

## **AIM OF THE WORK**

The aim of the work was to evaluate the difference between abdominal hysterectomy and laparoscopic hysterectomy.

## PATIENTS

This study was carried out on one hundred women randomly divided into two equal groups, fifty patients each, recruited from EL-Shatby University Hospital complaining of abnormal uterine bleeding (AUB) from 1-2012 to 10-2014.

### **Inclusion criteria:**

- 1- The age ranges from 40 to 60 years old.
- 2- Mobile uterus (by bimanual examination).
- 3- Normal cervix (by speculum examination).
- 4- Negative (free) Pap smear.
- 5- Abnormal uterine bleeding not responding to medical treatment .

### **Exclusion criteria:**

1. Previous laparotomy.
2. Morbid obesity (body mass index (BMI)  $>30\text{kg/m}^2$ ).
3. Uterine size  $\geq 12$  weeks gestation (by bimanual examination).

All cases will sign a well informed written consent to declare their agreement to be enrolled in this study, as agreed upon by the ethical committee.

### **All patients was randomly divided into two study groups using the sealed envelope technique:**

**Group A (Laparotomy group):** 50 patients did subtotal abdominal hysterectomy.

**Group B (Laparoscopy group):** 50 patients did laparoscopic supracervical hysterectomy (LASH).

## METHODS

All patients will be subjected to the following:

### **Preoperative:**

1. Full history taking.
2. General, systemic, and bimanual pelvic examination.
3. Relevant investigations; e.g. CBC, Renal and liver function tests, Blood sugar study and urine analysis).
4. Transvaginal ultrasonography: to scan and confirm uterine size, ovarian status, and any concomitant pelvic lesion.

**Intra-operative: both procedures will be undertaken under general anesthesia:**

**Steps of open supracervical hysterectomy operation include 7 steps:** <sup>(20-24)</sup>

- 1- Opening of the anterior abdominal wall.
- 2- Ligation of the round ligaments.
- 3- Ligation of the infundibulopelvic ligaments.
- 4- Uterine arteries ligation.
- 5- Removal of the uterus.
- 6- Closure of the stump and lastly.
- 7- Closure of the anterior abdominal wall in layers.

**Steps of laparoscopic supracervical hysterectomy:** <sup>(15-17)</sup>

- 1- Pneumoperotinum in flat position.
- 2- Primary trocar insertion.
- 3- Camera introduces then trendelenburg position.
- 4- 3 accessory trocars insertion.
- 5- Round ligaments transaction.
- 6- Utroovarian ligaments transaction.
- 7- Uterine arteries transaction.
- 8- Uterus removal via monopolar wire loop.
- 9- Uterus extraction via morcelator.
- 10- Evacuation of the pneumoperotinum.
- 11- Trocars extraction under vision.
- 12- Closure of the facial defects.

**Recording of the following data was done**

- 1- Duration of the procedure (in minutes).
- 2- Cost (anesthesia, analgesia, intra- and postoperative medications, instruments, suture materials, and hospital stay running costs).
- 3- Total scar length (in centimeters).
- 4- Blood loss (by either suction or number of soaked towels provided that each soaked towel represent about 300 cc blood).

**Postoperative:**

- A. Number, type and dose of Analgesic ampoules needed.
- B. Time to peristalsis (in hours).
- C. Time to flatus (in hours).
- D. Time to ambulation (in hours).
- E. Hemoglobin (in g/dl) and hematocrit (in %).
- F. Patients' satisfaction (Using relevant questionnaires)

**Follow up visits:**

- 1st visit six weeks post- procedure:
  1. Full recovery to basal activities (in days).
  2. Analgesics needed (in days).
  3. Wound infection.
- 2<sup>nd</sup> visit six months post- procedure:
  1. New symptoms as: low back pain or lower abdominal pain.
  2. Complications as: vault prolapse or stump rebleeding.
  3. Patients' satisfaction (Using relevant questionnaires)

## RESULTS

Fifty cases underwent open hysterectomy (group A) and fifty cases underwent laparoscopic hysterectomy (group B).

**Table (1): Comparison between both groups as regard age, Indication and obstetric data**

	Group A (n = 50)		Group B (n = 50)		Test of sig.	p
<b>Age (Years)</b>						
Min. – Max.	44.0 – 49.0		42.0 – 52.0		t= 0.727	0.469
Mean ± SD	46.08 ± 1.21		46.30 ± 1.76			
Median	46.0		46.0			
<b>Indication</b>					$\chi^2 = 0.243$	0.885
Fibroid	27	54.0	28	56.0		
Adeno	12	24.0	10	20.0		
DUB	11	22.0	12	24.0		
<b>Gravidity</b>					Z = 1.425	0.154
0	2	4.0	0	0.0		
1	6	12.0	11	22.0		
2	19	38.0	22	44.0		
>2	23	46.0	17	34.0		
Min. – Max.	0.0 – 4.0		1.0 – 4.0			
Mean ± SD	2.38 ± 0.99		2.14 ± 0.78			
Median	2.0		2.0			
<b>Parity</b>					Z = 1.016	0.310
0	3	6.0	1	2.0		
1	10	20.0	14	28.0		
2	19	38.0	23	46.0		
>2	18	36.0	12	24.0		
Min. – Max.	0.0 – 4.0		0.0 – 3.0			
Mean ± SD	2.08 ± 0.97		1.92 ± 0.78			
Median	2.0		2.0			
<b>Abortion</b>					Z = 1.141	0.254
0	38	76.0	43	86.0		
1	10	20.0	4	8.0		
2	2	4.0	2	4.0		
3	0	0.0	1	2.0		
Min. – Max.	0.0 – 2.0		0.0 – 3.0			
Mean ± SD	0.28 ± 0.54		0.22 ± 0.62			
Median	0.0		0.0			

