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**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1493053>Available online at: <http://www.iajps.com>**Research Article****STUDY TO KNOW THE OPERATIVE STRESS AFTER
LAPAROSCOPIC AND OPEN CHOLECYSTECTOMY AND
THEIR COMPARISON****¹Dr. Shakeel Akhtar, ²Dr. Muhammad Tahir Yaqoob, ³Dr. Muhammad Saad Iqbal**¹International High School of Medicine, Kyrgyzstan²Govt Mian Nawaz Sharif Teaching Hospital, Yakki Gate, Lahore³Lahore Medical and Dental College, Lahore Pakistan**Abstract:**

Objective: To compare the operative stress after open and laparoscopic cholecystectomy by determining the blood glucose levels in patients.

Study Design: A Series of comparative cases.

Duration and Location: In the Department of Surgery, Unit II of Services Hospital, Lahore for one year duration from July 2017 to July 2018.

Methods: Nine men and open cholecystectomy (N-25) and laparoscopic simple gallstones and 41 women with 50 patients, 20 to 60 years of age, total (N-25). Exclusions were pregnant women and patients of other age groups and those with other comorbidities and hepatitis. Patients were randomized to laparoscopic and open groups. At difference of 06 hours and then 18 hours of surgery Blood samples were taken from patients, his blood sugar was checked in the blood and the results were compared in the table and.

Results: In the pre-operative cholecystectomy pre-blood sugar level was between 57 to 93 with (mean 76.08 ± 3.6) and post-operative sugar level was 76-144 mg / dl post-level (average of 110.75 ± 6.4 ranged from mg / dL; The increase in blood sugar level is 46.1%. The preoperative level of blood glucose in laparoscopic cholecystectomy, was between 63 and 95 mg / dl and after 79-128 mg / dL (97.78 ± 8.12 average) (mean 78.9 ± 6.4); The blood sugar level percentage increases up to 23.9%.

Conclusion: Patients operated with open cholecystectomy have much increased blood sugar level; than those with laparoscopic cholecystectomy. Therefore, laparoscopic cholecystectomy produces less pronounced metabolic interference and stress response than open cholecystectomy.

Keywords: stress hyperglycemia, Laparoscopic cholecystectomy, Cholecystectomy, surgical stress.

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INTRODUCTION:

The superiority of laparoscopic cholecystectomy has justified universal use in recent years. There is no doubt that laparoscopic cholecystectomy has changed the surgical treatment of cholelithiasis and has become the mainstay of the treatment of uncomplicated gallstone disease. Laparoscopic cholecystectomy (LC) induces less surgical response than open cholecystectomy (OC). All surgical traumas trigger neurohormonal events that cause a postoperative increase in blood sugar levels. Bistran showed increased blood glucose levels after surgery. However, there are few studies on the difference between laparoscopic and open cholecystectomy, particularly in relation to operative response to stress when measuring blood glucose levels. The aim of this study is to compare the blood glucose levels of the response to postoperative stress after open and laparoscopic cholecystectomy.

MATERIALS AND METHODS:

This Series of comparative study was held in the Department of Surgery, Unit II of Services Hospital, Lahore for one year duration from July 2017 to July 2018. 50 adult patients in both sexes underwent cholecystectomy between 20 and 60 years of age. Patients of other age groups were excluded, pregnant

women, patients with positive hepatitis B and C, and other co-morbidities or complications. Patients underwent surgery and line investigations (CBC, blood glucose and urea, blood electrolytes and creatinine, liver function tests, profile hepatitis, ECG, chest X-ray) the day before entry. These patients were orally held on the opposite side from midnight on the day of surgery. Fluids, antibiotics and analgesics were administered intravenously before and after surgery. Patients were randomly assigned to open and laparoscopic groups. Blood samples from the patients were collected at 6 hours and then 18 hours on the day of surgery and blood glucose levels were estimated.

