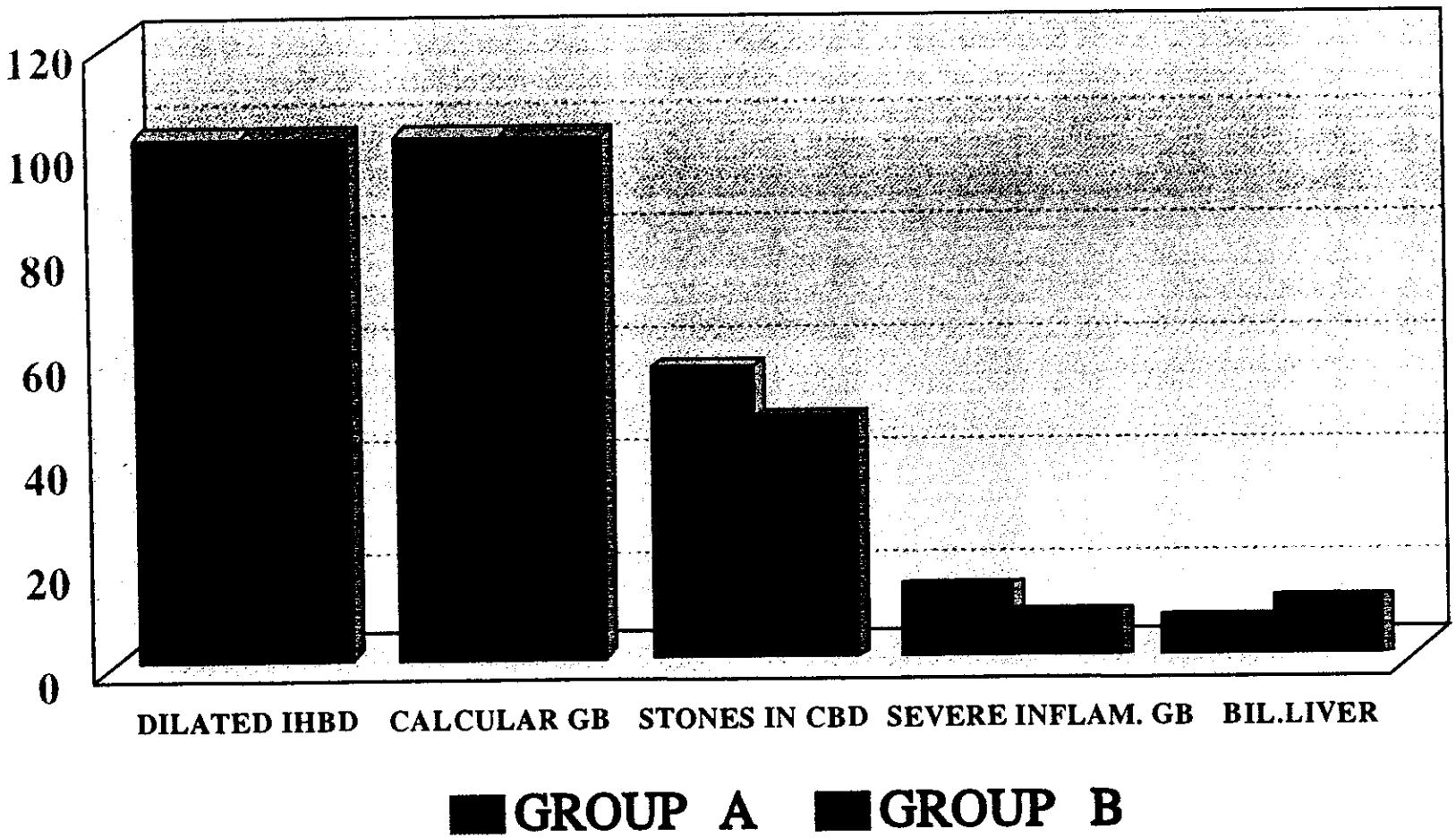


FIG. (8 2) : ERCP FINDINGS IN BOTH GROUPS

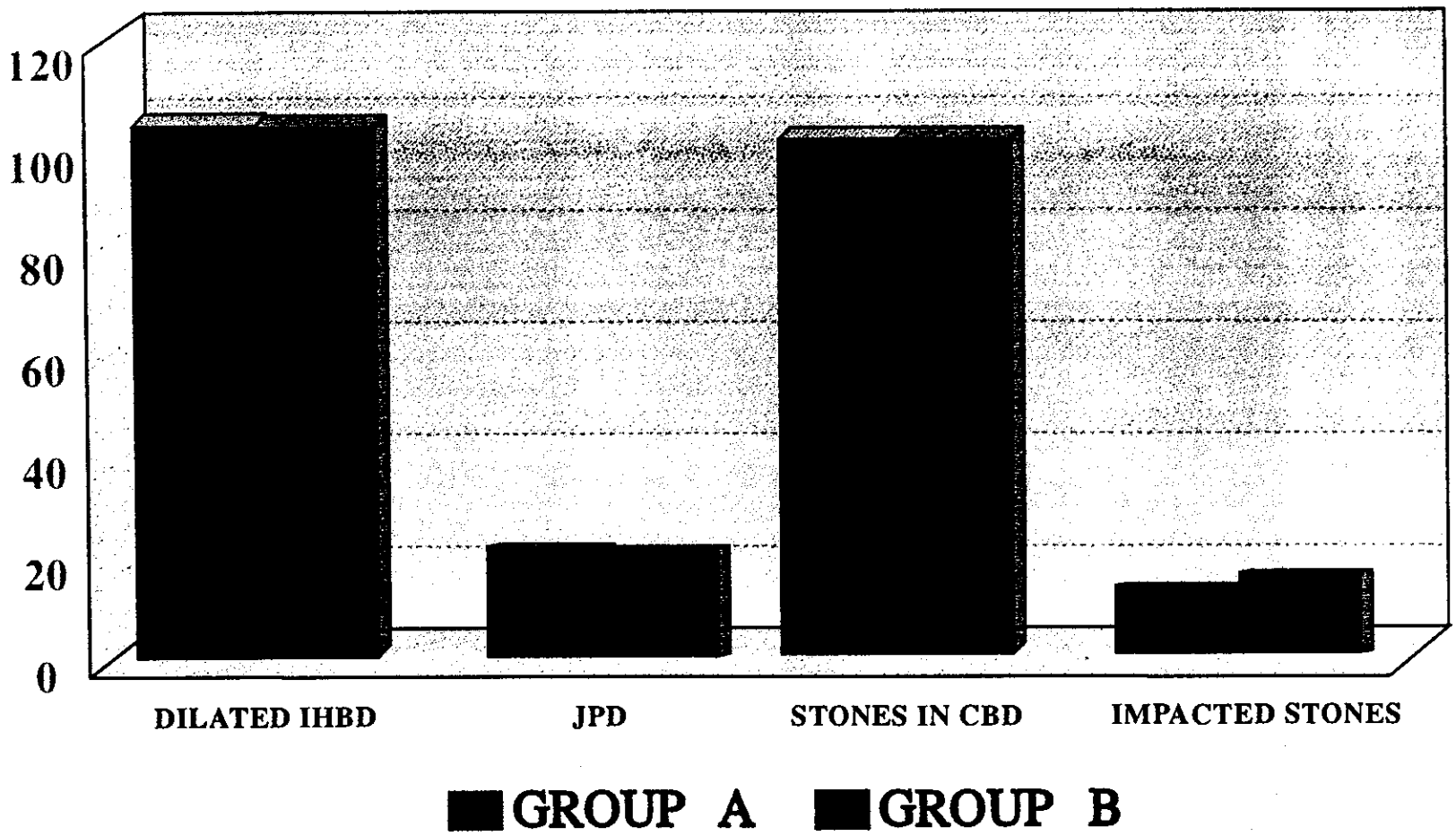