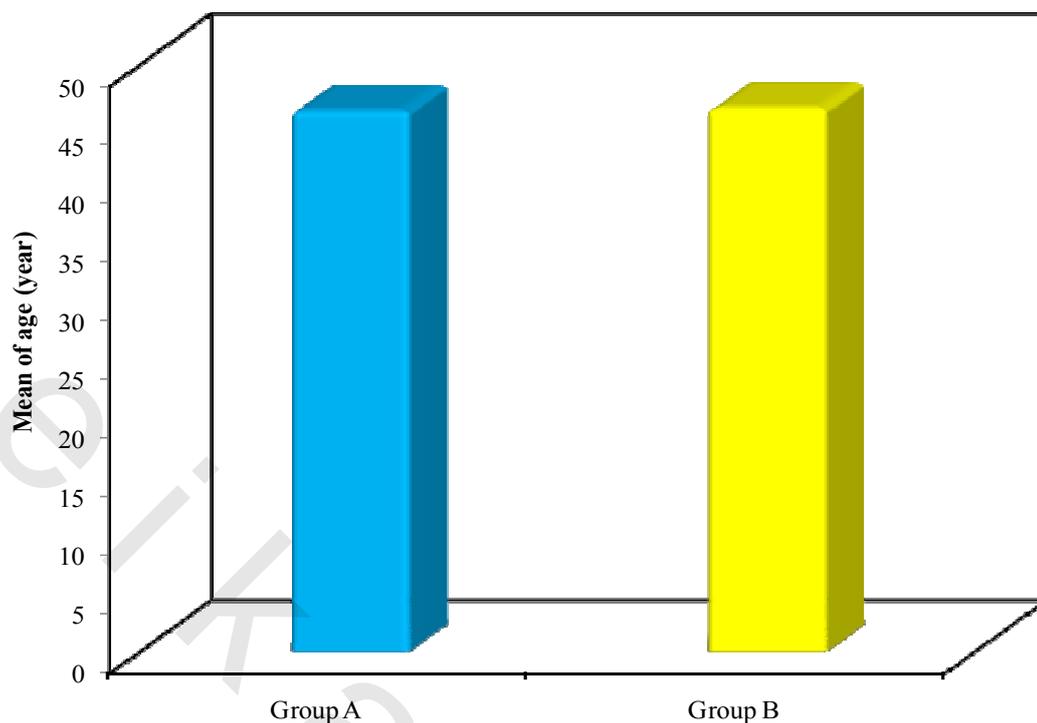
t: Student t-test

$\chi^2$ : Chi square test

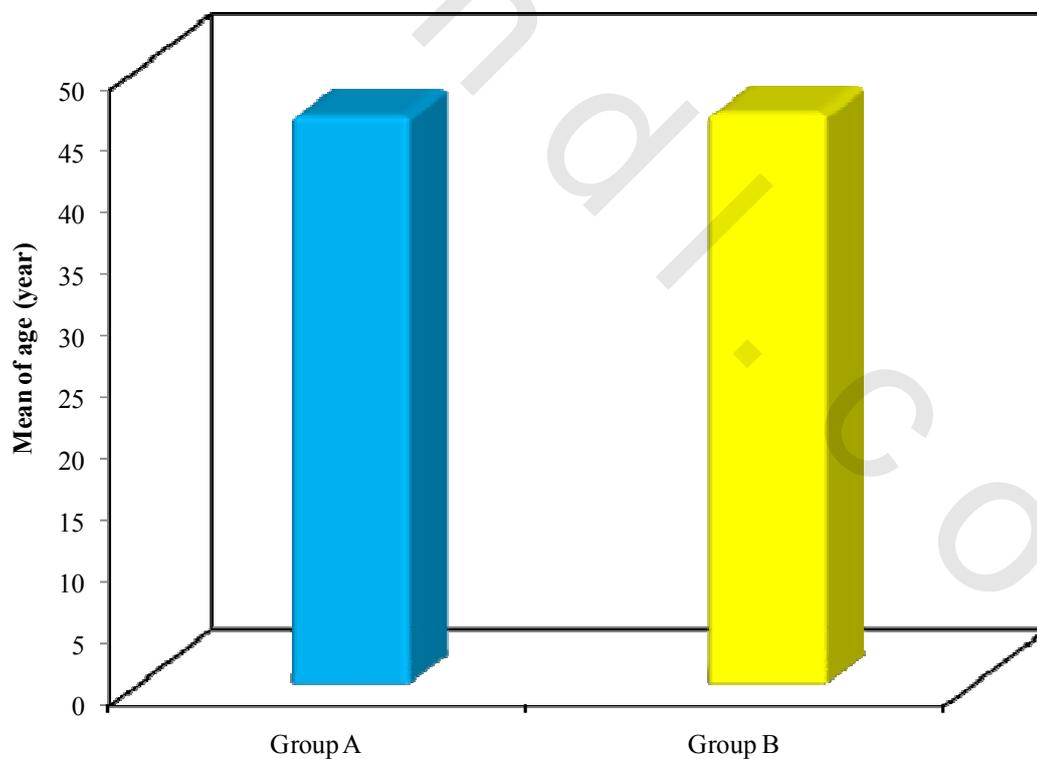
Z: Z for Mann Whitney test

DUB: Dysfunctional uterine bleeding

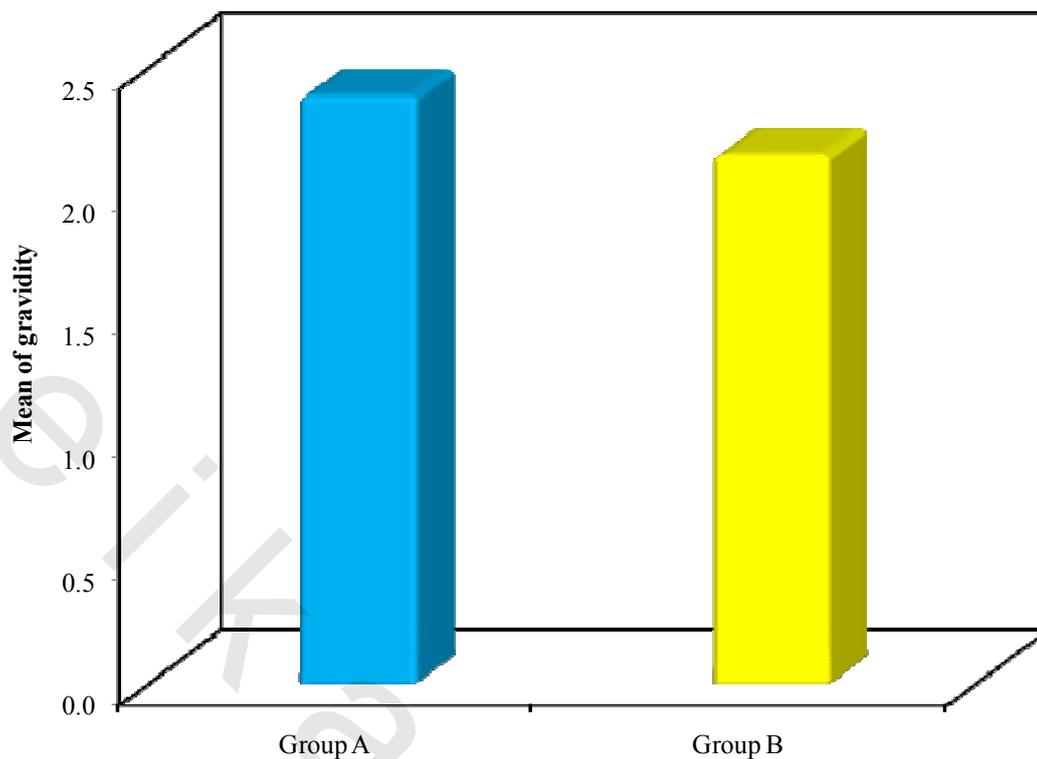
**This table showed no statistical significant difference.**



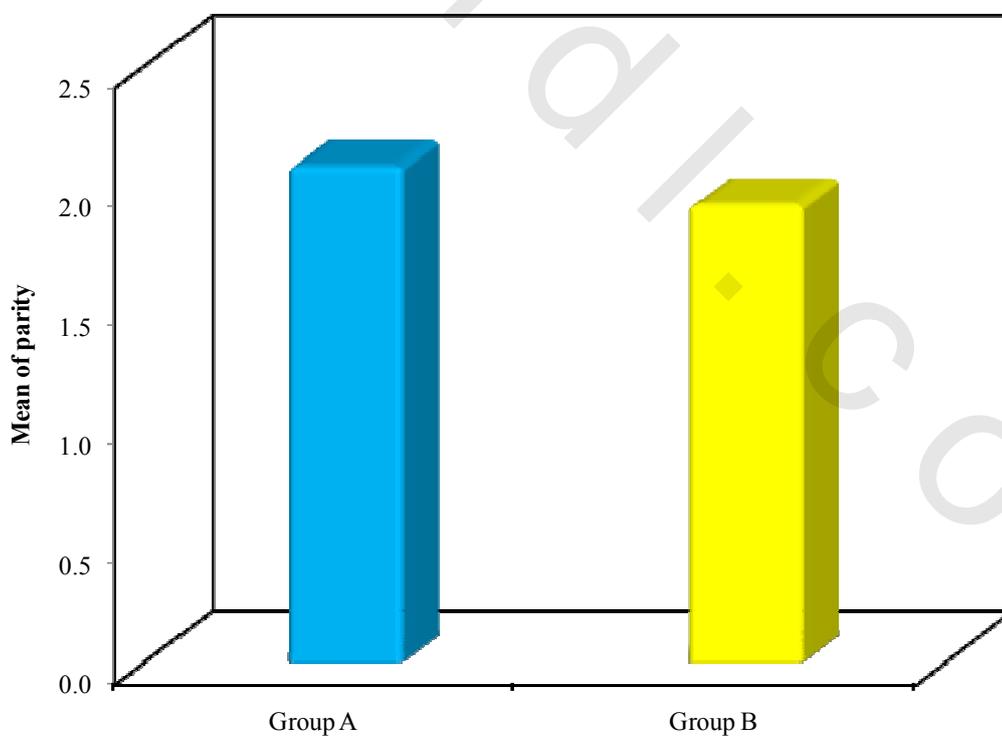
**Figure (15):** Comparison between the two studied groups according to age



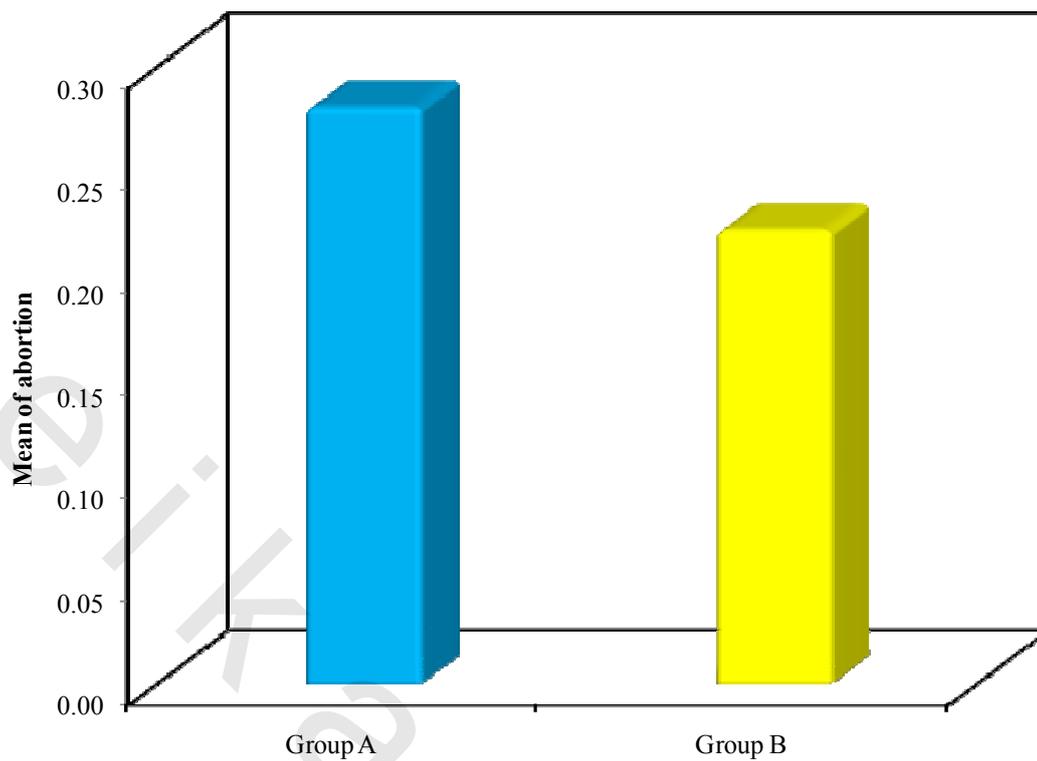
**Figure (16):** Comparison between the two studied groups according to indication