RESULTS:

Out of 50 patients, 41 were female and nine were male. Age distribution, as shown in Tables I and II, revealed that gallbladder disease is more common among women aged 40 to 50 years than men. The mean preoperative glucose level in patients with open surgery ranged from 76.08 ± 3.6 mg / dl in general, and $57-93$ mg / dl in general, and the mean was 110.75 ± 6.4 (Table I).

Age Group	Number	Blood Sugar Levels (mg/dl)			
		Preop.	Mean±SD	Postop.	Mean±SD
21-30 years	1	74	--	109	--
31-40 years	4	67-90	78.3±09.5	88-127	115.0±18.2
41-50 years	13	57-98	76.5±12.9	75-143	107.6±18.5
51-60years	7	67-93	75.6±08.4	96-126	111.4±13.4
Total	25	57-93	76.2±03.6	75-143	110.8±06.4

Table I. Blood Sugar Levels before and after Open Cholecystectomy

In the case of laparoscopic cholecystectomy, the preoperative blood glucose levels in the case of laparoscopic cholecystectomy, oscillating blood sugar levels was to an average of 78.9 ± 6.4 mg / dl, range from 62 and 95 mg / dl to 78 and 97.78 ± 8.12 mg / dl (Table II). 128 mg / dl. Patients who underwent OC showed a significant increase in blood glucose levels (45.5%) after surgery.

Table II. Blood Sugar Levels before and after Laparoscopic Cholecystectomy

Age (Years)	Number	Blood Sugar Levels (mg/dl)			
		Pre op.	Mean±SD	Post op.	Mean±SD
21-30 yrs	3	70-95	81.6±12.7	89-115	102±13
31-40 yrs	4	70-85	76.25±7.5	78-96	88.25±7.5
41-50 yrs	9	62-95	75.4±11.9	89-128	100.6±12.8
51-60yrs	9	66-95	82.4±9.9	83-124	100.3±14.2
Total	25	62-95	78.9±6.4	78-128	97.78±12.8

Laparoscopic cholecystectomy showed a blood glucose level in the patient, moreover, an increase (23.9%) that was not as high as the OC. The actual difference between the two environments is 2.86, the standard error between two media sugar level in OC / LC is 12.97, while the postoperative blood is quite significant. (Results are represented as 2 standard deviations with $P = 0.05$). The standard deviation error was 2.86 (Table III).

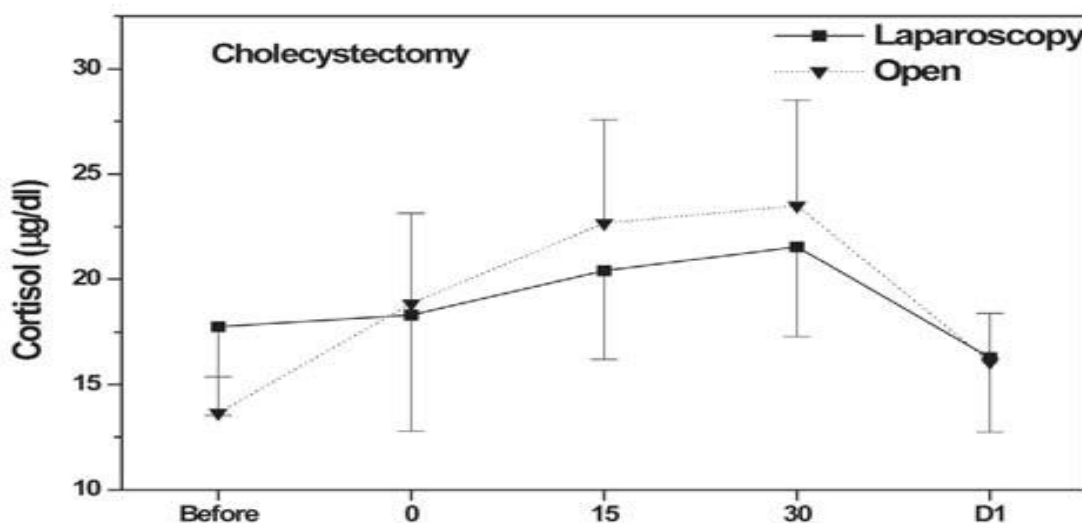
Table III. Standard error between the two Means

Surgery	Mean	Standard Dev.
Open Chole. (25)	110.75	6.4
Lap. Chole. (25)	97.78	12.8

DISCUSSION:

The superiority of laparoscopic cholecystectomy (LC) has justified universal use in recent years. It induces less surgical response than open cholecystectomy (OC). The aim of this study is that laparoscopic cholecystectomy is less traumatic and causes less surgical trauma than open cholecystectomy. In this study, blood sugar was taken as an indicator of surgical stress, and Bistrian's blood sugar levels were increased after the operation.