FIG. (8 3) : MEAN VALUES OF OPERATIVE TIME IN BOTH GROUPS

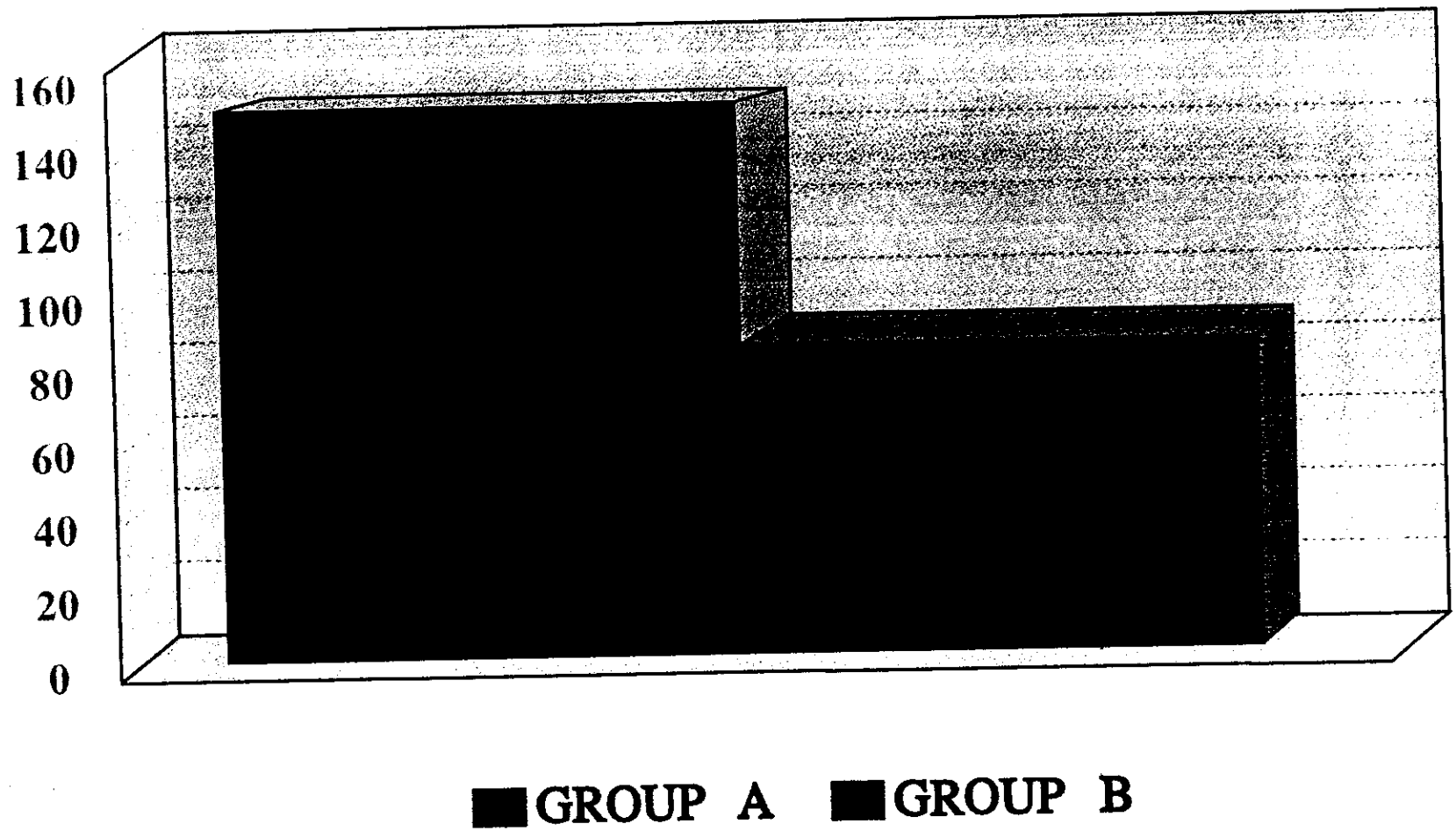


FIG. (8 4) : MEAN VALUES OF DURATION IN HEPATORENAL POUCH DRAIN IN BOTH GROUPS