**Figure (17):** Comparison between the two studied groups according to gravity



**Figure (18):** Comparison between the two studied groups according to parity



**Figure (19):** Comparison between the two studied groups according to abortion

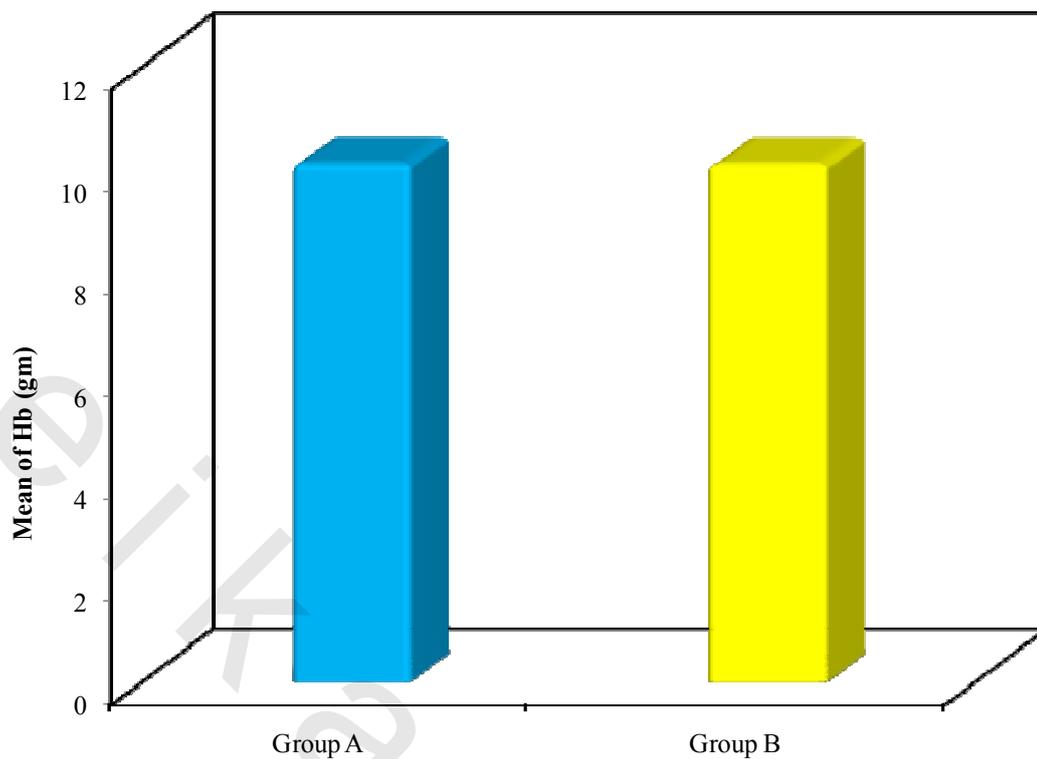
**Table (2): Comparison between the two studied groups according to preoperative Hb and Ht**

<b>Preoperative</b>	<b>Group A (n = 50)</b>	<b>Group B (n = 50)</b>	<b>t</b>	<b>p</b>
<b>Hb (gm)</b>				
Min. – Max.	9.40 – 12.10	9.40 – 11.30		
Mean ± SD	10.10 ± 0.60	10.09 ± 0.52	0.035	0.972
Median	10.10	10.15		
<b>Ht (%)</b>				
Min. – Max.	28.0 – 36.0	28.0 – 34.0		
Mean ± SD	30.36 ± 1.75	30.18 ± 1.44	0.562	0.575
Median	30.0	30.0		

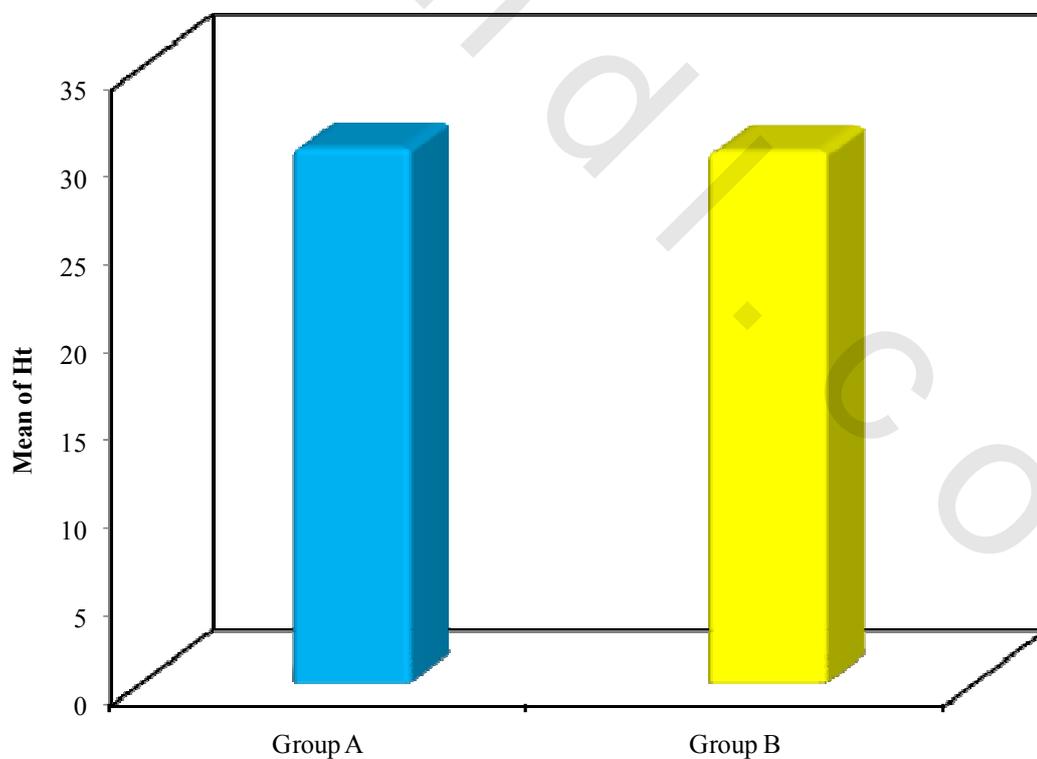
t: Student t-test

\*: Statistically significant at  $p \leq 0.05$

**This table showed no statistical significant difference.**



**Figure (20):** Comparison between the two studied groups according to Hb



**Figure (21):** Comparison between the two studied groups according to Ht

**Table (3): Comparison between the two studied groups according to TVUS uterine size and TVUS concomitant pelvic pathology**

Preoperative	Group A (n = 50)	Group B (n = 50)	Test of sig.	p
<b>TVUS uterine size (cm)</b>				
Min. – Max.	7.0 – 12.0	8.0 – 12.0		
Mean ± SD	10.28 ± 1.49	10.58 ± 1.23	t= 1.100	0.274
Median	11.0	11.0		
<b>TVUS concomitant pelvic pathology</b>	<b>(n = 12)</b>	<b>(n = 19)</b>		
Min. – Max.	3.0 – 17.0	3.0 – 17.0		
Mean ± SD	8.67 ± 3.75	7.16 ± 3.32	Z= 1.309	0.191
Median	9.0	7.0		

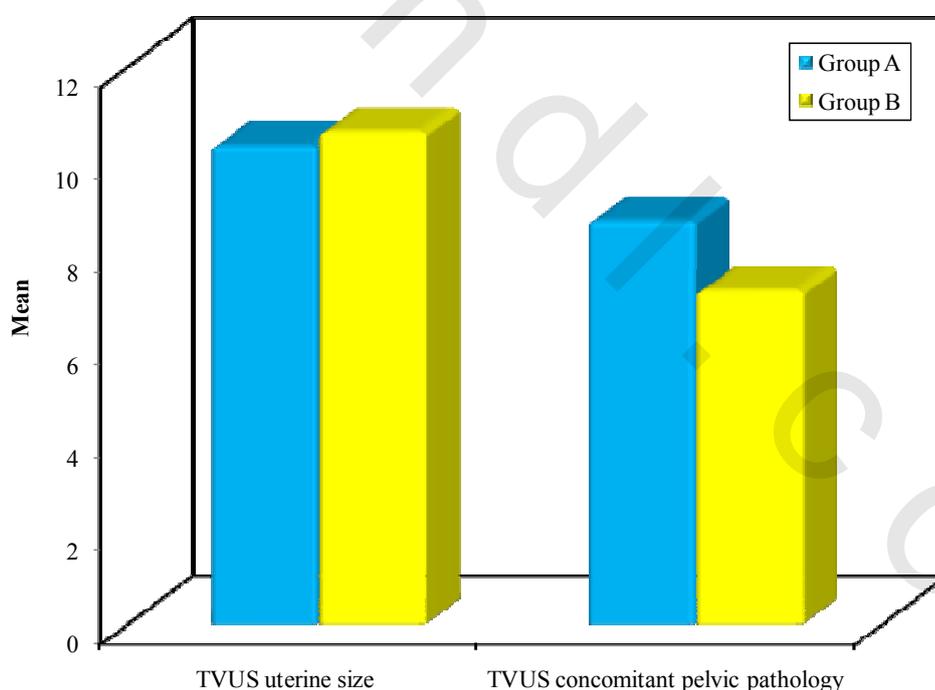
t: Student t-test

Z: Z for Mann Whitney test

\*: Statistically significant at  $p \leq 0.05$

TVUS: Trans vaginal ultrasound

**This table showed no statistical significant difference.**



**Figure (22): Comparison between the two studied groups according to TVUS uterine size and TVUS concomitant pelvic pathology**

**Table (4): Comparison between the two studied groups according to Intra-operative Total scar length**

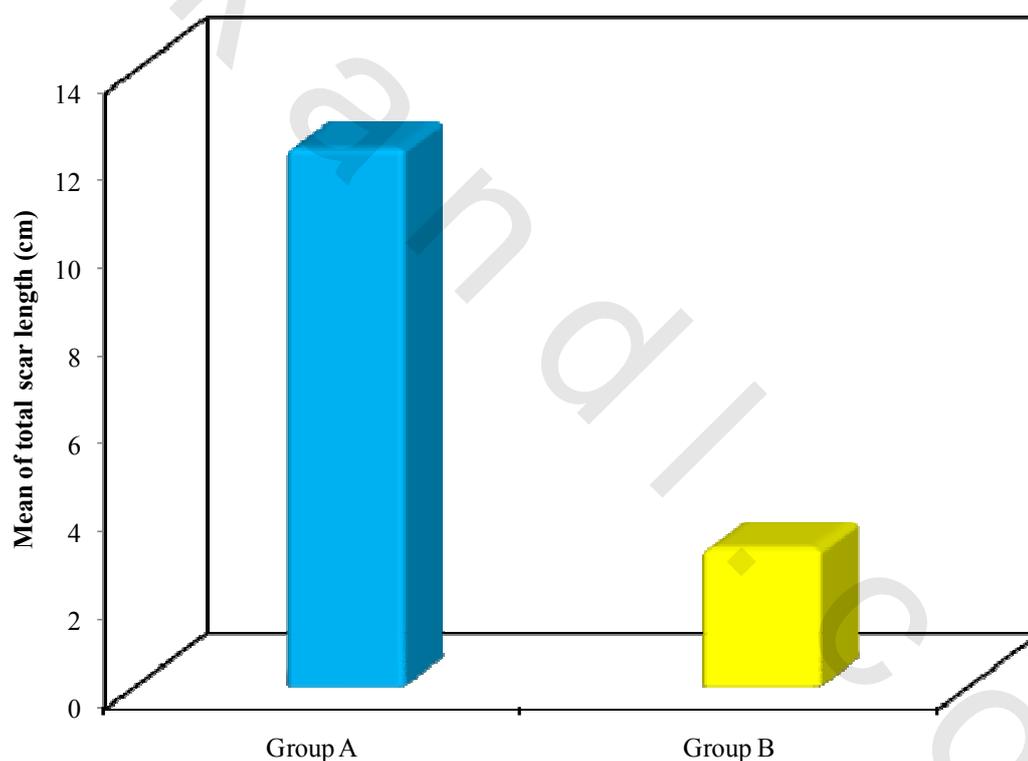
Intra-operative	Group A (n = 50)	Group B (n = 50)	t	p
<b>Total scar length (cm)</b>				
Min. – Max.	11.0 – 14.0	2.50 – 4.0		
Mean ± SD	12.22 ± 1.0	3.12 ± 0.48	58.294*	<0.001*
Median	12.0	3.0		

