Results

The data of 47 patients included in this study summarized in the following tables and figures:

Table (4): Patients Demographic Data.

Data	Number	Percent
Total Number of Cases	47	
Age (mean±SD)	46.12±10.75	
BMI in Kg/sqm (mean±SD)	23.6±5.92 (8% were Morbid)	
Gender		
Male	30	63.8%
Female	17	36.2%
Co morbidity		
DM	4	8.5
COPD	6	12.7
Hypertension	6	12.7
IHD	3	6.4
Liver Disease(liver cirrhosis)	1	2.1
Multiple co morbidities*	4	8.5
Previous Renal Stone Surgery (total)	6	12.7
Open	4	8.5
PCNL	2	4.2

* Multiple co morbidities in 4 cases (two cases had; DM and hypertension, one case had; COPD and IHD and one case had liver cirrhosis, DM).

This table shows demographic data of the studied cases (total number was 47 patients), mean age was 46.12 ±10.75 (range 24-65). BMI in Kg/sqm (mean ± SD) was 23.6±5.92 ((range 20- 43kg/m2), 4 patients, 8% were Morbid). The study included 30 males (63.8%) and 17 females (36.2%). Four patients were diabetic (8.5 %), 6 patients had COPD (12.7 %), 6 patients were hypertensive (12.7%), 3 patients had IHD (6.4%), 1 patient

had liver disease (2.1%), 4 patients had multiple co morbidities (8.5%). 6 patients had previous renal stone surgery, 12.7% (4 open and 2 PCNL).

Fig.(45): Mean Age & BMI.

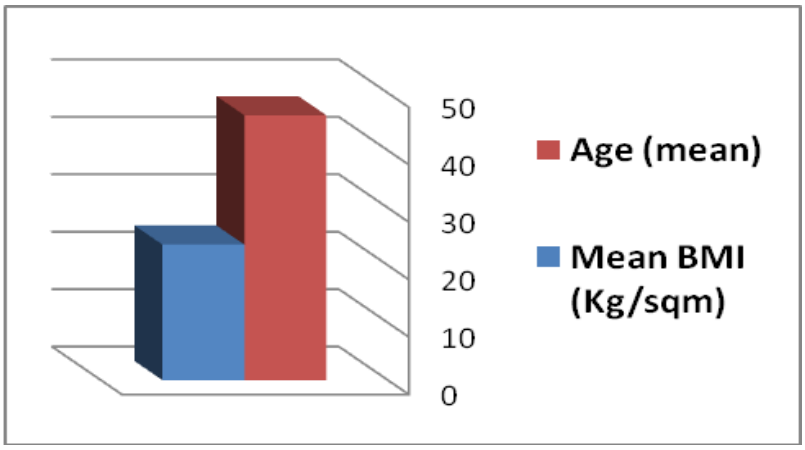

Fig.(46): Gender of cases

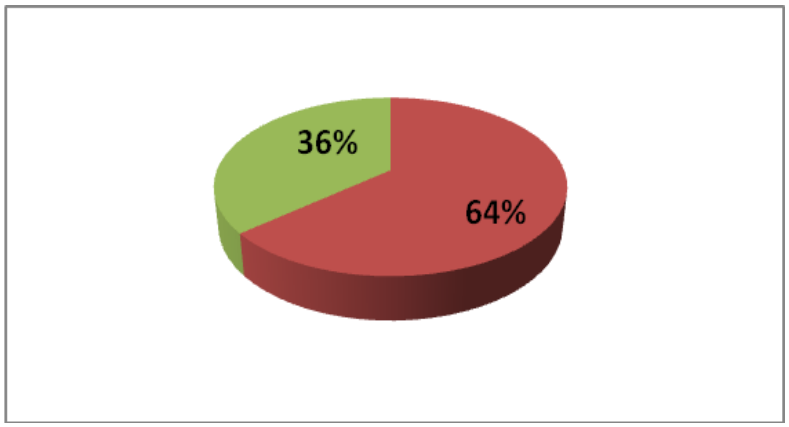

Fig.(47): Co morbidity in Percent.