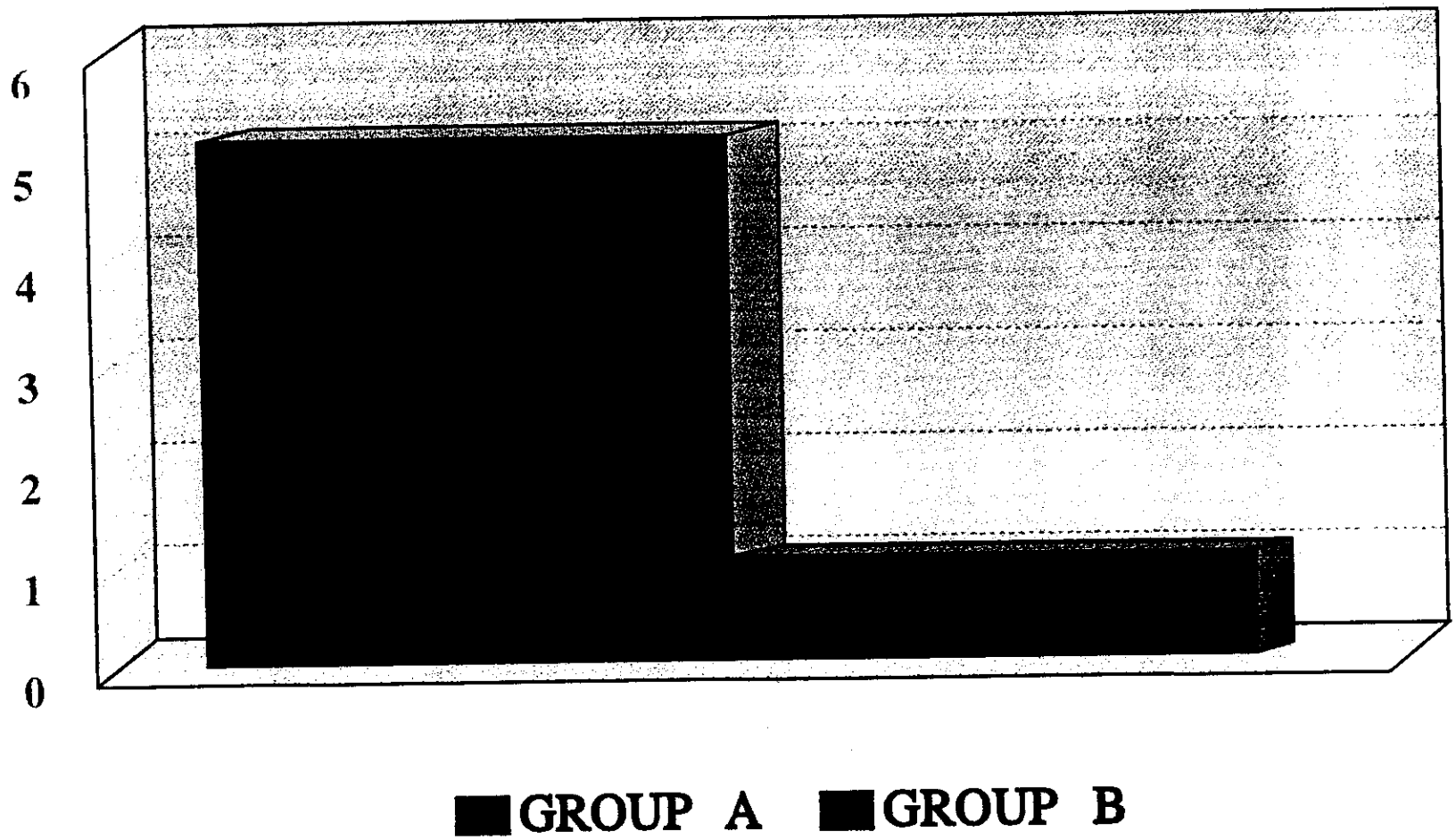


FIG. (85) : MEAN VALUES OF DURATION OF PARENTAL FLUIDS IN BOTH GROUPS

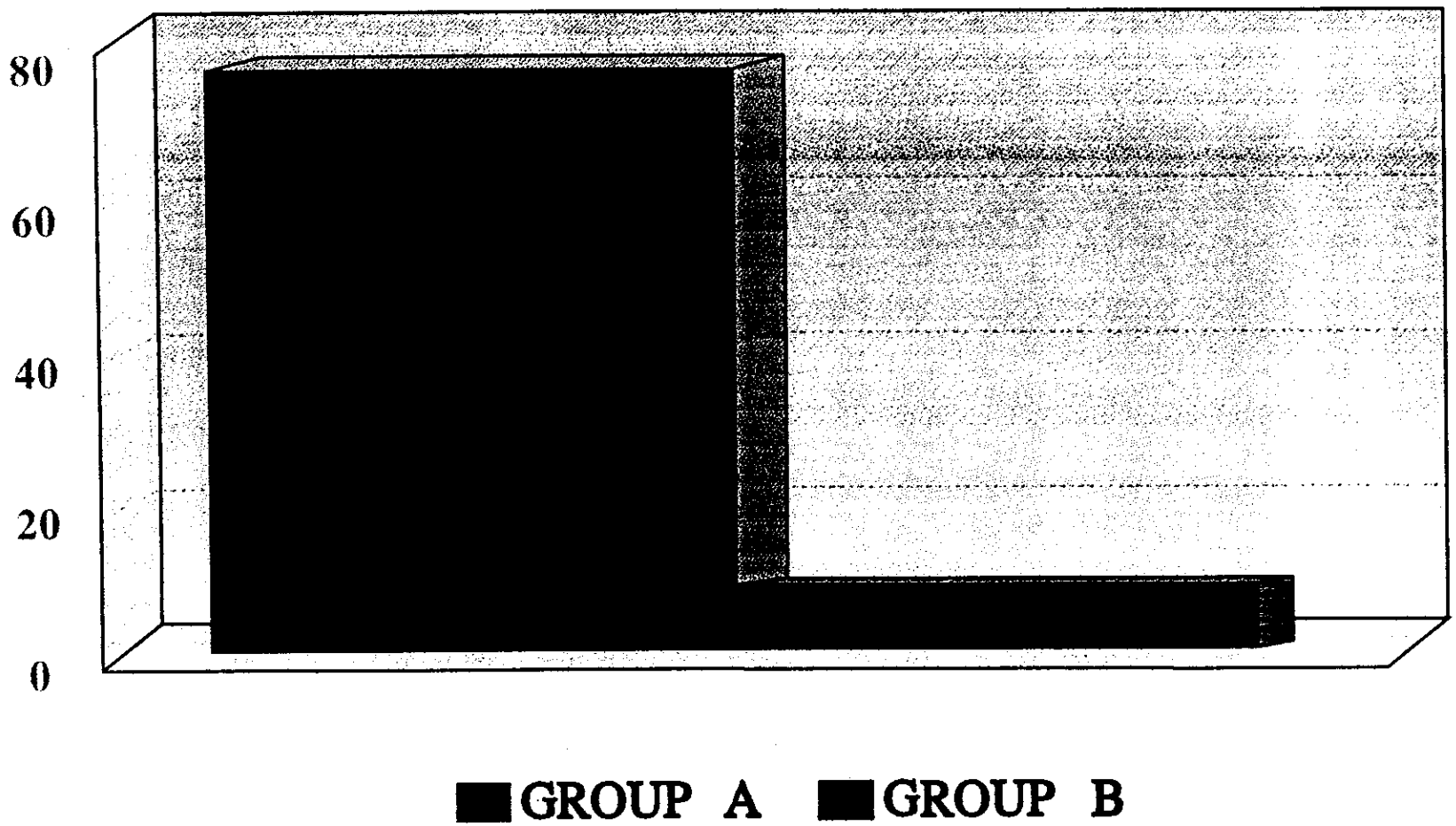