Total scar length in laparoscopy group : the sum of all incisions made for the surgical procedure to complete i.e. umbilical trocar + 2ry trochers.

t: Student t-test

\*: Statistically significant at  $p \leq 0.05$

**This table showed statistically significant longer total scar length in laparotomy group than in laparoscopy group.**



**Figure (23): Comparison between the two studied groups according to total scar length**

**Table (5): Comparison between the two studied groups according to blood loss, procedure duration, suture materials cost and anesthesia cost**

Intraoperative	Group A (n = 50)	Group B (n = 50)	Test of sig.	p
<b>Blood loss (cc)</b>				
Min. – Max.	300.0 – 900.0	70.0 – 400.0		
Mean ± SD	480.0 ± 171.43	171.60 ± 75.85	Z= 8.318*	<0.001*
Median	600.0	150.0		
<b>Procedure duration (min)</b>				
Min. – Max.	40.0 – 120.0	75.0 – 120.0		
Mean ± SD	65.40 ± 19.08	96.40 ± 15.52	t= 8.912*	<0.001*
Median	60.0	90.0		
<b>Suture materials (No of Used Ampules)</b>				
Min. – Max.	4.0 – 6.0	1.0 – 1.0		
Mean ± SD	4.82 ± 0.80	1.0 ± 0.0	t=33.754*	<0.001*
Median	5.0	1.0		
<b>Anesthesia cost (EP)</b>				
Min. – Max.	133.33 – 400.0	250.0 – 400.0		
Mean ± SD	218.0 ± 63.61	321.33 ± 51.73	t=8.912*	<0.001*
Median	200.0	300.0		

t: Student t-test

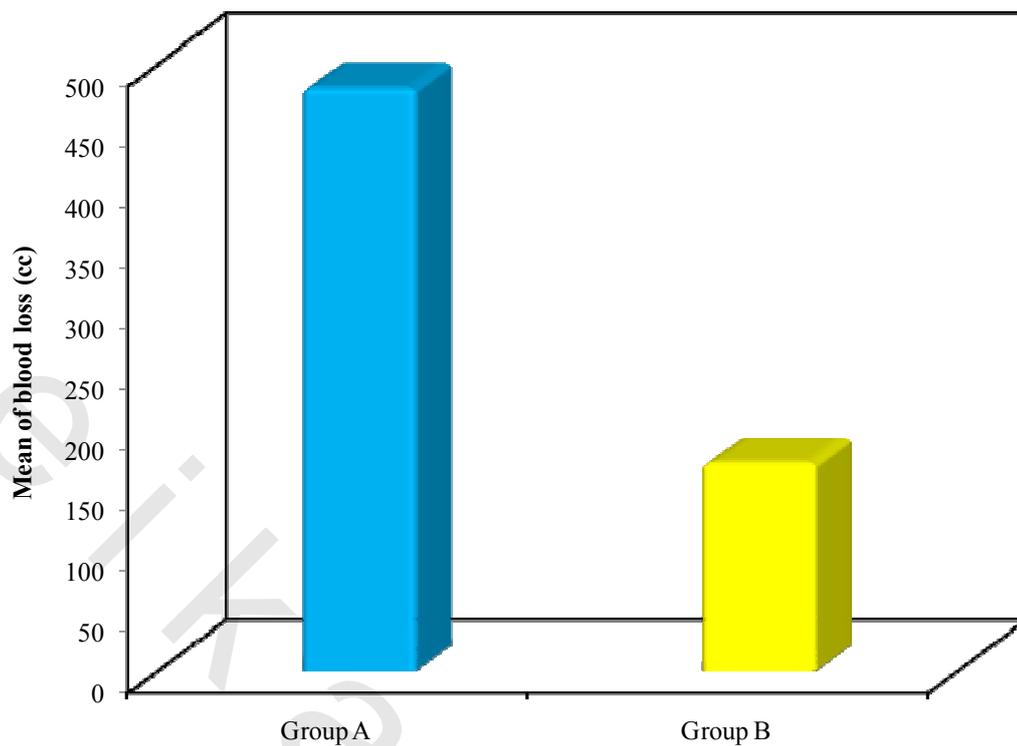
Z: Z for Mann Whitney test

\*: Statistically significant at  $p \leq 0.05$

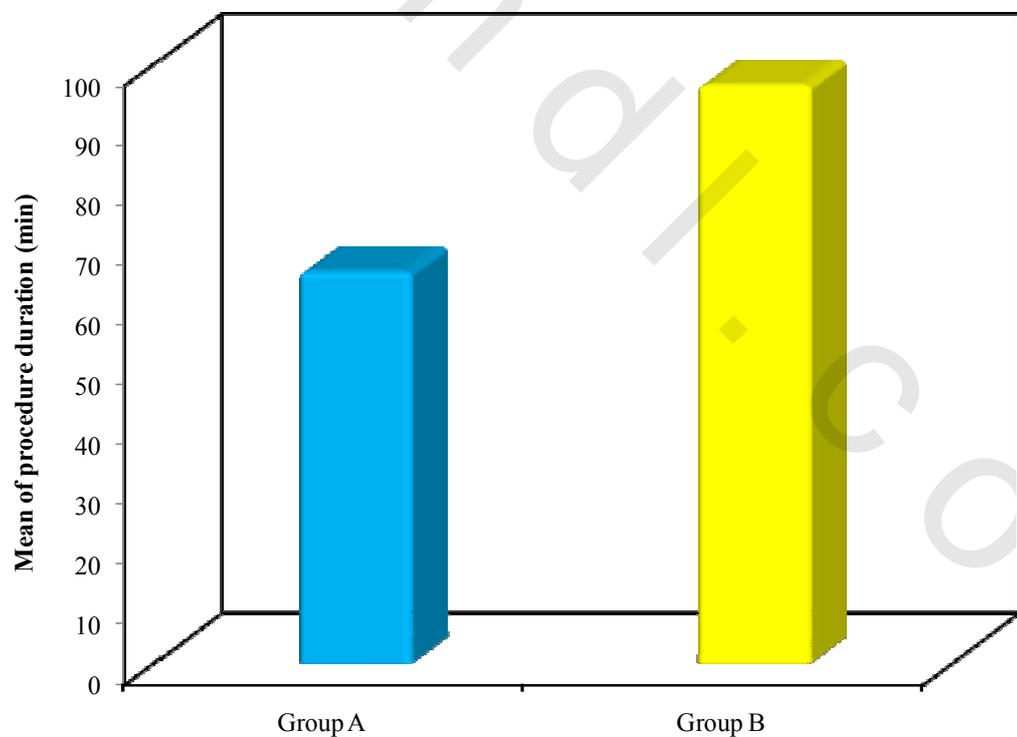
EP: Egyptian pound

NB: Anesthesia cost determined by the cost of muscle relaxant ampules and duration of oxygen consumption

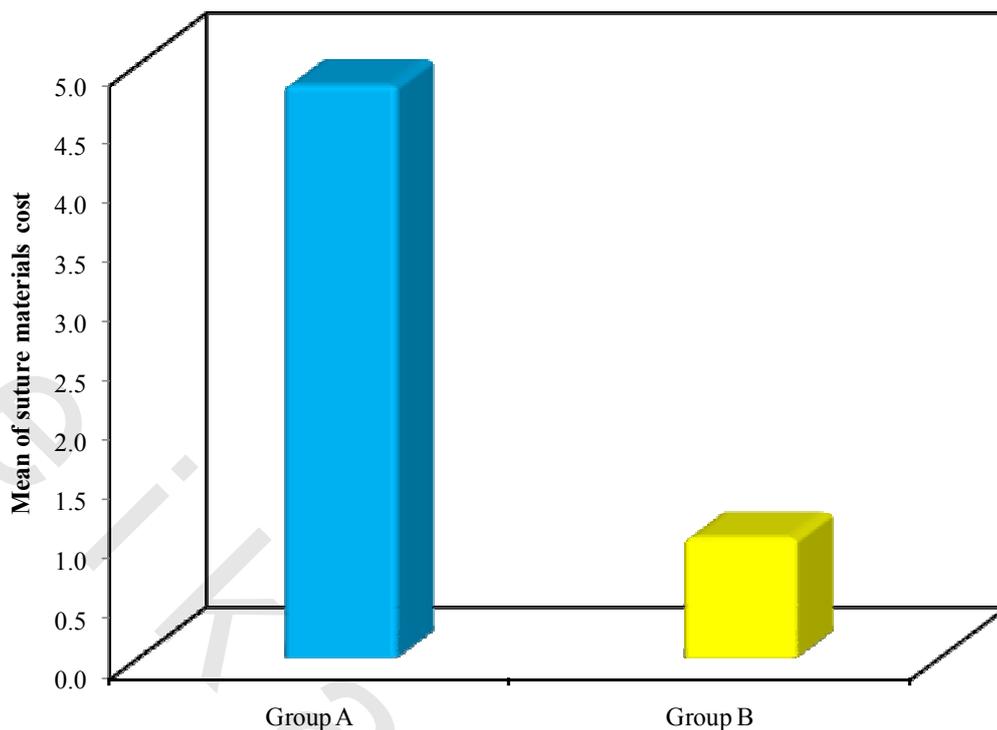
**This table showed that although the procedure duration was statistically longer in the laparoscopy group, the blood loss was statistically less than in the laparotomy group and the anesthesia cost in laparoscopy group was statistically higher than in the laparotomy group but the suture materials cost was statistically higher in laparotomy group.**



