

A PROSPECTIVE RANDOMIZED COMPARATIVE STUDY OF BILE DUCT INJURY IN LAPAROSCOPIC VS OPEN CHOLECYSTECTOMY

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ABSTRACT

Background: Bile duct injuries during gallbladder surgery is known as a bile duct injury. A bile duct can be burnt, squeezed, or severed. The bile duct will be unable to function properly as a result of an injury, leaking bile into the belly or preventing the usual passage of bile from the liver. If left untreated, bile duct injuries can cause unpleasant and even fatal symptoms. It is most usually an iatrogenic consequence following gallbladder removal surgery (cholecystectomy), but it can also be caused by significant trauma. **Materials and Methods:** In our study we are trying to give the data in randomized comparative of bile duct injury in laparoscopic vs open cholecystectomy cases admitted to our hospital over period of 2 years. In the present study 50 patients with clinical diagnosis bile duct injury in post cholecystectomy were admitted during the study period. **Result:** Our study showed that, the mean duration of hospital stay (days) in the Laparoscopic cholecystectomy group was 6.48 ± 5.584 and the mean duration of hospital stay (days) in the Open cholecystectomy group was 6.76 ± 3.032 . The student 't' test value was -0.220 shows statistically not significant difference between comparison of the duration of hospital stay in laparoscopic cholecystectomy group and open cholecystectomy group respectively. **Conclusions:** Open cholecystectomy showed higher benefits for patients with lower prevalence of Bile duct injuries and shorter mean hospital stay compared with laparoscopic cholecystectomy. Hence, in this study we concluded that open cholecystectomy is better than laparoscopic cholecystectomy.

INTRODUCTION

Damage to The Bile Ducts During Gallbladder Surgery Is Known as A Bile Duct Injury. A Bile Duct Can Be Burnt, Squeezed, Or Severed. The Bile Duct Will Be Unable to Function Properly as A Result Of an Injury, Leaking Bile Into the Belly Or Preventing The Usual Passage Of Bile From The Liver. If Left Untreated, Bile Duct Injuries Can Cause Unpleasant And Even Fatal Symptoms. It Is Most Usually an Iatrogenic Consequence Following Gallbladder Removal Surgery (Cholecystectomy), But It Can Also Be Caused By Significant Trauma. During Laparoscopic And Open Cholecystectomy, There Is A Risk Of Biliary Damage. If Not Recognized And Treated Properly, Biliary Damage Can Cause A Variety Of Problems, Including Death. Biliary Damage Should Ideally Be Treated At A Center With Endoscopy, Radiology, And Surgery Capabilities

And Competence. Because Of The Varied Anatomy, Limited Working Space, And Morbidity Of Its Consequences, Biliary Tree Injury Presents A Unique Challenge For The Surgeon. The Biliary Tree And Its Link To The Cystic Duct And Its Insertion Onto The Common Hepatic Duct Has Diverse And Aberrant Structure. The Most Common Cause Of Bile Duct Injury Is Incorrect Diagnosis Of Normal Biliary Architecture. When The Bile Duct Is Wounded, It Is Critical To Recognize It As Soon As Possible So That Proper Treatment May Begin. This Activity Covers The Examination And Treatment Of Biliary System Injury Caused By Iatrogenic Or Traumatic Causes, As Well As The Role Of The Interprofessional Team In Evaluating And Treating Patients With This Condition.

Aims and objectives: To Compare The Bile Duct Injury In Laparoscopic Vs Open Cholecystectomy.

MATERIALS AND METHODS

Objective of The Study:

The Main Objective Of This Study Is To Compare The Bile Duct Injury In Laparoscopic Vs Open Cholecystectomy.

Sources of Data:

This Is A Prospective Randomized Comparative Study Conducted In Mohan Kumaramanagalam Medical College Hospital Salem For A Period Of Two Years From November 2022 To October 2024

Methods and Collection of Data:

The Material For The Study Is Taken From The Cases Admitted To Department Of General Surgery In Gmk Medical College & Hospital Salem, Who Are Clinically Diagnosed To Have Bile Duct Injury In Post Cholecystectomy Patients. A Detailed History Is Taken And Examination Is Done To Diagnose Bile Duct Injury. Systemic Examination And Basic Investigations Done. Group A Comprising Patients Subjected To Lap Cholecystectomy And Group B Comprising Patients Subjected To Open Cholecystectomy.