FIG. (8 6) : MEAN VALUES OF DURATION OF ANTIBIPTICS IN BOTH GROUPS

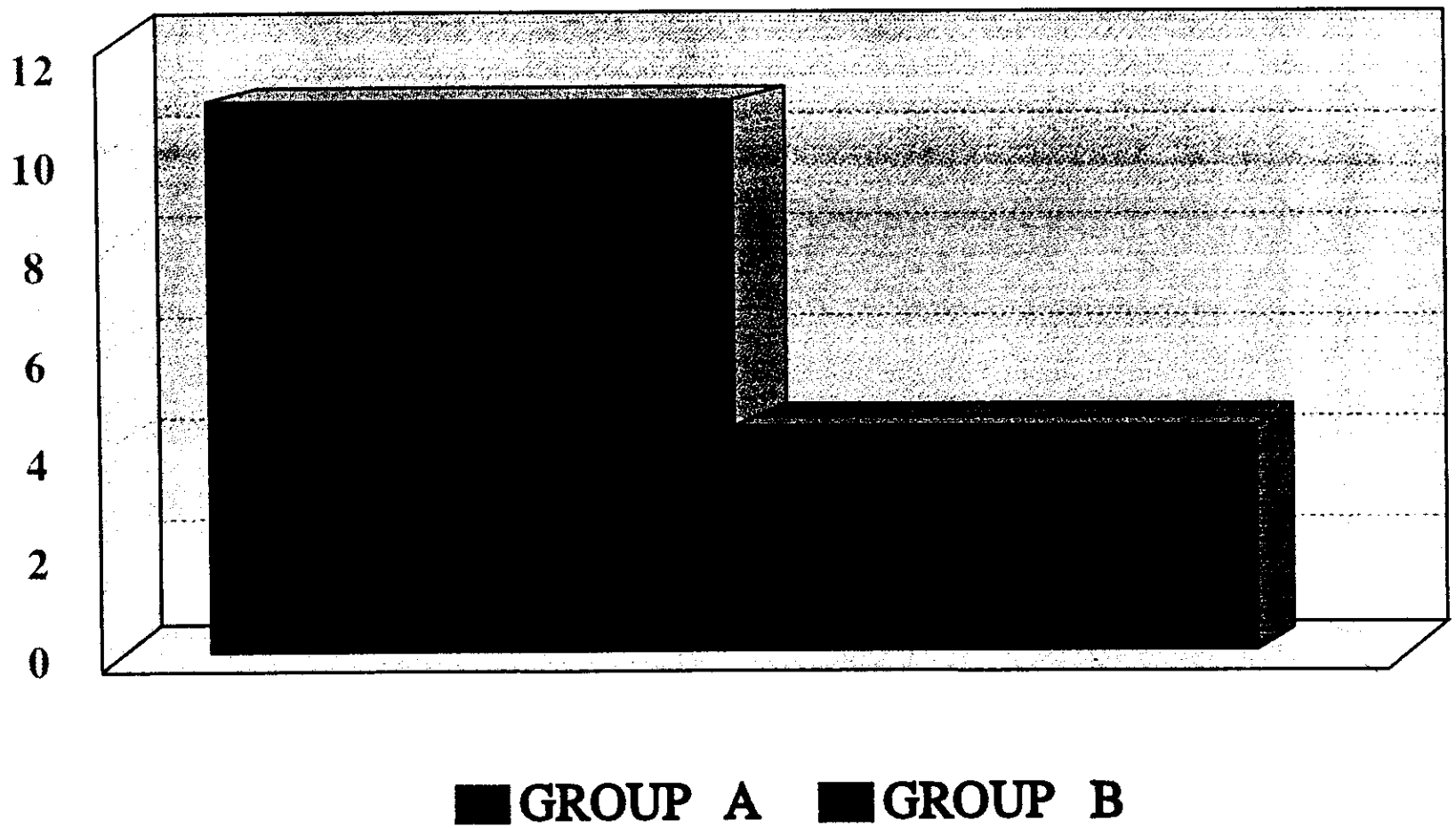


FIG. (8 7) : MEAN VALUES