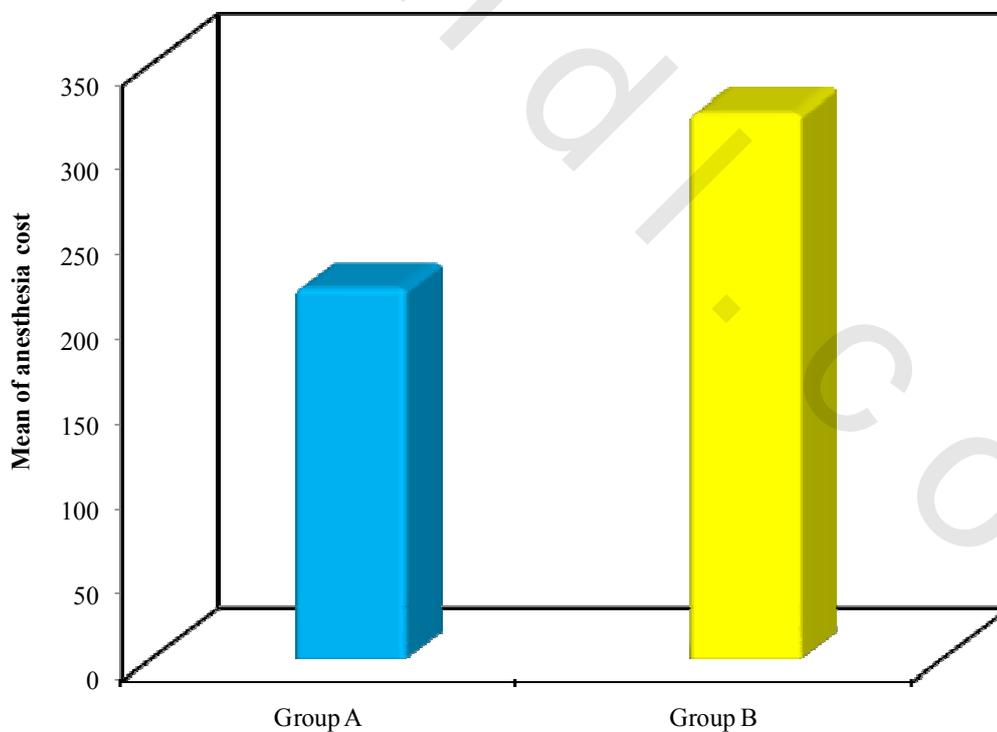
**Figure (24):** Comparison between the two studied groups according to blood loss



**Figure (25):** Comparison between the two studied groups according to procedure duration



**Figure (26):** Comparison between the two studied groups according to suture materials cost



**Figure (27):** Comparison between the two studied groups according to anesthesia cost

## Results

**Table (6): Comparison between the two studied groups according to Analgesics needed, Time to peristalsis, Time to flatus Hs and time to ambulation**

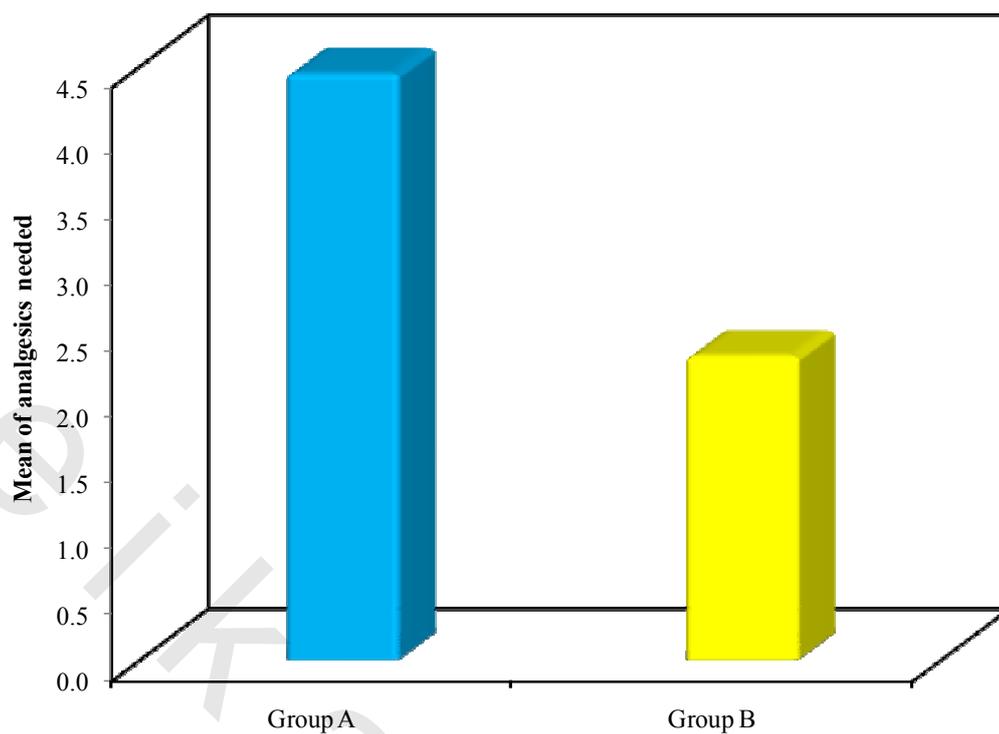
Postoperative	Group A (n = 50)	Group B (n = 50)	t	p
<b>Analgesics needed (No of Ampules)</b>				
Min. – Max.	4.0 – 5.0	2.0 – 3.0		
Mean ± SD	4.44 ± 0.50	2.30 ± 0.46	22.174*	<0.001*
Median	4.0	2.0		
<b>Time to peristalsis (Hours)</b>				
Min. – Max.	4.0 – 9.0	4.0 – 14.0		
Mean ± SD	6.96 ± 1.23	5.96 ± 2.29	2.725*	0.008*
Median	7.0	5.0		
<b>Time to flatus (Hours)</b>				
Min. – Max.	8.0 – 14.0	6.0 – 9.0		
Mean ± SD	10.32 ± 1.60	7.63 ± 0.98	9.845*	<0.001*
Median	10.0	8.0		
<b>Hospital stay (Days)</b>				
Min. – Max.	2.0 – 3.0	1.0 – 2.0		
Mean ± SD	2.42 ± 0.50	1.30 ± 0.46	Z=7.663*	<0.001*
Median	2.0	1.0		
<b>Time to ambulation (Hours)</b>				
Min. – Max.	8.0 – 24.0	6.0 – 14.0		
Mean ± SD	15.86 ± 4.61	9.20 ± 2.74	8.779*	<0.001*
Median	14.0	8.0		

Analgesic used was Ketorlac ampules 30mg intravenous.