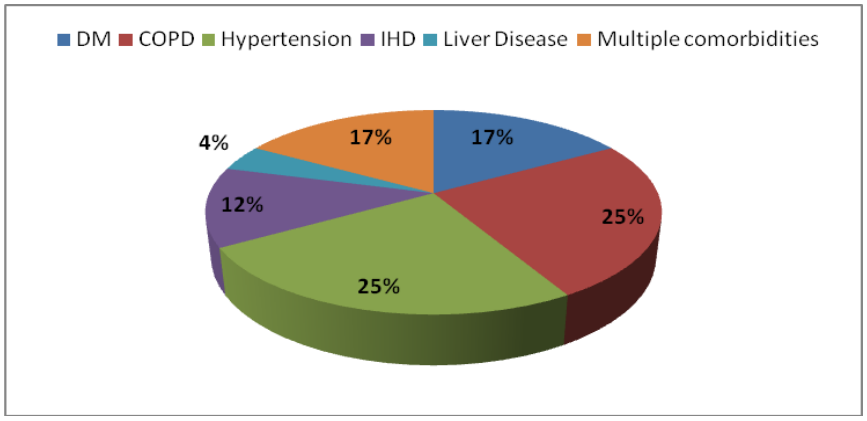

Fig.(48): Previous Renal Stone Surgery

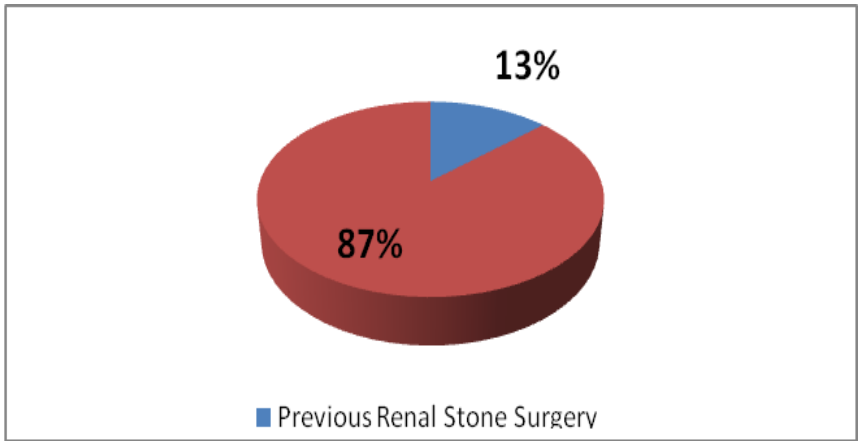

Fig. (49): Previous Renal Stone Surgery (%)

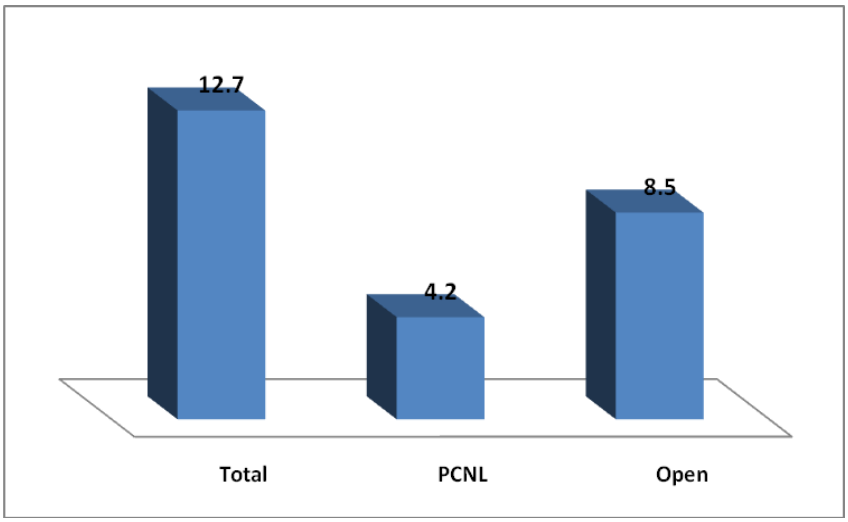

Table (5): Stone Characteristics

Data	Number	Percent (%)
Stone site:		
Pelvic stones	20	42.5
Calyceal stones (total)	18	38.3
Upper Calyceal	2	4.2
Middle Calyceal	5	10.6
Lower Calyceal	11	23.4
Staghorn	3	6.4
Upper Ureteric Stone	1	2.1
Multiple Stones*	5	10.6
Stone side:		
Right	25	53.2
Left	22	46.8
***Stone size* mean±SD(cm)**	2.9±1.029	
***Stone Radio-opacity*:**		
Opaque	42	89.4
Lucent	5	10.6