OF START OF POSTOPERATIVE AMBULATION IN BOTH GROUPS

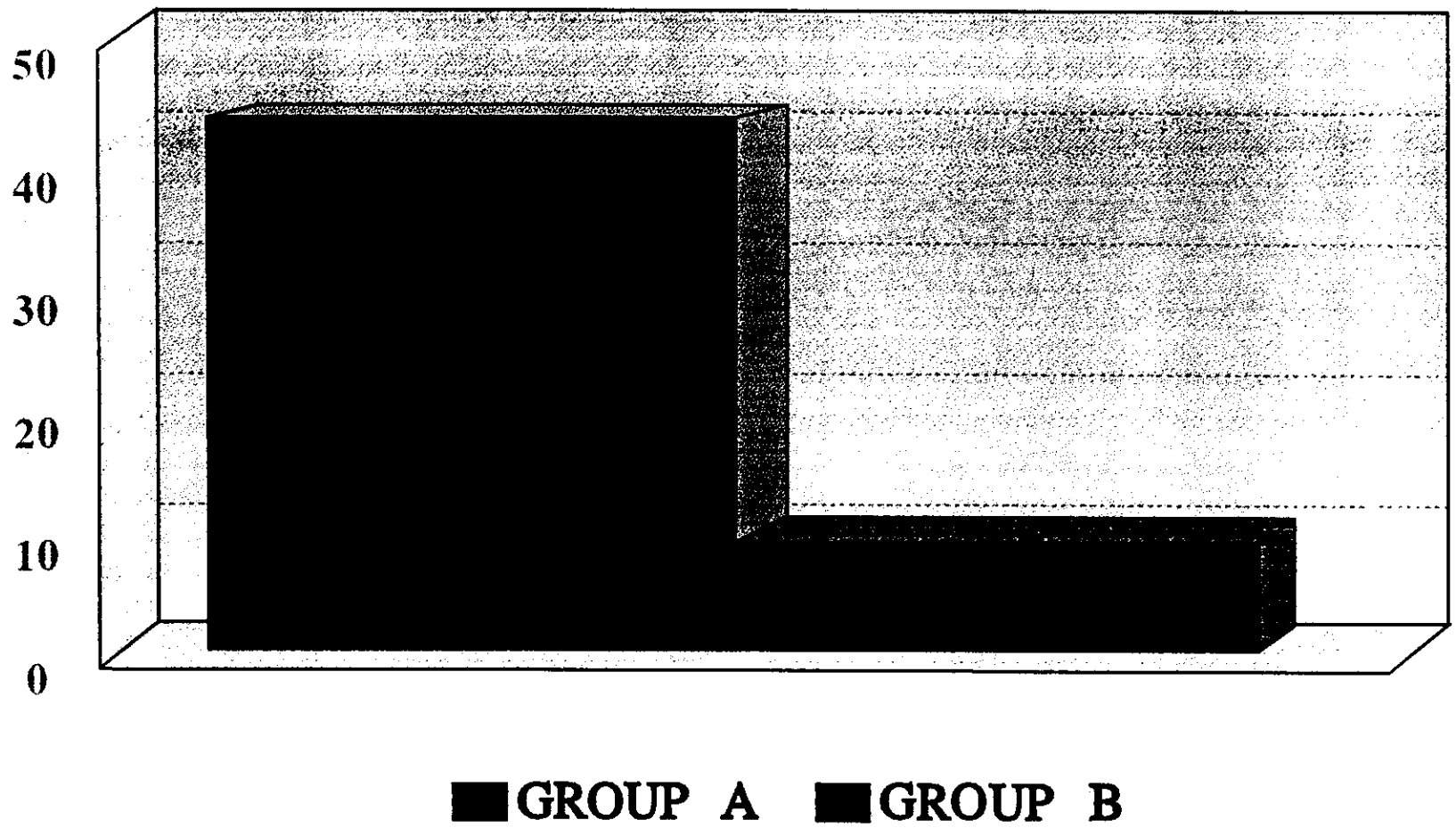


FIG. (8 8) : MEAN VALUES OF POSTOPERATIVE HOSPITAL STAY IN BOTH GROUPS