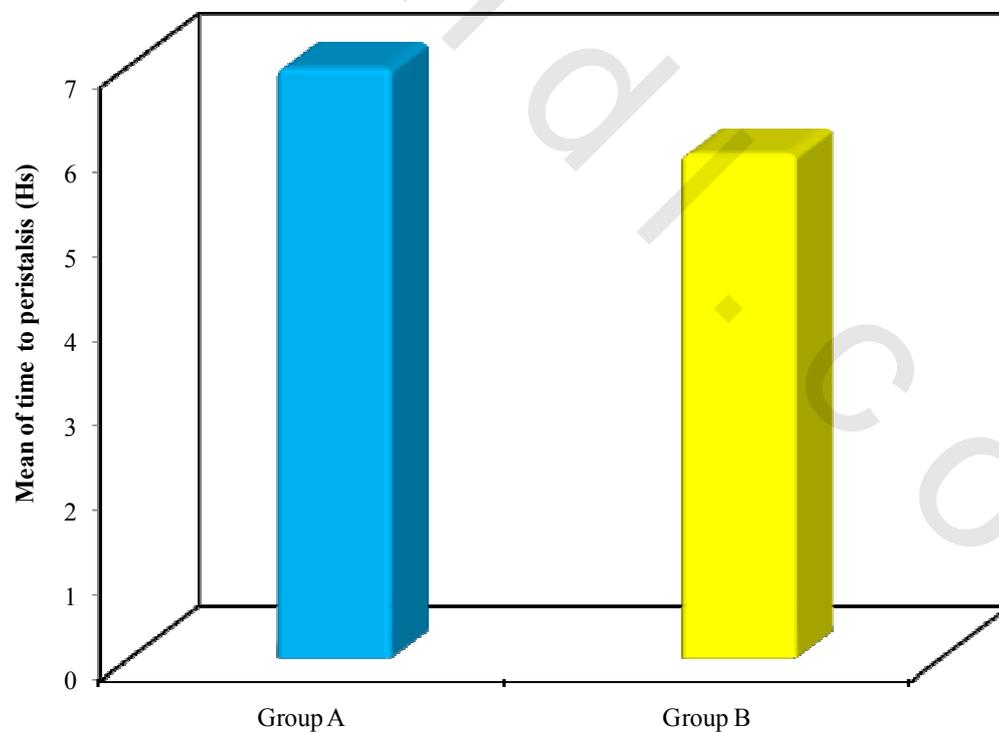
t: Student t-test

\*: Statistically significant at  $p \leq 0.05$

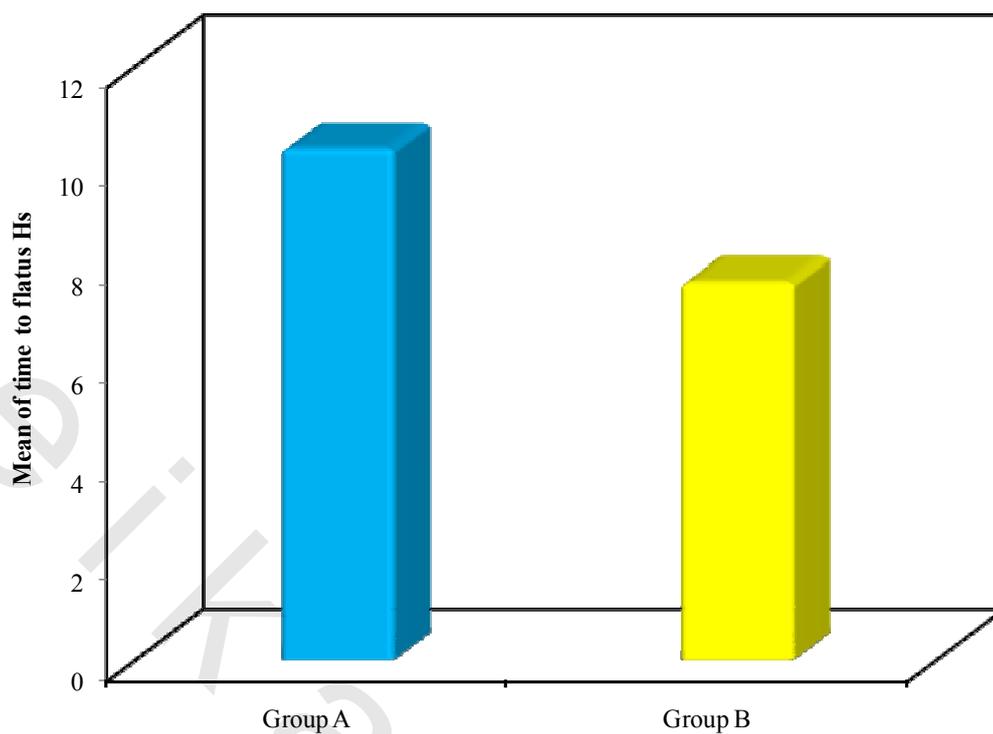
**This table showed statistically significant less postoperative analgesics needed, time to peristalsis, time to flatus, time to ambulation and hospital stay in the laparoscopy group.**



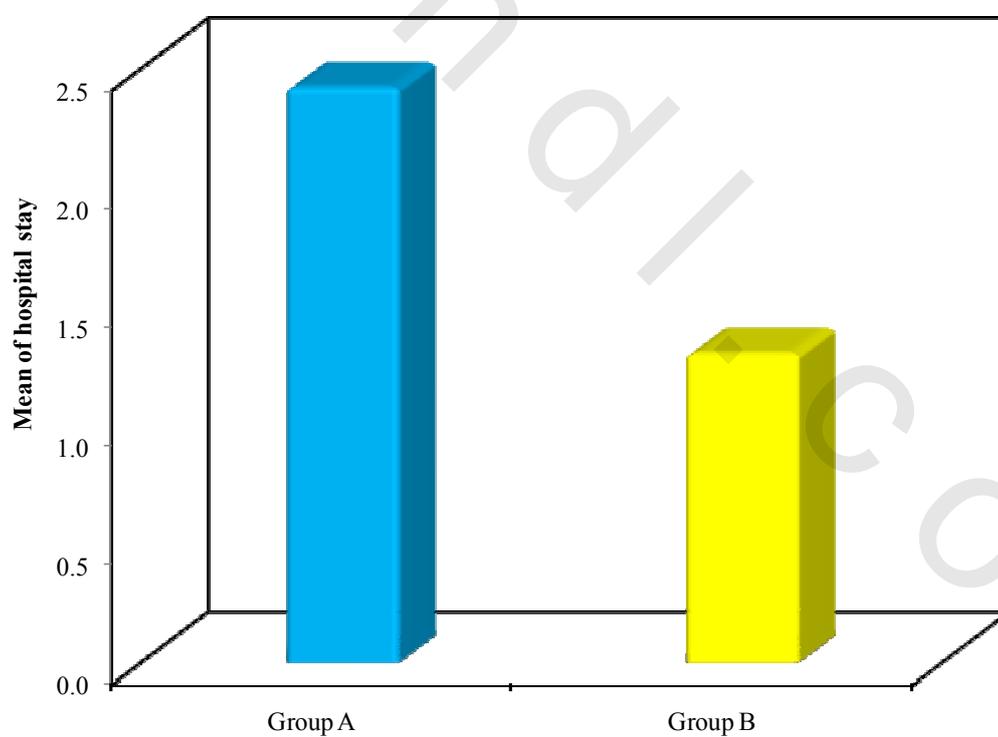
**Figure (28):** Comparison between the two studied groups according to analgesics needed



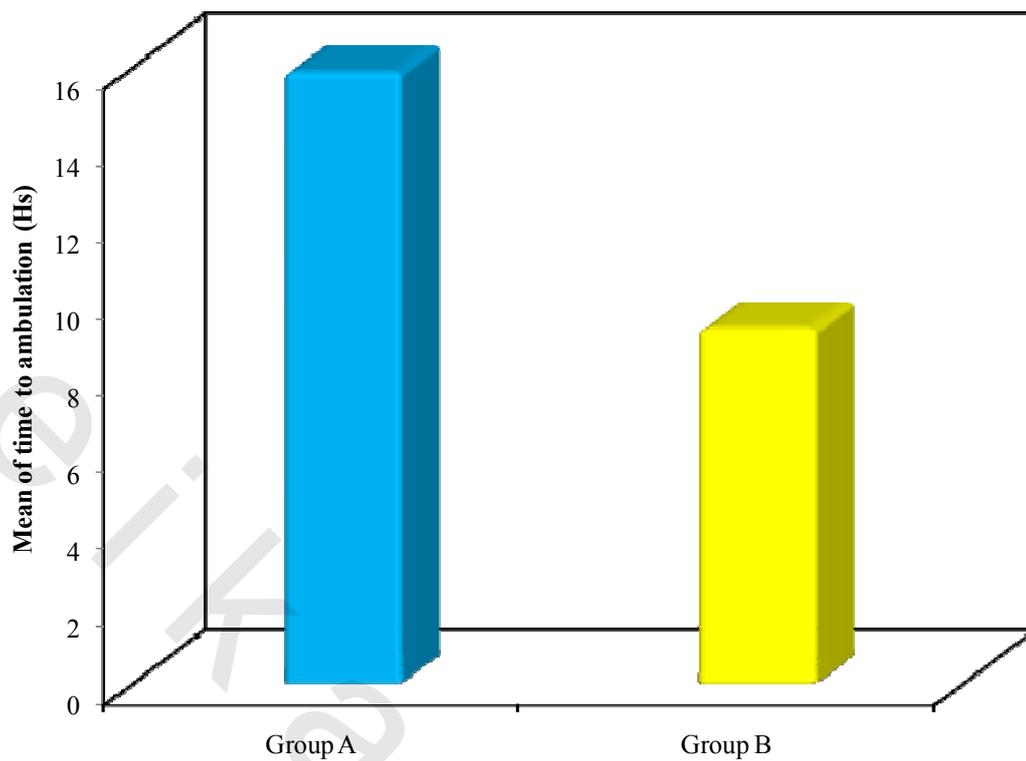
**Figure (29):** Comparison between the two studied groups according to time to peristalsis (Hs)



**Figure (30):** Comparison between the two studied groups according to time to flatus Hs



**Figure (31):** Comparison between the two studied groups according to hospital stay



**Figure (32):** Comparison between the two studied groups according to time to ambulation (Hs)

## Results

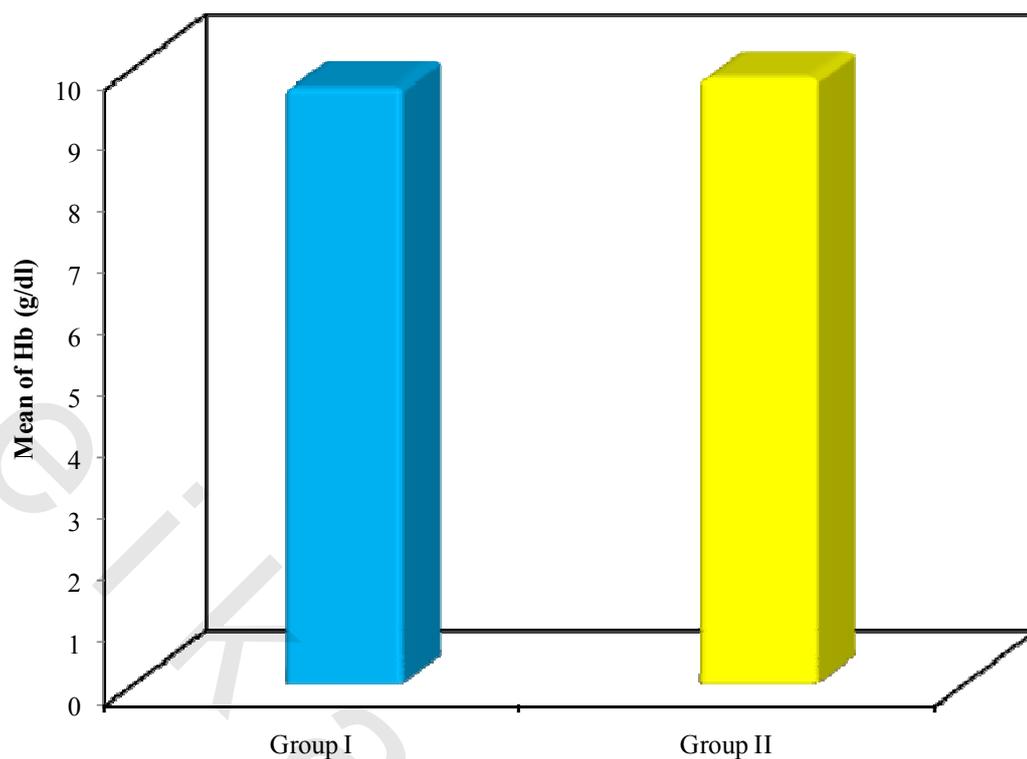
**Table (7): Comparison between the two studied groups according to postoperative Hb and Ht**