*As regard multiple stones; two cases had stones in upper and lower calices while the other 3 cases had stones in the middle and lower calices.

This table shows stone characteristics of the studied cases. As for stone site, 20 cases (42.5%) had pelvic stone, 18 cases (38.3%) had calyceal stones (2 upper, 5 middle and 11 lower calyceal), Staghorn 3 cases (6.4%). As for stone side 25 cases (53.2%) were right sided and 22 cases (46.8%) were left sided. mean stone size 2.9±1.029 (range 1.5- 4.5cm). Fourty two of the cases had radio-opaque (89.4%), while 5 cases had radiolucent stone (10.6%).

Fig.(50): Stone Site

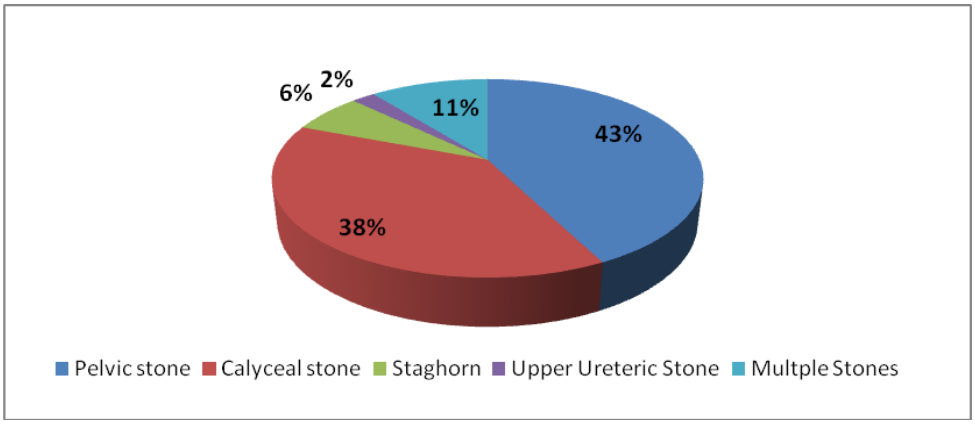

Fig. (51): Stone side (%)