Study Design and Study Period:

Prospective Randomized Comparative Study From November 2022 To October 2024

Place of Study:

Govt Mohan Kumaramangalam Medical College Hospital, Salem

Sample Size and Ethical Clearance:

50 Patients With Clinical Diagnosis Bile Duct Injury In Post Cholecystectomy Status And Ethical Clearance Obtained From Institutional Ethical Committee

Inclusion Criteria and Exclusion Criteria

The Patient Aged Between 20 To 60 Years Presenting With Symptoms And Signs Of Cholelithiasis/Cholecystitis And Diagnosed By USG/Ct Abdomen. Exclusion Criteria Were Patients Below 20 Years Of Age. Patient With CBD Calculus, Raised Alp, Dilated CBD Where CBD Exploration Needed. Patient With Suspected Malignant Gallbladder Disease.

Study Methodology

Written Informed Consent Was Obtained. Patients Who Satisfy The Inclusion And Exclusion Criteria Were Divided Into Two Groups History, Clinical Examination And Routine Investigations Are Noted In Proforma. The Patients Of All The 2 Groups Were Followed Up Daily And Evaluated For Bile Duct Injury Post Operatively. Group A Comprising Patients Subjected To Lap Cholecystectomy And Group B Comprising Patients Subjected To Open Cholecystectomy. Collected Data Will Be Analyzed By Using Statistical Package

RESULTS

In Laparoscopic Cholecystectomy Group, The Total 25 Patients, 36% (N=9) Of The Patients Were In The Age Group Ranging Between 41-50 Years With The

Mean Age Of The Patients Was Observed As 46.84 ± 13.55 (Years) And In Open Cholecystectomy Group, The Total 25 Patients, 32% (N=8) Of The Patients Were In The Age Group Ranging Between 41-50 Years With The Mean Age Of The Patients Was Observed As 50.16 ± 11.74 (Years).

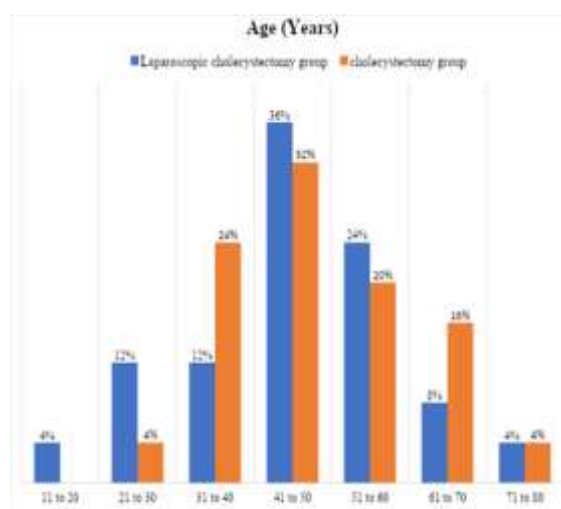


Figure 1

From (Table And Figure 2) S And In Laparoscopic Cholecystectomy Group We Infer That, Among 25 Patients, Majority 17 (68%) Were Female Patients And 8 (32 %) Were Male Patients And In Open Cholecystectomy Group, Among 25 Patients, Majority 13 (52%) Were Male Patient 12 (48 %) Were Female Patients.

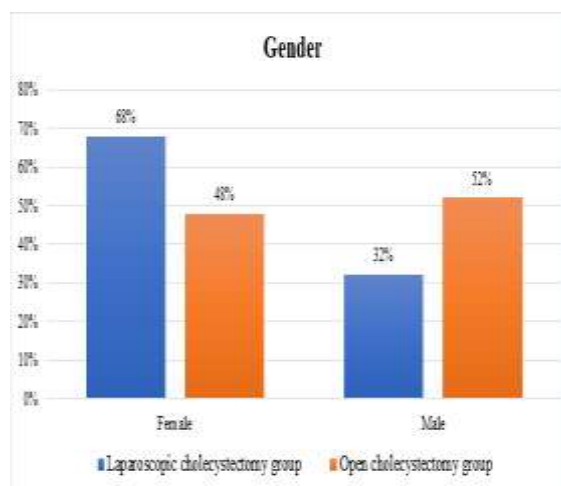


Figure 2

(Table and Figure 3) In Laparoscopic Cholecystectomy Group, Most Of The Patients, 20 (80%) Had Cholelithiasis In Diagnosis And In Open Cholecystectomy Group, Most Of The Patients, 9 (36%) Had Cholecystitis In Diagnosis.