Postoperative	Group A (n = 50)	Group B (n = 50)	t	p
<b>Hb (g/dl)</b>				
Min. – Max.	9.0 – 11.50	9.10 – 10.70		
Mean ± SD	9.67 ± 0.53	9.82 ± 0.46	1.529	0.129
Median	9.70	9.90		
<b>Ht (%)</b>				
Min. – Max.	27.0 – 34.0	27.0 – 32.0		
Mean ± SD	28.90 ± 1.59	29.32 ± 1.45	1.379	0.171
Median	29.0	30.0		

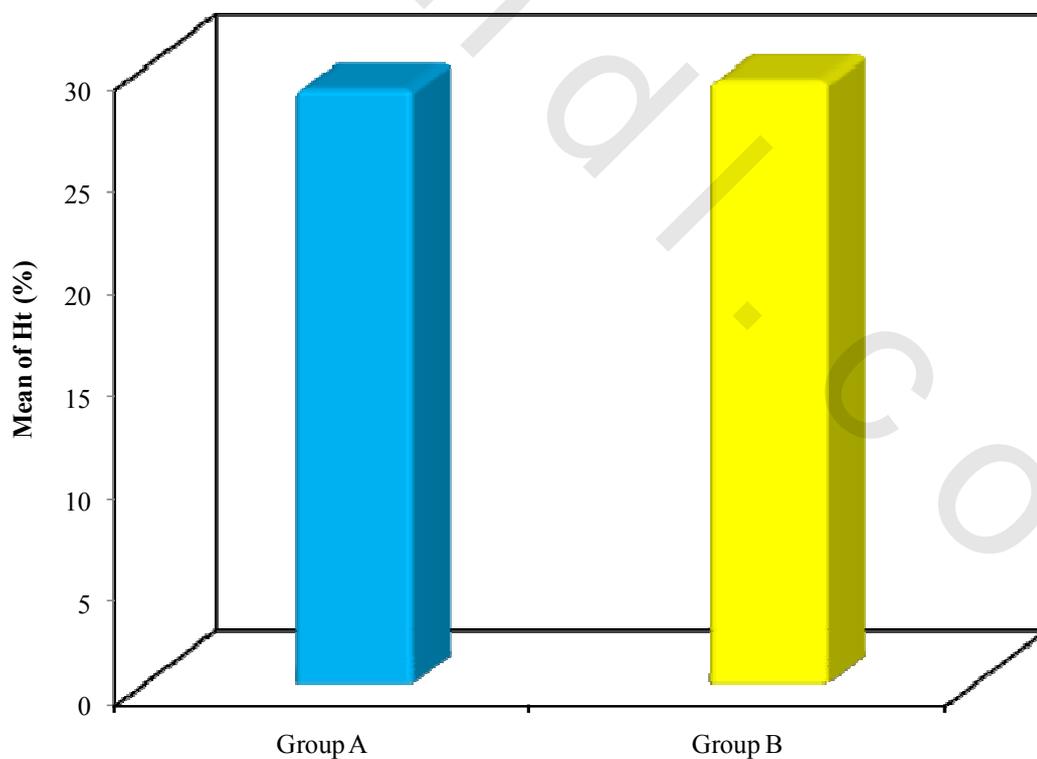
t: Student t-test

\*: Statistically significant at  $p \leq 0.05$

**This table showed no statistical significant difference.**



**Figure (33):** Comparison between the two studied groups according to Hb (g/dl)



**Figure (34):** Comparison between the two studied groups according to Ht (%)

## Results

**Table (8): Comparison between the two studied groups according to patients satisfaction**

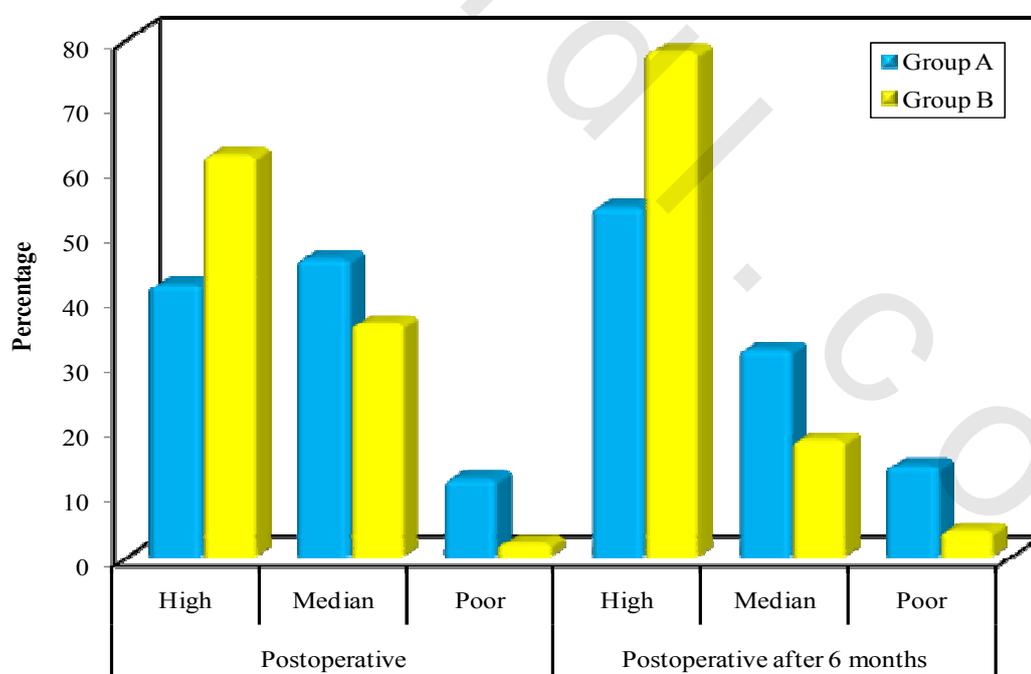
Patients satisfaction	Group A (n = 50)		Group B (n = 50)		Test of sig.	MC <sub>p</sub>
	No.	%	No.	%		
<b>Postoperative</b>						
High	21	42.0	31	62.0	5.926*	0.041*
Median	23	46.0	18	36.0		
Poor	6	12.0	1	2.0		
<b>Postoperative after 6 months</b>						
High	27	54.0	39	78.0	6.751*	0.028*
Median	16	32.0	9	18.0		
Poor	7	14.0	2	4.0		

$\chi^2$ : Chi square test

MC: Monte Carlo test

\*: Statistically significant at  $p \leq 0.05$

This table showed that the overall patient satisfaction postoperative and six month later were better in group B than group A.



**Figure (35): Comparison between the two studied groups according to patients satisfaction**

## Results

**Table (9): Comparison between the two studied groups according to follow up data**

	Group A (n = 50)	Group B (n = 50)	t	p
<b>Full recovery to basal activities (Days)</b>				
Min. – Max.	10.0 – 21.0	4.0 – 9.0		
Mean ± SD	16.06 ± 3.49	6.60 ± 1.40	17.790*	<0.001*
Median	15.0	7.0		
<b>Analgesics needed (Days)</b>				
Min. – Max.	10.0 – 20.0	4.0 – 7.0		
Mean ± SD	14.56 ± 2.73	5.46 ± 1.13	21.753*	<0.001*
Median	14.0	5.0		

Analgesic needed in the form of ketorolac tablets 10mg twice daily.

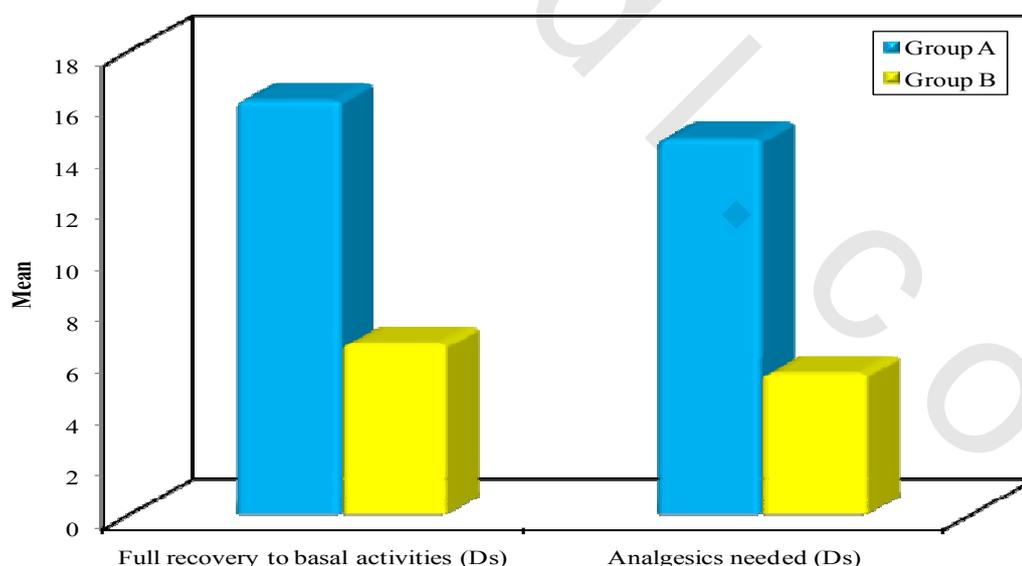
t: Student t-test

$\chi^2$ : Chi square test

FE: Fisher Exact test

\*: Statistically significant at  $p \leq 0.05$

**This table showed statistically significant less analgesic needed postoperative and less time to full recovery to basal activities in laparoscopy group.**



**Figure (36): Comparison between the two studied groups according to Full recovery to basal activities (Ds) and Analgesics needed (Ds)**