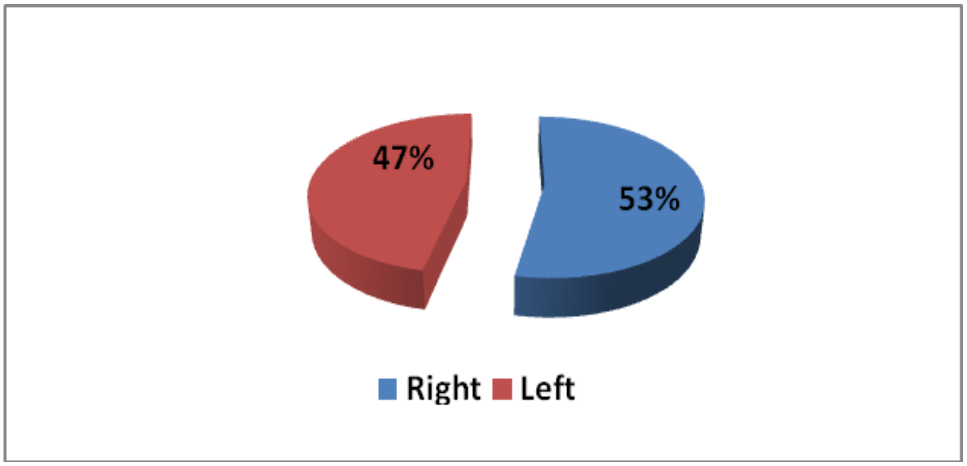

Fig.(52): Stone Radio-opacity

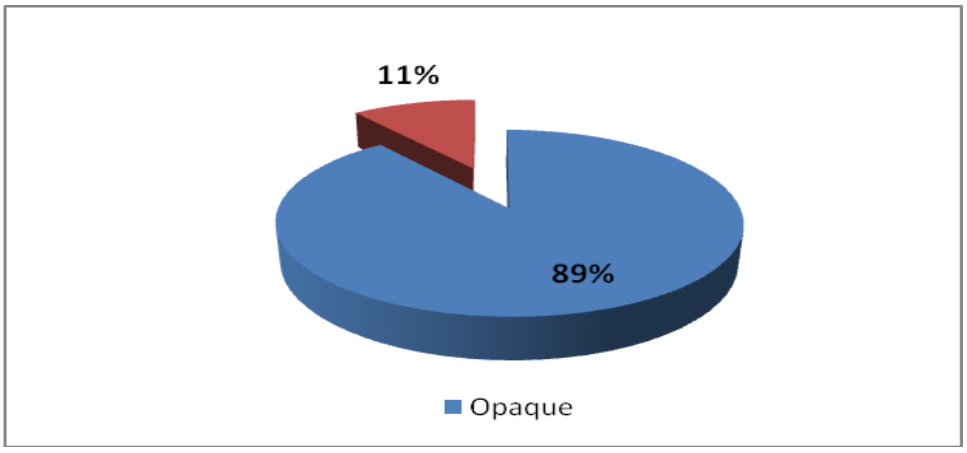

Table (6): Intraoperative Data

Data	Number	Percent
Anaesthesia:		
General	39	83.1
Spinal	6	12.7
Local with IV Sedation	2	4.2
Access:		
US Guided combined US and fluoroscopy *	42 5	89 11
***Calyx Puncture*:**		
Upper Calyceal	2	4.2
Middle Calyceal	6	12.7
Lower Calyceal	32	68.1
Multiple punctures**	7	15
Direction of Calyx Puncture:		
Posterior	38	80.9
Anterior	9	19.1
Track Dilatation :		
Alken***	6	12.7
Amplatz****	41	87.3
***Stone desintigration*:**		
Lithoclast	31	66
In-toto	16	34
Nephrostomy Drainage**	47	100
Mean Operative Time (in minutes)	65 (range: 45-110)	

*Multiple punctures (tracts): lower and middle calices in 5 cases, lower and upper calices in 2 cases.

**combined US and fluoroscopy for puncture of 5 cases (hyper mobile kidney) to ensure presence of the guide wire in the PCS.

***Alken dilators where used in6 (recurrent cases)

****Amplatz dilators where used in 41 (denovo cases)

*****The nephrostomy tube size ranged from (22-26) Fr.

This table shows the intra-operative data of the studies cases. General anesthesia was used in 39 cases (83.1%), spinal anesthesia was used in

6 cases (12.7%), and local anesthesia with IV sedation was used in 2 cases (4.2%). Ultrasound guidance was used in 42 cases (89%), while combined US and fluoroscopy for puncture of 5 cases (11%). Upper calyceal puncture was used in 2 cases (4.2%), middle calyceal puncture was used in 6 cases (12.7%), and lower calyceal puncture was used in 32 cases (68.1%), while multiple punctures were used in 7 cases (15%). Direction of calyx puncture was posterior in 38 cases (80.9%) and anterior in 9 cases (19.1%). Alken track dilatation was used in 6 cases (12.7%) while Amplatz dilators were used in 41 cases (87.3%). Lithoclast stone disintegration was used in 31 cases (66%), and In-toto stone disintegration was used in 16 cases (34%). Nephrostomy drainage was used in 47 cases (100%). postoperative. Mean operative time was 65 minutes (range: 45-110 minutes).