Patients were randomly divided into open surgery (mean age 44.52 ± 9.18) or laparoscopic cholecystectomy (mean age 42.52 ± 11 years). Blood glucose levels of the patients were also represented as age groups. A more significant increase in mean \pm 2SD ($p = 0.05$) was documented that results in open blood glucose (45.5%) after open surgery compared with laparoscopic cholecystectomy (23%, 9%). Luo *et al.*



Also performed a comparative study to evaluate the response to operative stress and energy metabolism after laparoscopic and open cholecystectomy. They measured insulin levels (in addition to other factors) on the first and third days before and after surgery. The differences between the groups were not significant at either the first or the third day. In our study there was no significant increase. They found a significant decrease in insulin levels from the third postoperative day group in open cholecystectomy compared to laparoscopic cholecystectomy.



In a study of 32 patients, Engin et al. found that cortisol, glucagon and blood sugar levels increased significantly after open and minimally invasive surgery. The increase in glucagon and cortisol levels after this surgery was significantly higher in the open procedure than in the laparoscopic procedure. However, the increase in glucose concentrations in the postoperative period was not significantly higher in patients undergoing open surgery. In our study, the standard error between two postoperative blood glucose levels in open and laparoscopic cholecystectomy was 2.86, whereas the real difference between the two methods was 12.97. It doubles the SE between the two roads and is very important.

CONCLUSION:

The results of this study clearly show that blood sugar levels are higher in patients after open cholecystectomy than in patients undergoing laparoscopic cholecystectomy. Since an increase in blood sugar level represents the degree of postoperative stress, laparoscopic cholecystectomy produces a lower response to stress and metabolic intervention than open surgery.

REFERENCES:

1. Joseph, Elizabeth, Shine Mathew, Remani Kelan Kamalakshy, and Suresh Sethumadhava Menon. "ULTRASOUND GUIDED TRANSVERSUS ABDOMINIS PLANE BLOCK VERSUS STANDARD ANALGESIC CARE FOR

POSTOPERATIVE PAIN RELIEF FOLLOWING TOTAL ABDOMINAL HYSTERECTOMY, AN OBSERVATIONAL STUDY." *Journal of Evidence Based Medicine and Healthcare* 5, no. 10 (2018): 858-861.

2. Kasai, M., Van Damme, N., Berardi, G., Geboes, K., Laurent, S. and Troisi, R.I., 2018. The inflammatory response to stress and angiogenesis in liver resection for colorectal liver metastases: a randomized controlled trial comparing open versus laparoscopic approach. *Acta Chirurgica Belgica*, 118(3), pp.172-180.
3. Straatman, Jennifer, Miguel A. Cuesta, Jurriaan B. Tuynman, Alexander AFA Veenhof, Willem A. Bemelman, and Donald L. van der Peet. "C-reactive protein in predicting major postoperative