## Results

**Table (10): Comparison between the two studied groups according to follow up data**

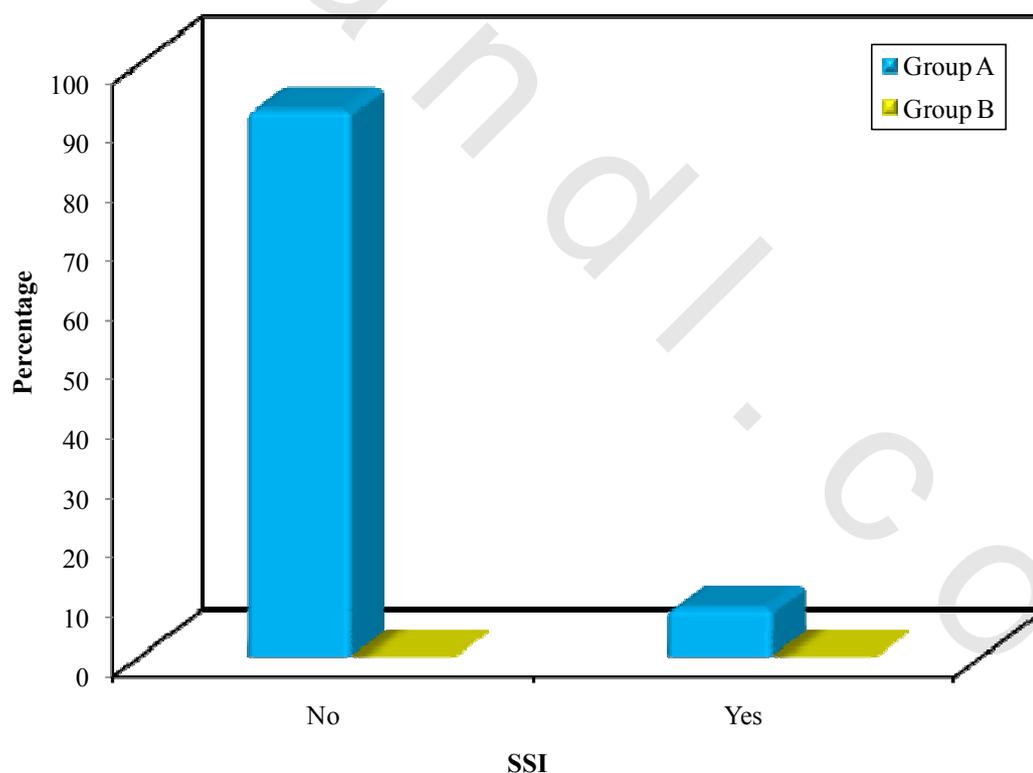
	Group A (n = 50)		Group B (n = 50)		$\chi^2$	p
	No.	%	No.	%		
<b>SSI</b>						
No	46	92.0	0	0.0	-	-
Yes	4	8.0	0	0.0		
<b>Scar pain</b>						
No	42	84.0	48	96.0	4.000*	0.046*
Yes	8	16.0	2	4.0		

$\chi^2$ : Chi square test

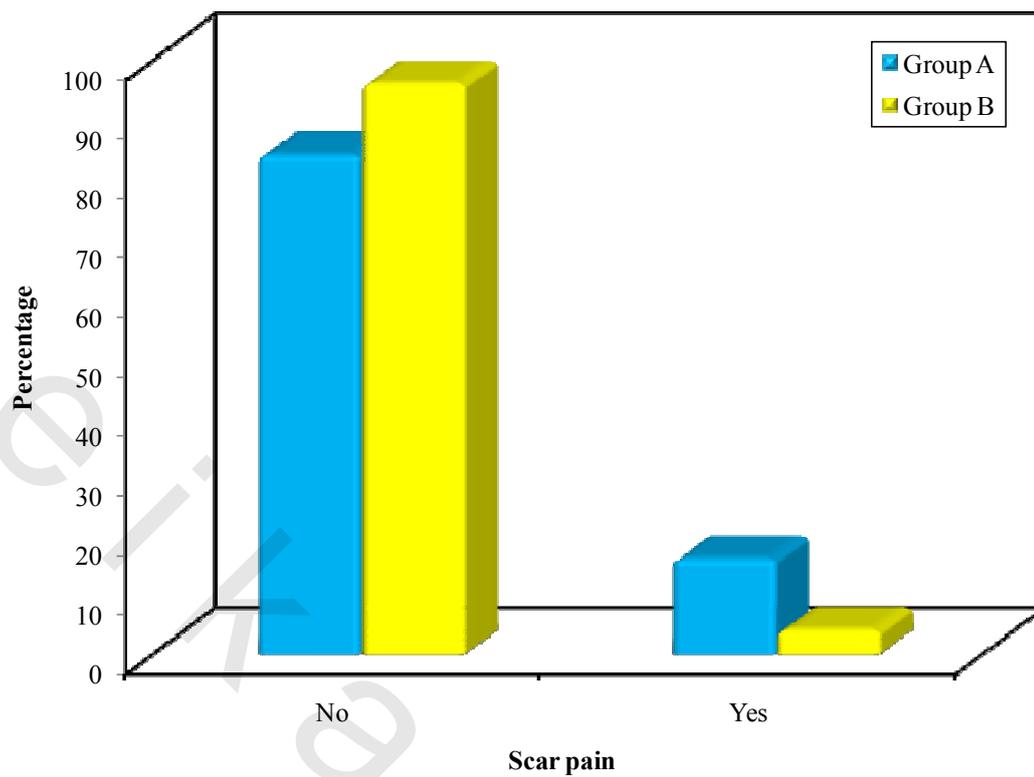
\*: Statistically significant at  $p \leq 0.05$

SSI: Surgical site infection

**This table showed statistical significant less incidence of surgical site infection (SSI) and scar pain among the laparoscopy group.**



**Figure (37): Comparison between the two studied groups according to SSI**



**Figure (38):** Comparison between the two studied groups according to scar pain

## Results

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**Table (11): Correlation between procedure duration and Anesthesia cost in each group**

		Procedure duration (min)	
		Group A	Group B
Anesthesia cost	r	1.000*	1.000*
	p	<0.001	<0.001

r: Pearson coefficient

\*: Statistically significant at  $p \leq 0.05$

This means that the higher the duration of the procedure in both groups the more will be the anesthesia cost i.e. positive correlation

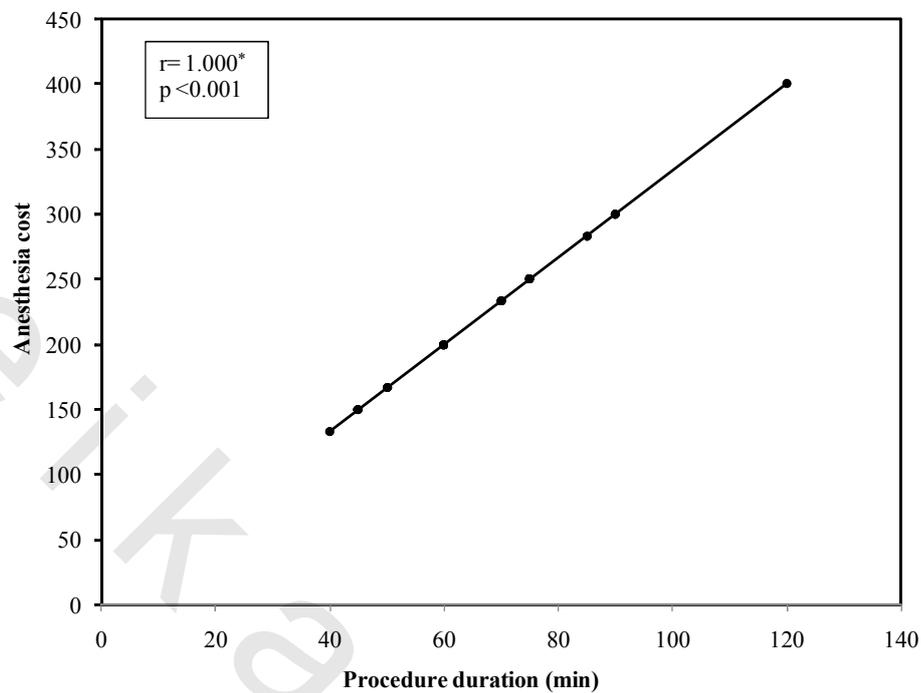


Figure (39): Correlation between procedure duration and Anesthesia cost in group A

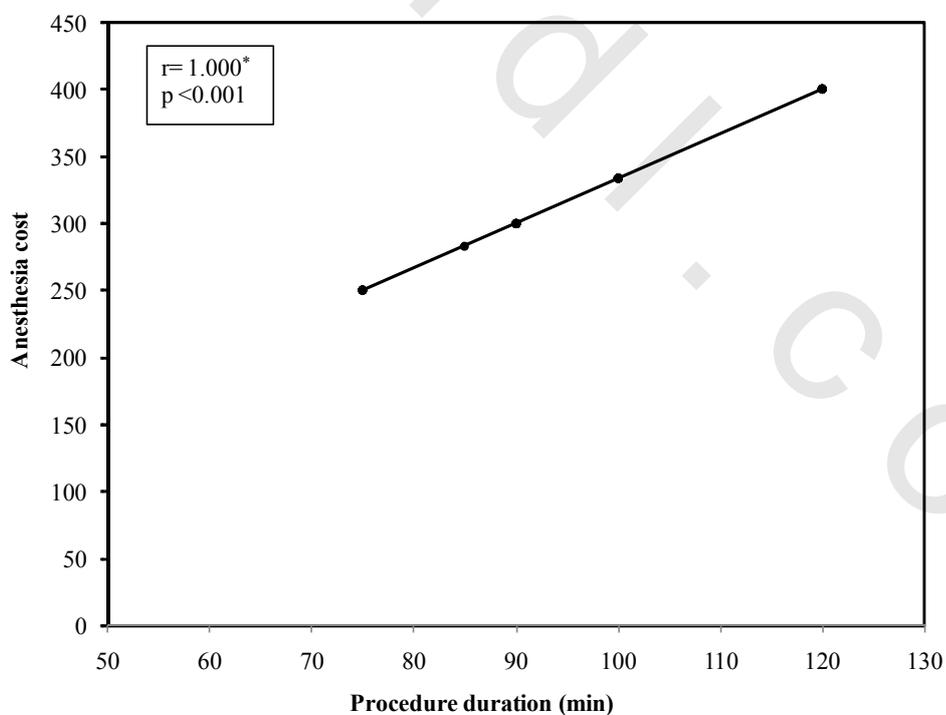


Figure (40): Correlation between procedure duration and Anesthesia cost in group B