Fig. (53): Type of Anesthesia

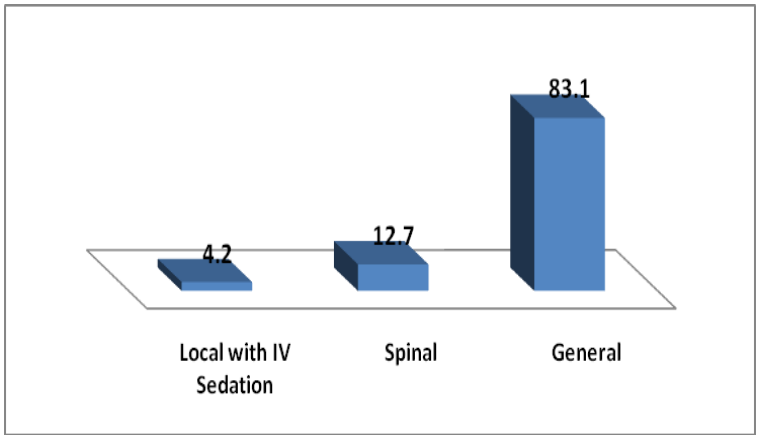

Fig.(54): Stone disintegration

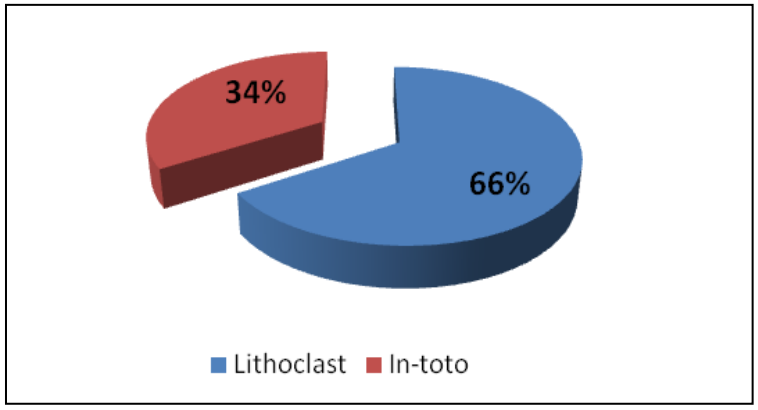

Fig. (55): Calyx Puncture (%)

