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Research Article

ASSOCIATION OF CALOT'S TRIANGLE CYSTIC LYMPH  
NODE AND CYSTIC ARTERY DURING LAPAROSCOPIC  
CHOLECYSTECTOMYDr. Zubair Ahmed Yousfani<sup>1</sup>, Dr. Kirshan Lal<sup>1</sup>, Dr. Jabeen Atta<sup>2</sup>, Dr. Syed Imran Zaidi<sup>3</sup>,  
Dr. Munis Raza<sup>4</sup> and \*Dr. Zulfiqar Ali Qutrio Baloch<sup>5</sup><sup>1</sup>Department of Surgery, Liaquat University of Medical and Health Sciences (LUMHS)<sup>2</sup>Department of Gynecology & Obstetrics, Bilawal Medical College, LUMHS Jamshoro<sup>3</sup>East Tennessee State University, Johnson City, TN<sup>4</sup>Grand Rapids Medical Education Partners, Grand Rapids, Michigan<sup>5</sup>Brandon Regional Hospital, Brandon, Florida**Received:** 14 February 2016**Accepted:** 25 February 2017**Published:** 28 February 2017**Abstract:**

**Objective:** To evaluate the cystic lymph node in triangle of Calot's and to detect the association of cystic artery to cystic lymph node at tertiary care teaching hospital

**Patients and Methods:** This cross sectional case series study was conducted from 1-July-2015 to 31-Dec-2015 at LUMHS Jamshoro Sindh Pakistan. All the patients who were planned for elective laparoscopic cholecystectomy were admitted and included in this study. The referral patients from different wards as Gynecology & Obstetrics and medicine were also included in the study. All the participants were evaluated by ultrasound before surgical procedure while laparoscopic cholecystectomy was performed under general anesthesia by applying four port techniques. The data was analyzed in SPSS 16, the frequency and percentages were computed for categorical variables while the mean  $\pm$ SD was computed for quantitative variables.

**Results:** The frequencies of the cystic lymph node and associated variations were observed. Of fifty cases 27 (54%) cases had Calot's triangle lymph nodes with female population predominance 20(40%). Out of 27 subjects, the cystic artery was posteroinferior and anteroinferior to lymph node in 18(36%) and 09(18%) individuals within triangle of Calot's.

**Conclusion:** The cystic lymph node was observed in twenty seven participants with association to cystic artery.

**Keywords:** Calot's triangle, Laparoscopic Cholecystectomy, Cystic lymph nodes and Cystic artery

**Corresponding Author:****\*Dr. Zulfiqar Ali Qutrio Baloch,**

Brandon Regional Hospital,

Brandon, Florida.

Email: [zulfikar229@hotmail.com](mailto:zulfikar229@hotmail.com),

QR code



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**INTRODUCTION:**

The commencement of laparoscopic surgery is the great advancement in the field of surgery [1]. Due to discoveries of new instrumentation for visualizations, and different surgical techniques the minimal invasive surgical procedures have progressively growing and become the best advance techniques [2]. The surgical removal of the gallbladder is called cholecystectomy while the minimal invasive technique to discard the gallbladder is known as laparoscopic cholecystectomy [3]. Currently laparoscopic cholecystectomy is a best treatment for gallstones [4]. Majority surgeons considered that laparoscopic cholecystectomy has various advantages as compared to open Cholecystectomy and is the most preferred technique with minimal chances of destroying anterolateral abdominal wall natural layers and has minimum post operative complications, less pain and traumatizing after procedure with good cosmetic effects [5-9]. The risk of injury during surgery in laparoscopic cholecystectomy is also significantly increasing [10]. The most frequent complications are bile leakage, hemorrhage, iatrogenic bile duct injuries and gall stone lost [11-13]. Cystic artery is the major content of Calot's triangle having variabilities [14]. The end portion of the cystic vessel is the most difficult part; reorganization of this part variation is a major approach in laparoscopic cholecystectomy [15]. Cystic lymph node (Calot's node) became enlarges in chronic and acute calculus cholecystitis and are the important landmark as far as cystic artery is concerned [16]. Exact knowledge for normal and variable anatomical components and their landmarks are necessary for the good and safe laparoscopic cholecystectomy [16].