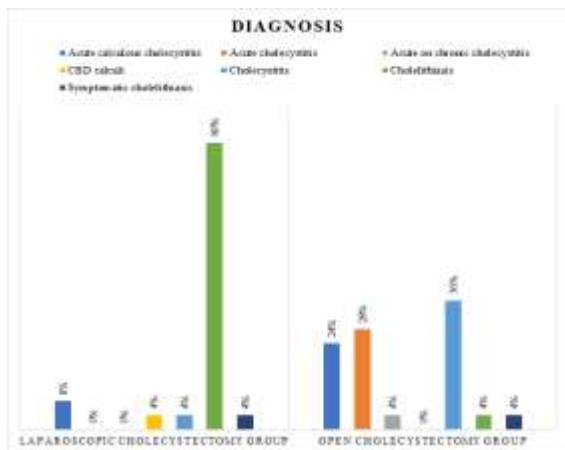


Figure 3

From (Table and Figure 4) In Laparoscopic Cholecystectomy Group We Infer That, among 25 Patients, Majority 19 (76%) Had No Bile Duct Injury

And In Open Cholecystectomy Group, Majority Of The Patients, 22 (88%) Had No Bile Duct Injury.

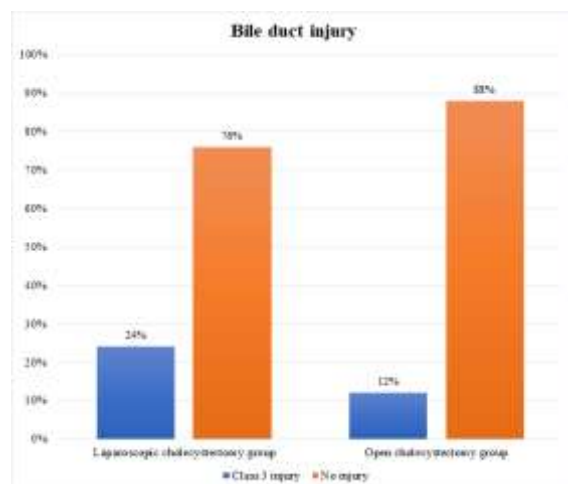


Figure 4:

Table 1: Age distribution of the patients

Age (Years)	Laparoscopic Cholecystectomy Group		Open Cholecystectomy Group	
	Frequency	Percentage	Frequency	Percentage
11 To 20	1	4	0	0
21 To 30	3	12	1	4
31 To 40	3	12	6	24
41 To 50	9	36	8	32
51 To 60	6	24	5	20
61 To 70	2	8	4	16
71 To 80	1	4	1	4
Total	25	100	25	100

Table 1a: Mean age distribution of the patients

Group	N	Mean (Years)	Median (Years)	Standard Deviation	Minimum (Years)	Maximum (Years)
Laparoscopic Cholecystectomy Group	25	46.84	48	13.55	20	74
Open Cholecystectomy Group	25	50.16	50	11.74	29	71

Table 2: Gender distribution of the patients

Gender	Laparoscopic Cholecystectomy Group		Open Cholecystectomy Group	
	Frequency	Percentage	Frequency	Percentage
Female	17	68	12	48
Male	8	32	13	52
Total	25	100	25	100

Table 3: Distribution based on diagnosis among patients

Diagnosis	Laparoscopic Cholecystectomy Group		Open Cholecystectomy Group	
	Frequency	Percentage	Frequency	Percentage
Acute Calculous Cholecystitis	2	8	6	24
Acute Cholecystitis	0	0	7	28
Acute On Chronic Cholecystitis	0	0	1	4
Cbd Calculi	1	4	0	0
Cholecystitis	1	4	9	36
Cholelithiasis	20	80	1	4
Symptomatic Cholelithiasis	1	4	1	4
Total	25	100	25	100

Table 4: Distribution based on bile duct injury among patients (N=25+25)

Bile Duct Injury	Laparoscopic Cholecystectomy Group		Open Cholecystectomy Group	
	Frequency	Percentage	Frequency	Percentage
Class 3 Injury	6	24	3	12
No Injury	19	76	22	88
Total	25	100	25	100

Table 5: Distribution based on duration of surgery (minutes) among patients (n=25+25)

Duration Of Surgery	Laparoscopic Cholecystectomy Group		Open Cholecystectomy Group	
	Frequency	Percentage	Frequency	Percentage
Less Than 90 Minutes	8	32	1	4
More Than 90 Minutes	17	68	24	96
Total	25	100	25	100