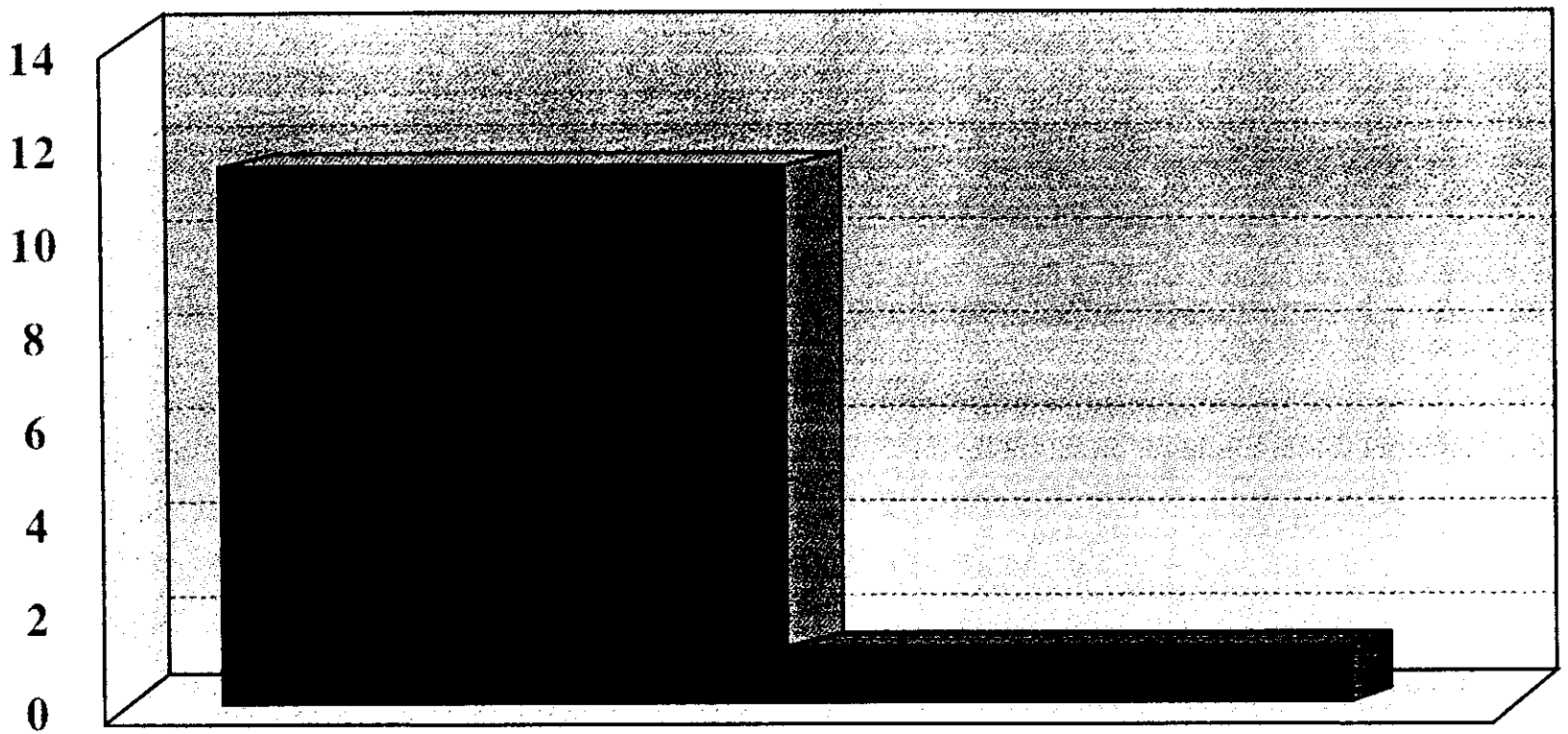


FIG. (8 9) : MEAN VALUES OF POSTDRAINAGE SERUM BILIRUBIN

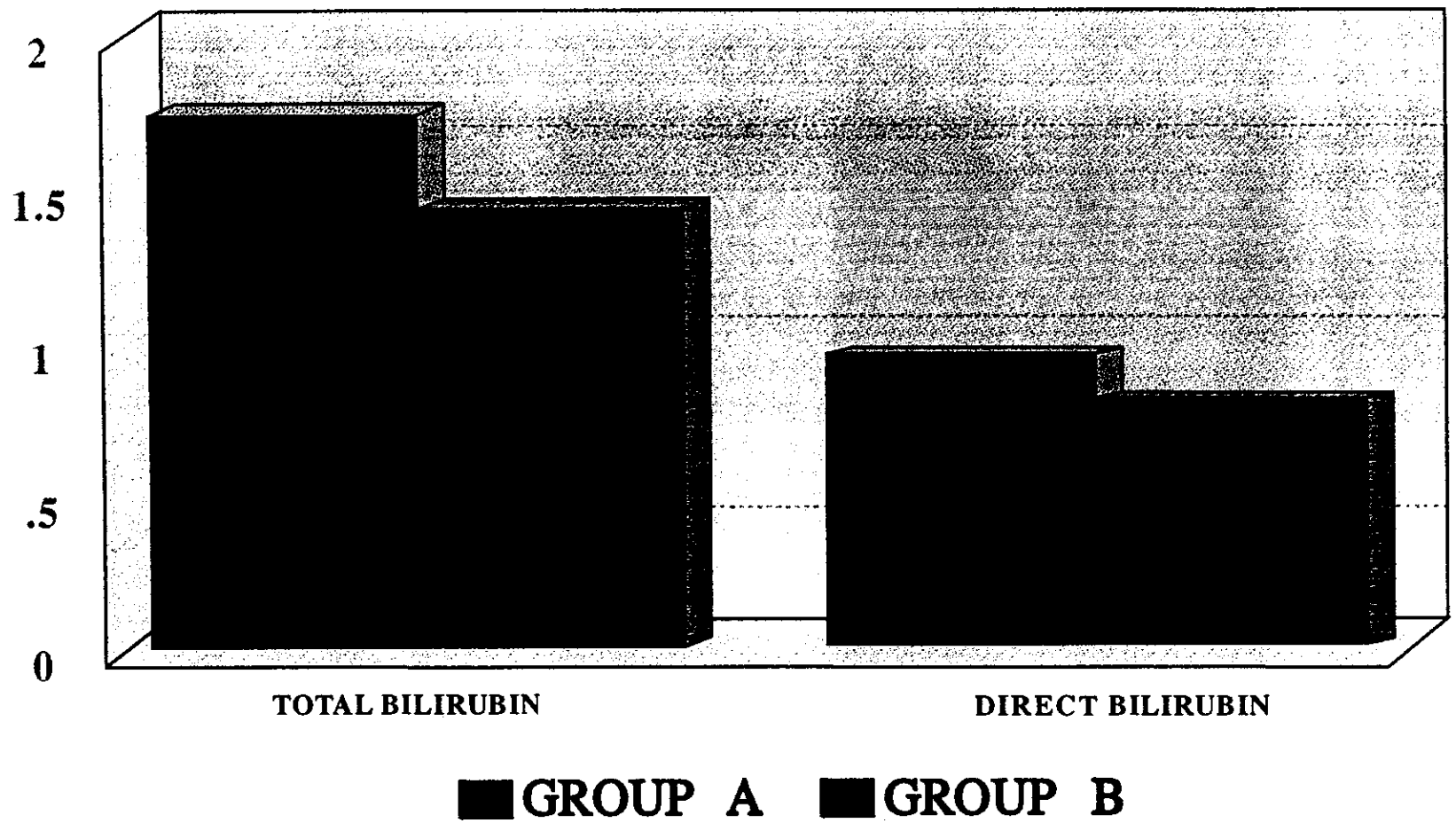