- complications are there differences in open and minimally invasive colorectal surgery? Substudy from a randomized clinical trial." *Surgical endoscopy* 32, no. 6 (2018): 2877-2885.
4. Schultz, Nicolai A., Peter N. Larsen, B. Klarskov, L. M. Plum, Hans-Jørgen Frederiksen, Henrik Kehlet, and Jens G. Hillingsø. "Second Generation of a Fast-track Liver Resection Programme." *World journal of surgery* 42, no. 6 (2018): 1860-1866.
 5. Thomas PK, Rajendran CV, Unnikrishnan G. Comparative Study Of Changes In Hepatic Function After Laparoscopic Cholecystectomy And Open Cholecystectomy. INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH. 2018 Feb 14;6(3).
 6. Roy, Kallol Kumar, G. C. Netra, Seema Singhal, Juhi Bharti, Sunesh Kumar, Dipendra K. Mitra, Ruma Ray, Jyoti Meena, and Perumal Vanamail. "Impact of energy devices on the post-operative systemic immune response in women undergoing total laparoscopic hysterectomy for benign disease of the uterus." *Journal of the Turkish German Gynecological Association* 19, no. 1 (2018): 1.
 7. Henriques, Jessimara Ribeiro, and Maria Isabel Toulson Davisson Correia. "Are postoperative intravenous fluids in patients undergoing elective laparoscopic cholecystectomy a necessity? A randomized clinical trial." *Surgery* 163, no. 4 (2018): 721-725.
 8. KÄRKKÄINEN, JARI, Tuomas Selander, Martin Purdy, Petri Juvonen, and Matti Eskelinen. "Patients with Increased Levels of the Oxidative Stress Biomarker SOD1 Appear to Have Diminished Postoperative Pain After Midline Laparotomy: A Randomised Trial with Special Reference to Postoperative Pain Score (NRS)." *Anticancer research* 38, no. 2 (2018): 1003-1008.
 9. Bittner, R. and Schwarz, J., 2018. Endoscopic Mini/Less Open Sublay (EMILOS) Technique: A Variation of the MILOS Operation in the Therapeutic Spectrum of Primary and Secondary Ventral Hernias. In *Laparo-endoscopic Hernia Surgery* (pp. 365-372). Springer, Berlin, Heidelberg.
 10. Mostafa, R.H., Ibrahim, I.M. and Ayoub, A.H., 2018. Effect of perioperative dexmedetomidine infusion on blood glucose levels in non-diabetic morbid obese patients undergoing laparoscopic bariatric surgery. *Egyptian Journal of Anaesthesia*.
 11. Kingo, Pernille Skjold, Thormod Mønsted Rasmussen, Lotte Kaasgaard Jakobsen, Johan Palmfeldt, Rikke Nørregaard, Michael Borre, and Jørgen Bjerregaard Jensen. "Robot-assisted laparoscopic cystectomy with intracorporeal urinary diversion vs. open mini-laparotomy cystectomy: evaluation of surgical inflammatory response and immunosuppressive ability of CO₂-pneumoperitoneum in an experimental porcine study." *Scandinavian journal of urology* (2018): 1-7.
 12. Duffield, J.A., Thomas, M.L., Moore, J.W., Hunter, R.A., Wood, C., Gentili, S. and Lewis, M., 2018. Intraperitoneal Local Anesthetic Instillation and Postoperative Infusion Improves Functional Recovery Following Colectomy: A Randomized Controlled Trial. *Diseases of the Colon & Rectum*, 61(10), pp.1205-1216.
 13. Lowndes, Bethany R., Amro M. Abdelrahman, Cornelius A. Thiels, Amani O. Mohamed, Andrea L. McConico, Juliane Bingener, and M. Susan Hallbeck. "Surgical team workload comparison for 4-port and single-port laparoscopic cholecystectomy procedures." *Applied ergonomics* (2018).
 14. Ozcan, A.T.D., Altin, C.B., Erdogan, S., Ergin, M., Çiftçi, A., Kara, H., Aksoy, S.M. and But, A., 2018. The effects of Desflurane and Sevoflurane on Nesfatin-1 levels in laparoscopic Cholecystectomy: a randomized controlled trial. *BMC anesthesiology*, 18(1), p.23.
 15. Micić, Dušan, Nebojša Lalić, Vladimir Djukić, Sanja Stanković, Goran Trajković, Branislav Oluić, and Snežana Polovina. "Influence of IL-6, TNF- α and hs-CRP on Insulin Sensitivity in Patients after Laparoscopic Cholecystectomy or Open Hernia Repair." *Journal of Medical Biochemistry* 37, no. 3 (2018): 328-335.