Table 6: Mean duration of surgery (minutes) of the patients

Group	N	Mean (Minutes)	Median (Minutes)	Standard Deviation	Minimum (Minutes)	Maximum (Minutes)
Laparoscopic Cholecystectomy Group	25	121.6	120	34.17	80	175
Open Cholecystectomy Group	25	140.8	140	20.29	90	180

In Laparoscopic Cholecystectomy Group, The Total 25 Patients, 68% (N=17) Of The Patients Were Duration Of Surgery Is Less Than 90 Minutes With The Mean Duration Of Surgery (Minutes) Of The Patients Was Observed As 121.6 ± 34.17 (Minutes)

And In Open Cholecystectomy Group, The Total 25 Patients, 96% (N=24) Of The Patients Were Duration Of Surgery Is More Than 90 Minutes With The Mean Duration Of Surgery (Minutes) Of The Patients Was Observed As 140.8 ± 20.29 (Minutes).

Table 7: Distribution based on duration of hospital stay (days) among patients (N=25+25)

Duration Of Surgery	Laparoscopic Cholecystectomy Group		Open Cholecystectomy Group	
	Frequency	Percentage	Frequency	Percentage
Less Than 7 Days	19	76	20	80
More Than 7 Days	6	24	5	20
Total	25	100	25	100

Table 8: Mean duration of hospital stay (days) of the patients

Group	N	Mean (Days)	Median (Days)	Standard Deviation	Minimum (Days)	Maximum (Days)
Laparoscopic Cholecystectomy Group	25	6.48	3	5.584	3	19
Open Cholecystectomy Group	25	6.76	6	3.032	4	18

In Laparoscopic Cholecystectomy Group, The Total 25 Patients, 76% (N=19) Of The Patients Were Duration Of Hospital Stay Is Less Than 7 Days With The Mean Hospital Stay (Days) Of The Patients Was Observed As 6.48 ± 5.584 (Days) And In Open

Cholecystectomy Group, The Total 25 Patients, 80% (N=20) Of The Patients Were Duration Of Hospital Stay Is Less Than 7 Days With The Mean Duration Of Hospital Stay (Days) Of The Patients Was Observed As 6.76 ± 3.032 (Days).

Table 9: Comparison of the diagnosis among the patients in laparoscopic cholecystectomy group and open cholecystectomy group. (N=25+25)

Diagnosis	Laparoscopic Cholecystectomy Group		Open Cholecystectomy Group		Statistical Significance
	N	%	N	%	
Acute Calculous Cholecystitis	2	8	6	24	$X^2 = 34.59$ Df = 6 P-Value = 0.001**
Acute Cholecystitis	0	0	7	28	
Acute On Chronic Cholecystitis	0	0	1	4	
Cbd Calculi	1	4	0	0	

Cholecystitis	1	4	9	36
Cholelithiasis	20	80	1	4
Symptomatic Cholelithiasis	1	4	1	4

**-P < 0.001 Highly Significant

The Table 9 Reveals The Diagnosis Had Shown Statistically Highly Significant In Comparison Of The Diagnosis Among The Patients In Laparoscopic

Cholecystectomy Group And Open Cholecystectomy Group With Chi-Square Value Of (X²=34.59, D.F=6) At P<0.001 Level Respectively.

Table 10: Comparison of the bile duct injury among the patients in laparoscopic cholecystectomy group and open cholecystectomy group. (N=25+25)

Bile Duct Injury	Laparoscopic Cholecystectomy Group		Open Cholecystectomy Group		Statistical Significance
	N	%	N	%	
Class 3 Injury	6	24	3	12	X ² =1.220 Df=1 P-Value =0.269 Ns
No Injury	19	76	22	88	

Non Significant

The Table 10 Reveals The Bile Duct Injury Had Shown Statistically Not Significant Comparison Of The Bile Duct Injury Among The Patients In

Laparoscopic Cholecystectomy Group And Open Cholecystectomy Group With Chi-Square Value Of (X²=1.220, D.F=1) At P<0.05 Level Respectively.

Table 11: Comparison of the whether converted to open procedure among the patients in laparoscopic cholecystectomy group and open cholecystectomy group (N=25+25)

Whether Converted To Open Procedure	Laparoscopic Cholecystectomy Group		Open Cholecystectomy Group		Statistical Significance
	N	%	N	%	
No	23	92	25	100	X ² =2.083 Df=1 P-Value =0.149 Ns
Yes	2	8	0	0	

Non Significant

The Table 11 Reveals The Whether Converted To Open Procedure Had Shown Statistically Not Significant Comparison Of The Whether Converted To Open Procedure Among The Patients In

Laparoscopic Cholecystectomy Group And Open Cholecystectomy Group With Chi-Square Value Of (X²=2.083, D.F=1) At P<0.05 Level Respectively.