FIG. (9 0) : MEAN VALUES OF SGPT AND SGOT POST DRAINAGE

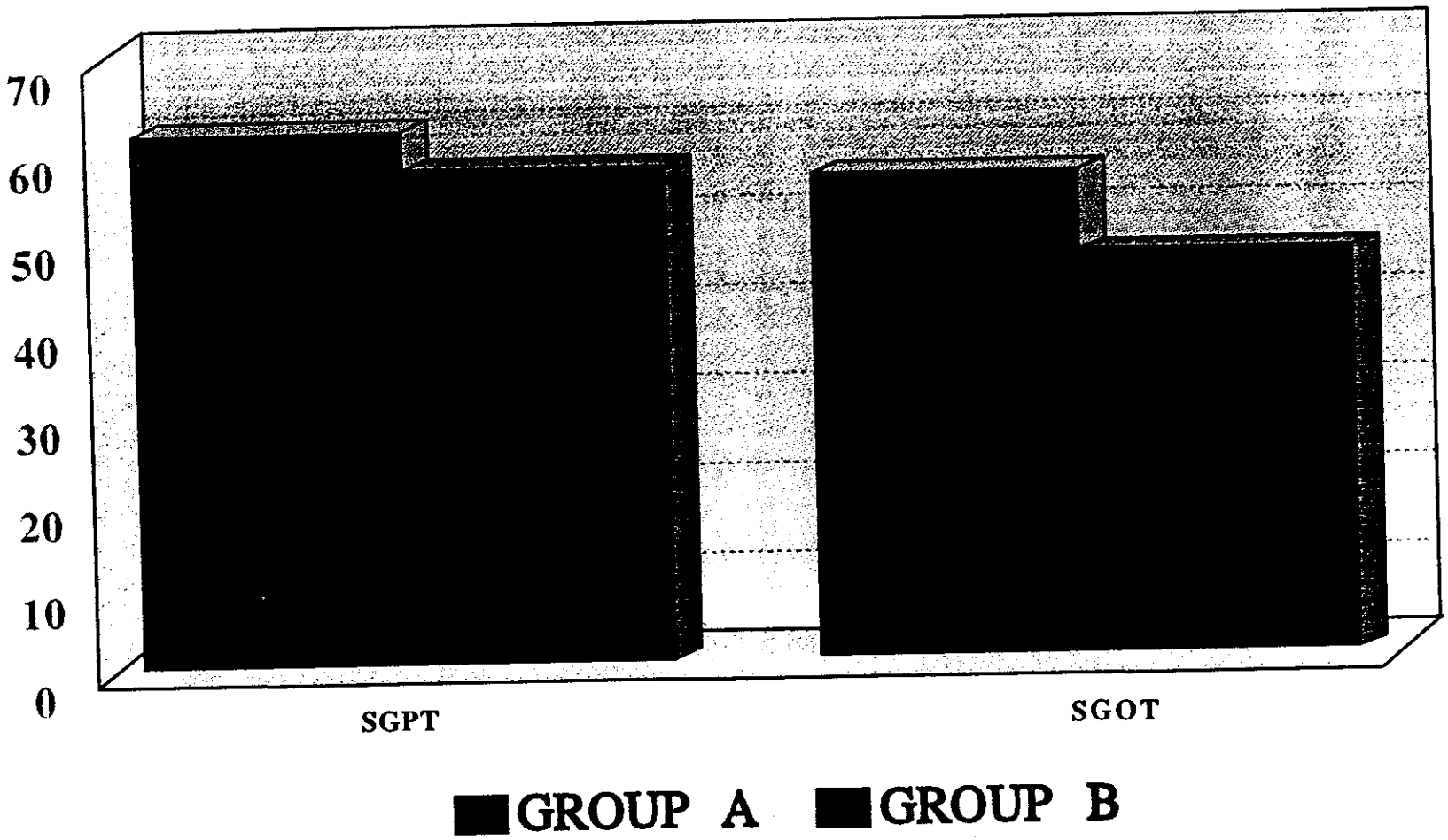
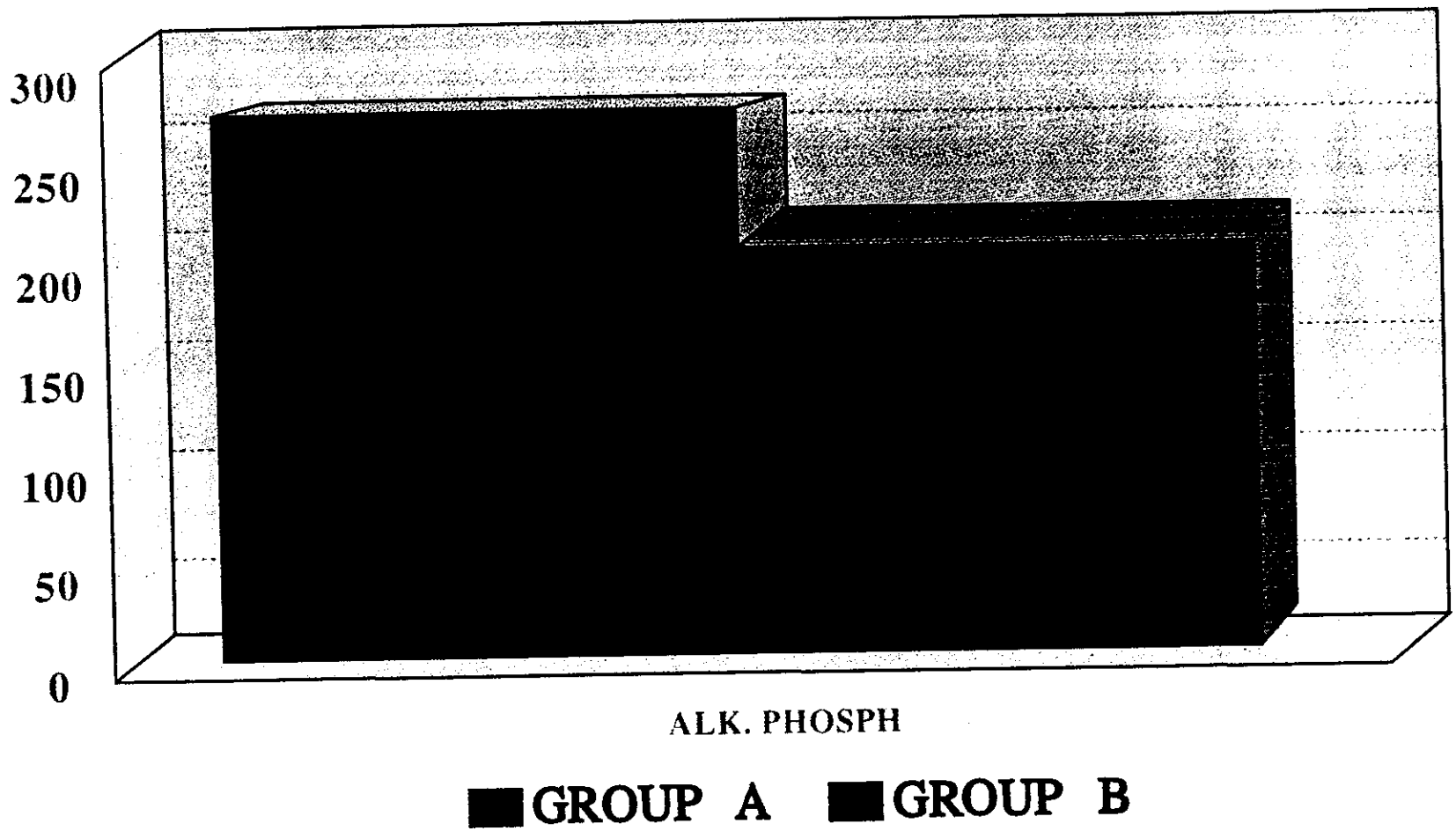