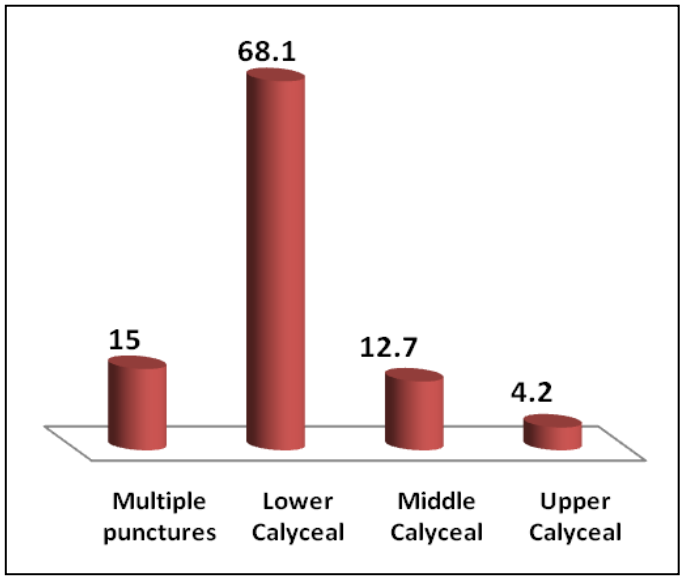

Fig. (56): Direction of calyx puncture

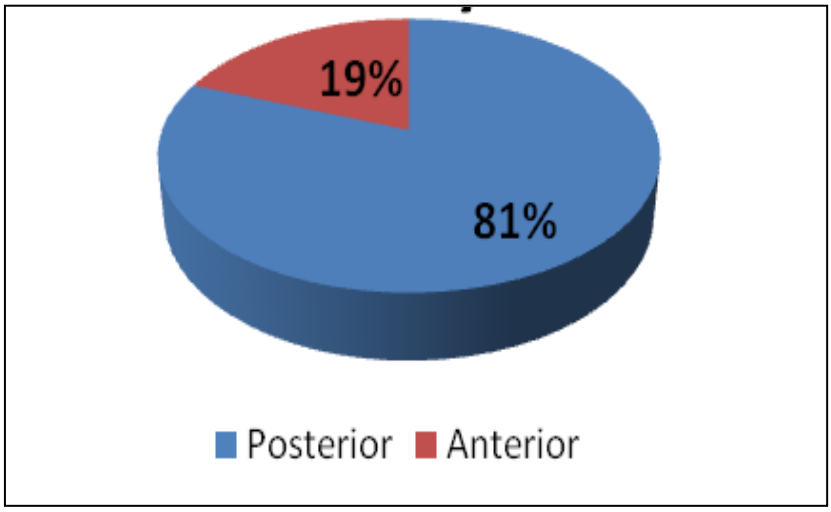

Fig. (57): Track Dilatation

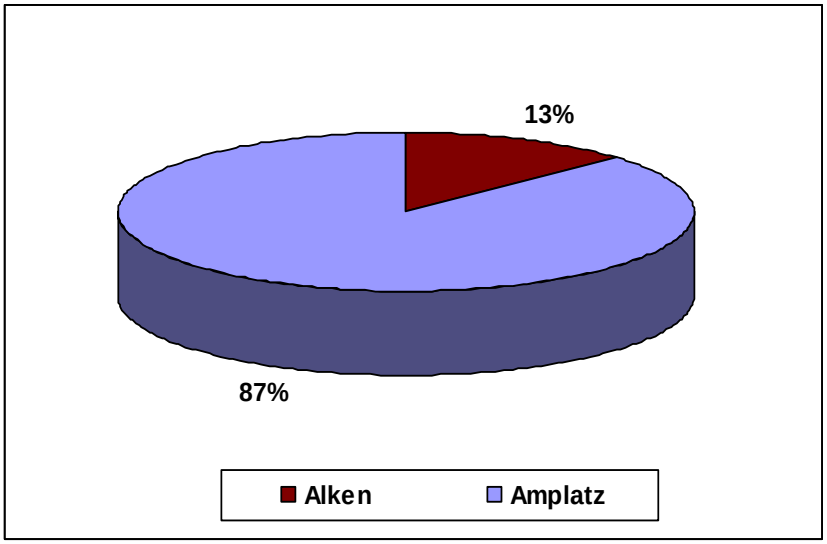

Table (7): Intraoperative Complications.

Data	Number	Percent
***Intraoperative complications*:**		
Dilatation difficulties	5	10.6
Bleeding Requiring transfusion	2	4.2
Perforation	2	4.2
Visceral injury	0	0
Total	9	19.1

This table shows the intraoperative complications (total of 9 cases, 19.1%); dilatation difficulties were found in 5 cases (10.6%), bleeding requiring transfusion in 2 cases (4.2%), perforation in 2 cases (4.2%),and visceral injury did not occur in any of the studied cases.

Fig. (58): Intraoperative complications (%)