**PATIENTS AND METHODS:**

This cross sectional study of six months was conducted at department of Surgery, LUMHS. All the patients who were planned for elective laparoscopic cholecystectomy were admitted and included in this study. The referral patients from different wards as Gynecology & Obstetrics and medicine were also included in the study. The informed consent was taken from every patient or their attendants and the data was recorded on pre-developed proformas. The patients who were vitally unstable or had malignancy, pregnancy or who don't want to include in the study were placed in exclusion criteria. The clinical history was taken and specific examination was performed while entire baseline, as well as relevant investigations was advised. All the participants were evaluated by ultrasound before surgical procedure while laparoscopic cholecystectomy was performed under general anesthesia by applying four port techniques. The information regarding Calot's triangle was also saved through DVD recorder and the structures were observed on video monitor. The data was analyzed in SPSS 16, the frequency and percentages were computed for categorical variables while the mean  $\pm$ SD was computed for quantitative variables. No statistical test was applied due to descriptive nature of the study.

**RESULTS:**

During three months study period total fifty (50) patients were underwent laparoscopic cholecystectomy due to calculus cholecystitis with mean age  $\pm$ SD 54.76 $\pm$ 5.86 years. The age and gender distribution and lymph node variations are presented in Table 1-4.

**Table 01: The Age Distribution**

Age (yrs)	Frequency (n=50)	Percentages (%)
20-29	07	14%
30-39	10	20%
40-49	15	30%
50-59	10	20%
60+	08	16%

**Table 02: The Gender Distribution**

Gender	Frequency (n=50)	Percentages (%)
Male	15	30%
Female	35	70%

**Table 03: the Age and Calot's Triangle Lymph Nodes**

Age (yrs)	Calot's triangle lymph node (n=27)	Percentages (%)
20-29	01	2%
30-39	03	6%
40-49	10	20%
50-59	09	18%
60+	05	10%

**Table 04: The Gender and Calot's Triangle Lymph Nodes**

	Calot's triangle lymph node (n=27)	Percentages (%)
Male	07	14%
Female	20	40%

**DISCUSSION:**

The Calot's triangle is bounded by inferior hepatic surface (upper border) while cystic and bile ducts occupies two other sides. The contents for Calot's triangle are cystic artery, right hepatic artery, cystic lymph node and lymphatic and connective tissues [17]. It is actually a potential space used for dissection of its contents without bile duct damage which is the important and challenging maneuver for laparoscopic cholecystectomy [18,19]. Lymph node is also a content of Calot's triangle, is an important landmark for the recognition of cystic artery and duct during for laparoscopic cholecystectomy [20]. The present study identified twenty seven (54%) subjects having lymph node within Calot's triangle. Out of 27 subjects, the cystic artery was posteroinferior and anteroinferior to lymph node in 18(36%) and 09(18%) individuals within triangle of Calot's. In 2009, Torres K, et al observed that cystic lymph node exists near cystic artery in 65.6% subjects [21]. In present series we tried & observed the exact relationship between cystic artery to the lymph node. In 2003, Kunasani R, et al conclude that lymph node lateral dissection is the safe area in laparoscopic cholecystectomy [22]. In current study the cystic artery relationship to the lymph node was also visualized and recognized as observations by former literature. In our view, for the removal of the adherent omentum or peritoneum from triangle of Calot to expose the underlying cystic artery and duct the lymph node identification is a best approach for the surgeon to proceed and dissect in the right direction and also helps to prevent the injury to the structures of Calot. In present study the mean age  $\pm$  SD for overall population underwent laparoscopic

cholecystectomy was  $54.76 \pm 5.86$  with female gender predominance. The observations regarding the demographical distribution of present study were consistent with the study by Ramachandran CS, et al [23].

**CONCLUSION:**

Cystic lymph node as a good to identify the cystic artery within the triangle of Calot's and had observed the frequently relation of the cystic lymph node to artery. Thus, the surgeons can use this tool as a marker for the recognition and clipping of the cystic artery. This knowledge will be supportive and helpful in interpreting the uneventful laparoscopic cholecystectomy.

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