FIG. (91) : MEAN VALUES OF ALKALINE PHOSPHATASE POST DRAINAGE



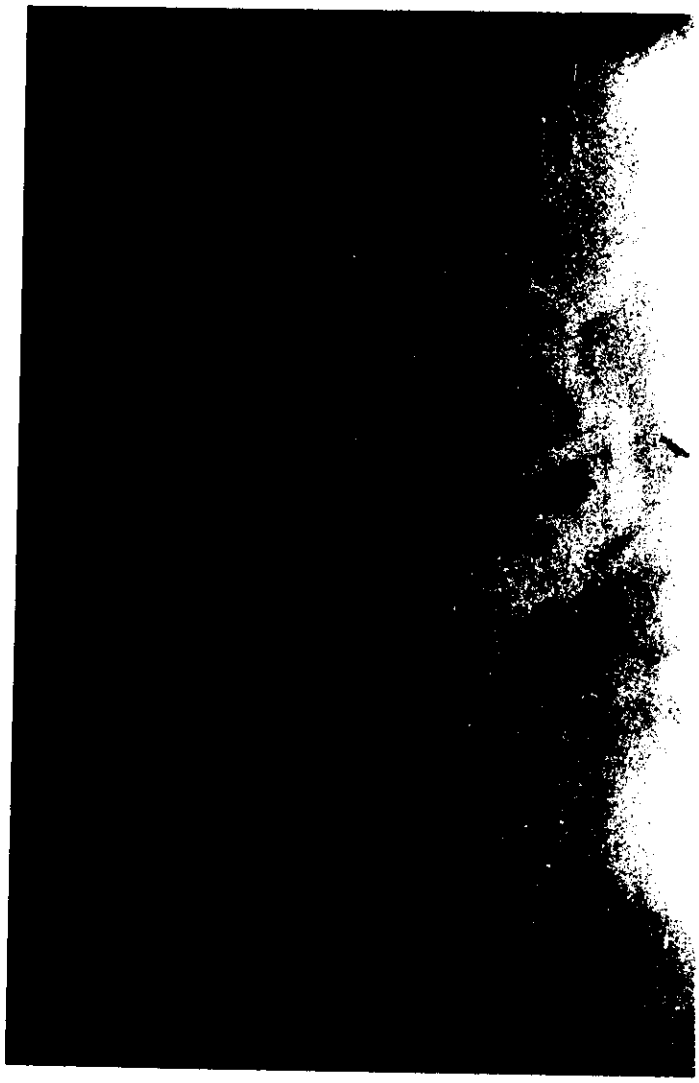
(Fig.92) ***E.R.C.P*** **shows multiple stones inside dilated C.B.D.**

(Fig.93) ***E.R.C.P*** **shows impacted stone in the lower end of the common bile duct with dilated C.B.D &C.H.D and I.H.B.D above the stone.**

(Fig.94) ***E.R.C.P*** **shows filling defect with multiple stones inside dilated C.B.D.**

(Fig.95) ***E.R.C.P*** **shows "Mirnzi Syndrome"**

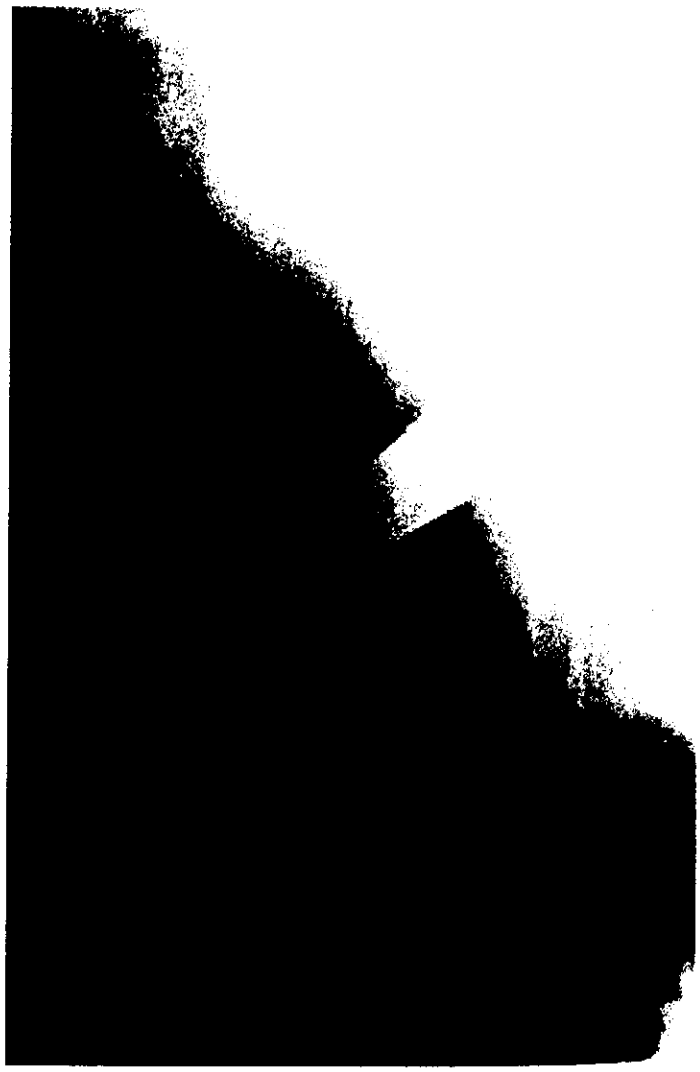
Stone projecting from the cystic duct into dilated C.B.D causing its obstruction



(Fig.96) ***Post operative T-tube cholangiography***

(Post operative missed stone with dilated C.B.D)

(Fig.97) ***E.R.C.P*** **shows large stone (2 cm.) inside the basket during extraction from the lower end of the C.B.D.**



(Fig.99) ***E.R.C.P*** **shows large stone (4 cm.) catched in large basket for lithotripsy**

(Fig. 100) ***E.R.C.P*** **shows basket introduced into the dilated C.B.D with stone inside the opened basket**

(Fig.101) ***E.R.C.P*** **shows stone in lithotripsy basket.**

(Fig. 103) ***E.R.C.P*** **shows multiple large stones inside the dilated C.B.D with stent (10 Fr.) to relive the obstruction**

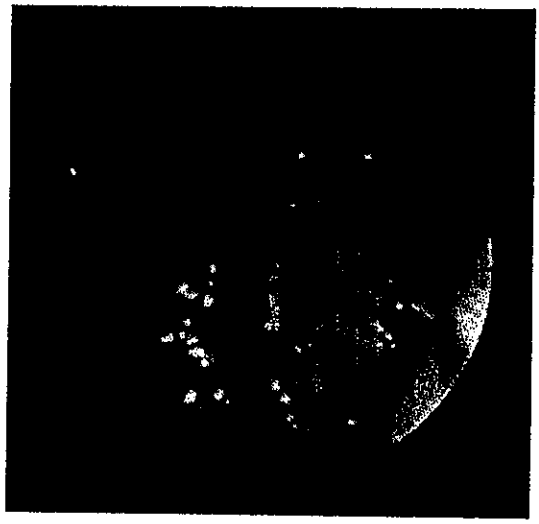


Fig (104) Endoscopic Shincteromy
(E.S.)

Fig (105) Endoscopic Retrograde Biliary
Drainage by Stent