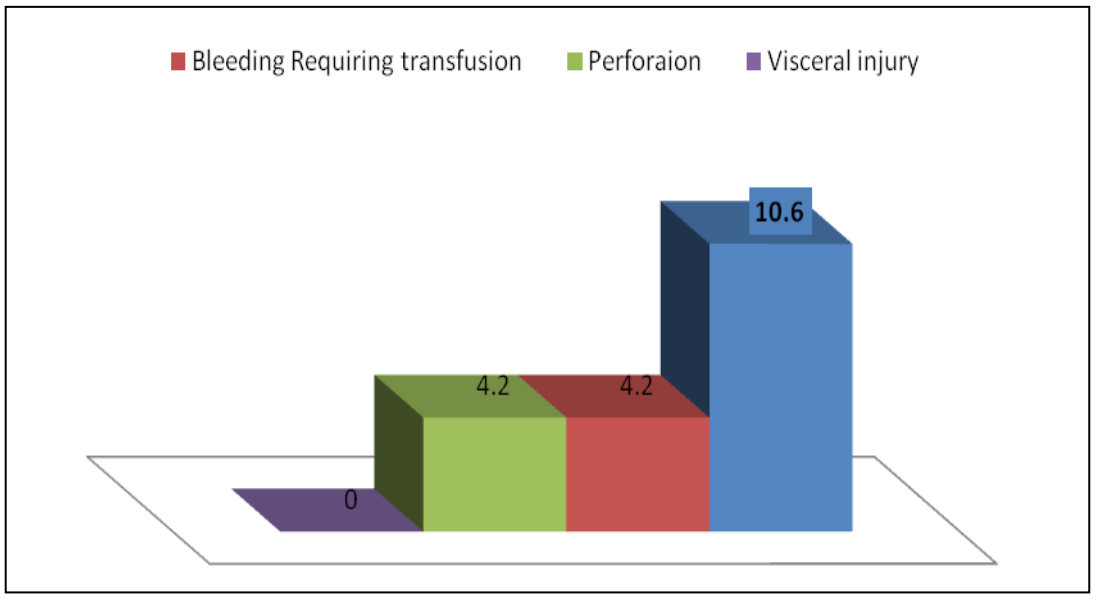

Table (8): Postoperative Data.

Data	Number	Percent
Stone outcome:		
Success*	44	93.6
Residual > 4 mm	3	6.4
Auxiliary Procedures:		
DJ insertion**	3	6.4
ESWL***	2	4.2
Re-treatment:		
Second look	2	4.2
Hospital stay (in days):	3.4 (Range: 2 to 6 days)	

*including insignificant residual stone (<4 mm), (2 cases).

** One DJ was inserted intraoperativelly (antegrade) for pelvic perforation, in 2 cases a DJ was inserted postoperatively for persistent urinary leakage.

*** ESWL was done for 2 cases of residual stones; one in the upper calyx and the other in the middle calyx.

This table shows the postoperative data of the studied cases; stone free rate was 93.6% (44 cases), residual stones more than 4 mm in 3 cases (6.4%). DJ insertion was used in 3 cases (6.4%) and ESWL was used in 2 cases (4.2%). A second look was needed in 2 cases (4.2%).and mean hospital stay was 3.4 days (range: 2-6 days).

Fig. (59): Stone outcome

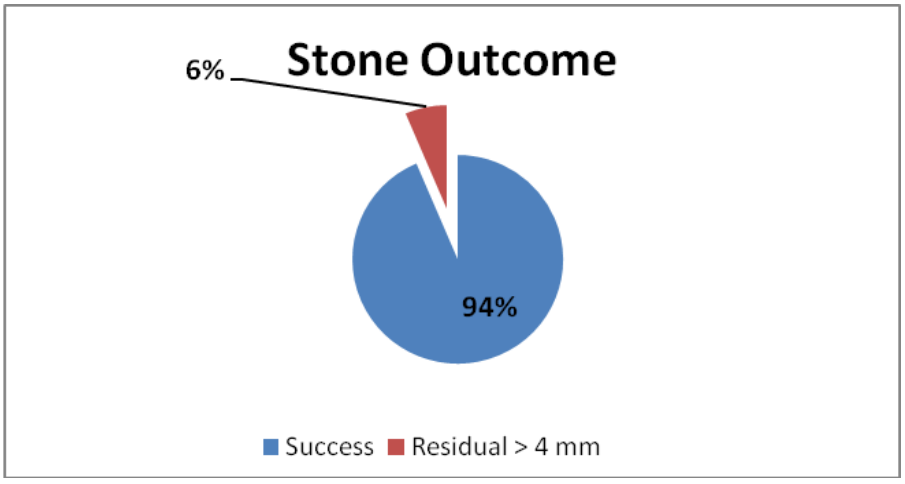

Fig. (60): Auxiliary Procedures (%)