Table 12: Comparison of the reason for conversation among the patients in laparoscopic cholecystectomy group and open cholecystectomy group. (N=25+25)

Reason For Conversation	Laparoscopic Cholecystectomy Group		Open Cholecystectomy Group		Statistical Significance
	N	%	N	%	
Mirizzi Syndrome	2	8	0	0	X ² =2.083 Df=1 P-Value =0.149 Ns
Nil	23	92	25	100	

Non Significant

The Table 12 Reveals The Reason For Conversation Had Shown Statistically Not Significant Comparison Of The Reason For Conversation Among The Patients In Laparoscopic Cholecystectomy Group

And Open Cholecystectomy Group With Chi-Square Value Of (X²=2.083, D.F=1) At P<0.05 Level Respectively.

Table 13: Comparison of the duration of surgery in laparoscopic cholecystectomy group and open cholecystectomy group (N=25+25)

Duration Of Surgery (Minutes)	Group	Mean	Standard Deviation	Mean Difference	'T' Value Student T Test	Df	'P' Value
	Laparoscopic Cholecystectomy Group	121.6	34.17	-19.20	-2.415	48	0.020* S
Open Cholecystectomy Group	140.8	20.29					

*-P < 0.05 Significant

Table and Figure 13 Shows That, The Mean Duration Of Surgery (Minutes) In The Laparoscopic Cholecystectomy Group Was 121.6 ± 34.17 And The Mean Duration Of Surgery (Minutes) In The Open Cholecystectomy Group Was 140.8 ± 20.29 . The

Calculated Student 'T' Test Value Of $T = -2.415$ Shows Statistically Significant Difference Between Comparison Of The Duration Of Surgery In Laparoscopic Cholecystectomy Group And Open Cholecystectomy Group Respectively.

Table 14: Comparison of the duration of hospital stay in laparoscopic cholecystectomy group and open cholecystectomy group (N=25+25)

Duration Of Hospital Stay	Group	Mean	Standard Deviation	Mean Difference	'T' Value Student T Test	Df	'P' Value
	Laparoscopic Cholecystectomy Group	6.48	5.584	-0.280	-0.220	48	0.827 Ns
	Open Cholecystectomy Group	6.76	3.032				

Non Significant

Table -14: Shows That, The Mean Duration Of Hospital Stay (Days) In The Laparoscopic Cholecystectomy Group Was 6.48 ± 5.584 And The Mean Duration Of Hospital Stay (Days) In The Open Cholecystectomy Group Was 6.76 ± 3.032 . The Calculated Student 'T' Test Value Of $T = -0.220$ Shows Statistically No Significant Difference Between Comparison Of The Duration Of Hospital Stay In Laparoscopic Cholecystectomy Group And Open Cholecystectomy Group Respectively.

DISCUSSION

In Our Study We Are Trying To Give The Data In A Randomized Comparative Of Bile Duct Injury In Laparoscopic Vs Open Cholecystectomy Cases Admitted To Our Hospital Over A Period Of 2 Years. In The Present Study 50 Patients With Clinical Diagnosis Of Bile Duct Injury In Post Cholecystectomy Patients Were Admitted During The Study Period.

Age Distribution

In This Study The Highest Number Of Cases Occurred In The Laparoscopic Cholecystectomy Group In The 41-50 Years Of Age Group (36%) With The Mean Age Of The Patients Was Observed As 46.84 ± 13.55 (Years). In The Open Cholecystectomy Group In The 41-50 Years Of Age Group (32%) With The Mean Age Of The Patients Was Observed As 50.16 ± 11.74 (Years).

Similarly, Bharani Raj Kumar And Rajesh Chakkarapani,^[24] In 2020 Documented That Average Age Of The Patients Was 41.30 Years And $Sd \pm 12.01$ With Range 40-59 Years (63%) In Laparoscopic Cholecystectomy And Average Age Of The Patients In Open Cholecystectomy Was 39.16 ± 11.43 With Range 40-59 Years (70%).