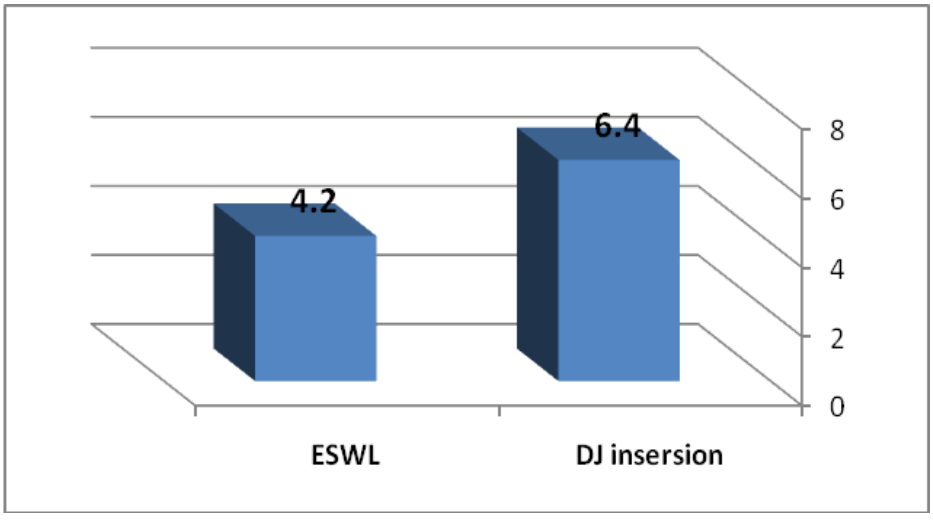

Table (9): Postoperative complications

Data	Number	Percent
Bleeding	0	0
Fever (>38)	4	8.5
Urinary Leakage	3	6.3
Total	7	14.8

This table shows postoperative complications (total 7 cases, 10.6%); fever in 4 cases (8.5%), and urinary leakage in 3 cases (6.3%).

Fig. (61): Postoperative complications (%)

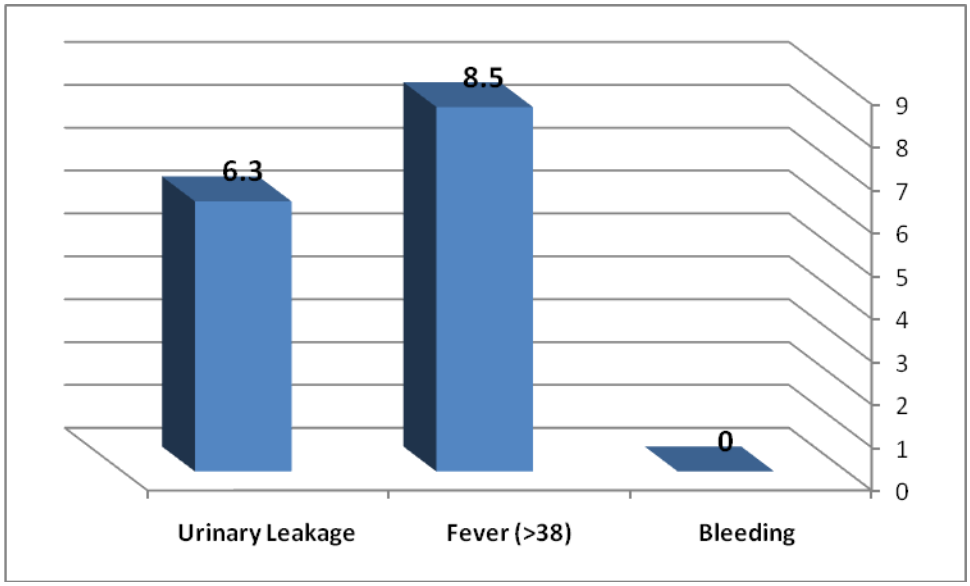

Table (10): Effect on Hemoglobin (gm) and Haematocrite

Hemoglobin (gm)			Haematocrite%		
Hb Preoperative	Hb Postoperative	P value	Hct Preoperative	Hct Postoperative	P value
11.3±0.95	10.8±1.3	0.018*	32.7±1.9	31.2±3.25	0.003*

*Insignificant Difference

This table shows the effect of the procedure on haemoglobin (gm) and haematocrite%; which shows insignificant difference between pre and post-operative haemoglobin and haematocrite.

Fig.(62): Pre and Postoperative Hb(gm) & Hct(%).