Supportively, The Mean Age Of Patients In Laparoscopic Cholecystectomy Was 45 ± 11 (Years) And Open Cholecystectomy Was 47 ± 10 (Years) In Rafiqul Islam Et Al,^[22] In A 2020 Study. The Mean Age Of The Patients In The Laparoscopic Cholecystectomy Group Was 45.32 ± 9.76 And In The Open Cholecystectomy Group Was 49.00 ± 14.28 (Years) In Sagheer Ahmed Et Al,^[47] 2014 Study. Mean Age Of The Patients In Laparoscopic Cholecystectomy Group Was 40.78 ± 11.90 And In Open Cholecystectomy Group Was 42.02 ± 11.67 (Years) In Anindita Bhar And Sagar Karmakar,^[59] 2020 Study. The Mean Age Of The Patients In Laparoscopic Cholecystectomy Was 43.35 ± 8.61 ,^[54] 42.5 Years.^[57]

Gender Distribution

Highest Laparoscopic Cholecystectomy Group Cases Occurred In Females (68%) Than Male (32%). In

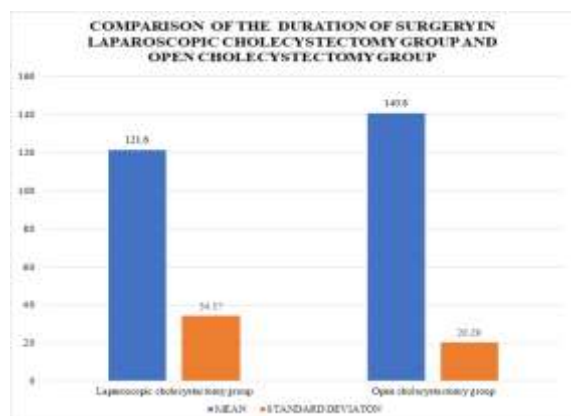


Table 6: Comparison of the duration of surgery in laparoscopic cholecystectomy group and open cholecystectomy group

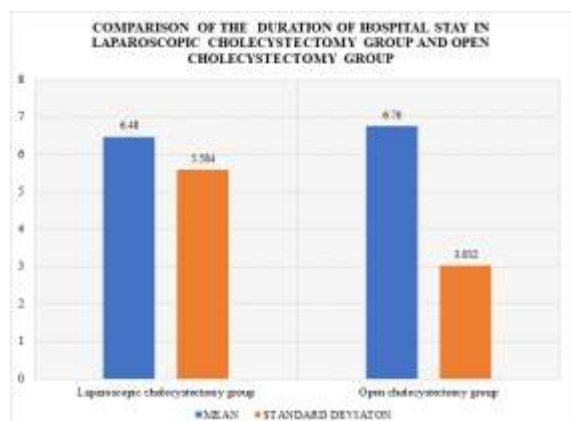


Table 7: Comparison of the duration of hospital stay in laparoscopic cholecystectomy group and open cholecystectomy group

Open Cholecystectomy Group Cases Occurred In (52%) Were Male And (48%) Were Female Patients. The Laparoscopic Cholecystectomy Group Showed That Female (320 Cases) Than Male (250 Cases) And Open Cholecystectomy Group Showed That Female (205 Cases) Than Male (175 Cases) In Rafiqul Islam Et Al,^[22] In 2020. In Laparoscopic Cholecystectomy, Male Was (22%) And Females Were (78%). In Open Cholecystectomy, (24%) Were Male And (76%) Were Females In Sagheer Ahmed Et Al,^[47] 2014 Study.

In Contrary, A Study Of Waheeb R. Al-Kubati,^[53] 2010 Showed That Male (75%) Were More Than Female Patients (25%) In Laparoscopic Cholecystectomy. This Is Similar Results Were Found In Laparoscopic Cholecystectomy Of Female Were More Than Male.

Distribution Based On Diagnosis

In The Present Study, In The Laparoscopic Cholecystectomy Group Most Of The Patients (80%) Had Cholelithiasis And In The Open Cholecystectomy Group, Majority (36%) Had Cholecystitis. Similarly, (87.1%) Had Cholelithiasis Followed That (9.6%) Had Acute Cholecystitis In Laparoscopic Cholecystectomy In Ugur Ekici Et Al,^[56] In A 2018 Study. Supportively, Tanweer Karim And Abhinandan Kadyal In 2015 Showed That 100 Patients Of Cholelithiasis In Both Laparoscopic And Open Cholecystectomy Group.^[51] On The Contrary, The Majority Underwent Laparoscopic Cholecystectomy For Cholecystitis.

Distribution Based On Bile Duct Injury

In The Present Study, In The Laparoscopic Cholecystectomy Group (76%) Had No Bile Duct Injury And In Open Cholecystectomy Group, (88%) Had No Bile Duct Injury.

Similarly, In Laparoscopic Cholecystectomy Group (88.5%) Had No Bile Duct Injury And In Open Cholecystectomy Group, (85%) Had No Bile Duct Injury, Anindita Bhar And Sagar Karmakar,^[59] 2020 Study. Aseem Trikha,^[25] Found In Laparoscopic Cholecystectomy Group (40%) Had Bile Duct Injury And In Open Cholecystectomy Group, (26.6%) Had Bile Duct Injury. The Frequency Of Biliary Tract Injury Was 0.87% After Laparoscopic Cholecystectomy And 0.58% After Open Cholecystectomy In Maria Fernanda Velasco-Espinoza Et Al,^[55] 2018.

A Study Of Shing-Moo Huang Et Al,^[49] In 2017 Showed That Bile Duct Injury Rate Was 0.08% In Laparoscopic Cholecystectomy Group. In Contrary, 61% Had Bile Duct Injury In Laparoscopic Cholecystectomy Group In 2020 Supriya Sharma Et Al,^[50] Study. Supportive Results Showed That In Laparoscopic Cholecystectomy Group (2 - 6 Cases) Had Bile Duct Injury.

Planned Laparoscopic Operations Converted To Open Cholecystectomy Intra-Operatively.

Distribution Based On Duration Of Surgery (Minutes)

Our Study Observed That In Laparoscopic Cholecystectomy Group, 68% Were Duration Of

Surgery Is Less Than 90 Minutes With The Mean Duration Of Surgery (Minutes) Was 121.6 ± 34.17 (Minutes) And In Open Cholecystectomy Group, 96% Were Duration Of Surgery Is More Than 90 Minutes With The Mean Duration Of Surgery (Minutes) Was 140.8 ± 20.29 (Minutes).

Supportive Results Showed That Mean Duration Required For Open Cholecystectomy Was 53.11 ± 12.56 Minutes, Was More Than Laparoscopic Cholecystectomy Duration 38.27 ± 6.29 Minutes. Rafiqul Islam Et Al,^[22] In 2020 Reports Mean Operative Time In Laparoscopic Surgery Was 30 To 60 Minutes (54.3%), Open Surgery Lasting 30 To 60 Minutes Were (36.8%) And (44.2%) Laparoscopic Cholecystectomy In Time Interval 61-120 Minutes, Significantly Less Than (57%) Open Cholecystectomy In Time Interval (61-180 Minutes). In 2020 Aamir Hussain Hela Et Al,^[54] Reported That The Mean Operative Time In Laparoscopic Cholecystectomy Was 55.5 ± 10.60 Minutes With Range Of 45 - 90 Minutes. Mean Duration Of Surgery In Laparoscopic Cholecystectomy (70.25 ± 15.78) Is Significantly Less Than That Of Open Cholecystectomy (107.18 ± 16.18) In Anindita Bhar And Sagar Karmakar, 2020.

Distribution Based On Duration Of Hospital Stay (Days)

In Present Study, In Laparoscopic Cholecystectomy Group, 76% Were Duration Of Hospital Stay Is Less Than 7 Days With The Mean Hospital Stay (Days) Was 6.48 ± 5.584 (Days) And In Open Cholecystectomy Group, 80% Were Duration Of Hospital Stay Is Less Than 7 Days With The Mean Duration Of Hospital Stay (Days) Was 6.76 ± 3.032 (Days).

Supportively, Duration Of Hospital Stay (Days) Of Laparoscopic Cholecystectomy Was 2.11 ± 1.22 And Open Cholecystectomy Was 4.78 ± 2.63 (Days). Mean Duration Of Post-Op Hospital Stay Was Much Higher In Open Cholecystectomy (5.91 ± 1.82 Days) Compared To That In Laparoscopic Cholecystectomy (2.36 ± 1.40 Days).

In 2019 Nazima Begum Et Al,^[52] States That The Pre-Operative Hospital Stay Mean Days Is 2.78 Days Of Laparoscopic Cholecystectomy And 2.34 Days Of Open Cholecystectomy. In Post-Operative Hospital Stay Mean Days, 3.97 Days Of Laparoscopic Cholecystectomy And 7.66 Days Open Cholecystectomy. In 2020 Aamir Hussain Hela Et Al.,^[54] Showed That The Mean Hospital Stay Of Patients In Our Study Was 1.6 0.9 Days With A Range Of 12 Hours To 14 Days.

Comparison Of The Diagnosis Among The Patients In Laparoscopic Cholecystectomy Group And Open Cholecystectomy Group

In Our Study Showed That The Diagnosis Had Shown Statistically Highly Significant In Comparison Of The Diagnosis Among The Patients In Laparoscopic Cholecystectomy Group And Open Cholecystectomy Group With Chi-Square Value Of 34.59 And Degree Of Freedom Was 6 At $P < 0.001$ Level Respectively.

Comparison Of The Bile Duct Injury Among The Patients In Laparoscopic Cholecystectomy Group And Open Cholecystectomy Group

In Present Study, Observed That The Bile Duct Injury Had Shown Statistically Not Significant Comparison Of The Bile Duct Injury Among The Patients In Laparoscopic Cholecystectomy Group And Open Cholecystectomy Group With Chi-Square Value Of 1.220 And D.F Was At $P < 0.05$ Level Respectively. Similarly, In 2019 Nazima Begum Et Al,^[52] Showed That Statistically Not Significant Comparison Of The Bile Duct Injury Among The Patients In Laparoscopic Cholecystectomy Group And Open Cholecystectomy Group With Z Score -1.0459 and P Value 0.293 . Setthabutr Eaupanitcharoen,^[58] 2019 Reported That The Bile Duct Injury Occurred During Laparoscopic Cholecystectomy More Common Than Open Cholecystectomy But Without Statistical Significant, P Value 0.08 .

Comparison Of The Duration Of Surgery In Laparoscopic Cholecystectomy Group And Open Cholecystectomy Group

In The Present Study, I Observed That The Mean Duration Of Surgery (Minutes) In The Laparoscopic Cholecystectomy Group Was 121.6 ± 34.17 And The Mean Duration Of Surgery (Minutes) In The Open Cholecystectomy Group Was 140.8 ± 20.29 . The Student 'T' Test Value Was -2.415 Shows Statistically Significant Difference Between Comparison Of The Duration Of Surgery In Laparoscopic Cholecystectomy Group And Open Cholecystectomy Group Respectively.

Our Study Is In Rapport With Nazima Begum Et Al,^[52] The Mean Operating Time Is 59.32 Min For Laparoscopic Cholecystectomy And 66.22 Min For Open Cholecystectomy. The Group Mean For The Length Of The Procedure Is 62.94 Min. Z-Score Was -83.156 And Showed Statistically Significant As $P < 0.01$.

The Median Operation Time For Laparoscopic Cholecystectomy Was $50-175$ Min (Mean= 103.98 Min) And $35-95$ Min (Mean= 70 Min) For Open Cholecystectomy Shows Statistically Significant As $P < 0.001$ In Tanweer Karim And Abhinandan Kadyal,^[51] In 2015 Study.

Comparison Of The Duration Of Hospital Stay In Laparoscopic Cholecystectomy Group And Open Cholecystectomy Group

Our Study Showed That The Mean Duration Of Hospital Stay (Days) In The Laparoscopic Cholecystectomy Group Was 6.48 ± 5.584 And The Mean Duration Of Hospital Stay (Days) In The Open Cholecystectomy Group Was 6.76 ± 3.032 . The Student 'T' Test Value Was -0.220 Shows Statistically Not Significant Difference Between Comparison Of The Duration Of Hospital Stay In Laparoscopic Cholecystectomy Group And Open Cholecystectomy Group Respectively.

In Contrary, Tanweer Karim And Abhinandan Kadyal,^[51] In 2015 States Open Cholecystectomy Group Had Significantly Less Hospital Stay Than

Laparoscopic Cholecystectomy Group T (98) Was -3.3142 And $P < 0.001$) And Had The Mean Difference Lies Between -1.3581 And 4.8781 .

The Total Duration Of Hospital Stay Was Shorter In Laparoscopic Cholecystectomy Of Mean 2.49 ± 1.49 Days Compared To Patients In Open Cholecystectomy Of Mean 5.66 ± 1.72 Days. Duration Of Hospital Stay Is Significantly Less In Laparoscopic Cholecystectomy Compared To Open Cholecystectomy With P Value 0.0001 In Sagheer Ahmed Et Al,^[47] 2014 Study.

CONCLUSION

Bile Duct Injuries Is A Major Complication Of Laparoscopic Cholecystectomy. Open Cholecystectomy Showed Higher Benefits For Patients With Lower Prevalence Of Bile Duct Injuries And Shorter Mean Hospital Stay Compared With Laparoscopic Cholecystectomy Hence, In This Study We Concluded That Open Cholecystectomy Is Better Than Laparoscopic Cholecystectomy.

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