ORIGINAL ARTICLE
doi: 10.35366/115846

Cirujano General
October-December 2023
Vol. 45, no. 4 / p. 212-216

Video laparoscopic appendectomy in patients over 60 years old

Apendicectomía videolaparoscópica en pacientes mayores de 60 años

Ricardo Suárez-Uria,* Edgar Elvis Craig-Hall,‡ Raúl González-Moner*

Keywords:
acute appendicitis, elderly, video laparoscopic surgery, postoperative complications, hospital stay.

Palabras clave:
apendicitis aguda, adulto mayor, cirugía videolaparoscópica, complicaciones postoperatorias, estadía hospitalaria.

ABSTRACT

Introduction: acute appendicitis is one of the most frequent diseases that have always affected human beings. It is estimated that 8% of people in Western countries present appendicitis at some time in their lives. The risk of acute appendicitis after 60 years of age is 1:35 for women and 1:50 for men. **Objective:** to describe the evolution of patients over 60 who underwent video laparoscopic appendectomy. **Material and methods:** a prospective-observational case series study was carried out on patients over 60 who underwent appendectomy by video laparoscopic surgery. **Results:** appendectomy in patients over 60 was more representative in patients between 60 and 65. The hospital stay was between 24 and 48 hours due to the phase in which the surgeon classified the nosologic entity. **Conclusions:** appendectomy by video laparoscopic surgery in the elderly had greater effectiveness in using surgical resources, shorter hospital stays, and postoperative complication rates. The video laparoscopic approach is suggested as the treatment of choice for acute appendicitis in the elderly population.

RESUMEN

Introducción: *la apendicitis aguda es una de las enfermedades más frecuentes que han afectado, desde siempre, al ser humano. Se calcula que 8% de las personas en los países occidentales presentan apendicitis en algún momento de su vida. El riesgo de apendicitis aguda después de los 60 años es de 1:35 para mujeres y 1:50 para hombres.* ***Objetivo:*** *describir la evolución de los pacientes mayores de 60 años a los que se le realizó apendicectomía videolaparoscópica.* ***Material y métodos:*** *se desarrolló un estudio prospectivo-observacional de serie de casos en los pacientes mayores de 60 años a los que se les realizó apendicectomía mediante cirugía videolaparoscópica.* ***Resultados:*** *la apendicectomía en los pacientes mayores de 60 años evidenció una mayor representatividad en las edades entre 60 y 65 años. La estadía hospitalaria fue entre 24 a 48 horas debido a la fase en la que el cirujano clasificó la entidad nosológica.* ***Conclusiones:*** *la apendicectomía mediante cirugía videolaparoscópica en el adulto mayor presentó una mayor efectividad en el empleo de los recursos quirúrgicos, menor estadía hospitalaria y tasa de complicaciones postoperatorias. Se sugiere el abordaje videolaparoscópico como tratamiento de elección en la apendicitis aguda en la población del adulto mayor.*

* First-degree specialist in General Comprehensive Medicine and General Surgery.
‡ First-degree specialist in General Surgery.

Service of General Surgery, Hospital Universitario Clínico Quirúrgico «Lucía Iñiguez Landín». Holguín, Cuba.

Received: 02/26/2023
Accepted: 11/24/2023

INTRODUCTION

Acute appendicitis is one of the most frequent diseases that has affected human beings since time immemorial. It is estimated that 8% of people in Western countries develop appendicitis at some time in their lives.[1,2] The risk of acute appendicitis after the age of 60 is 1:35 for women and 1:50 for men. Currently, despite advances in medicine, the morbidity and mortality of acute appendicitis in this group of people remain high.[3]

Clinically, the classic picture of acute appendicitis appears in only a quarter of the patients.[4] Generally, the clinical picture has a more insidious onset, with attenuated symptoms, so diagnostic errors are frequent.[5]

According to the World Health Organization (WHO), persons between 60 and 74 years of age are considered elderly; 75 to 90 years of age are considered old; and those over 90 years

How to cite: Suárez-Uria R, Craig-Hall EE, González-Moner R. Video laparoscopic appendectomy in patients over 60 years old. Cir Gen. 2023; 45 (4): 212-216. https://dx.doi.org/10.35366/115846

of age are called grand old or grand longevity. Any individual over 60 will be referred to indistinctly as a senior citizen.[6]

Elderly patients constitute a high-risk group because complication rates increase directly proportional to age.[7-9] This is basically due to three factors: poor physiological reserve, concomitant presentation with associated medical diseases, and high incidence of appendiceal perforation at the time of surgery.[10]

Since the introduction of video laparoscopic appendectomy, and despite the reported advantages over laparotomy, there have been controversies surrounding its systematic use.

The traditional approach has been the access route of choice since it was described by McBurney in 1889 and until 1983, when Kurt Semm performed video-laparoscopic appendectomy as a new alternative. This is the established technique for treating acute appendicitis in many hospitals today.

Video laparoscopy is a technique for viewing the pelvic-abdominal cavity using video television equipment. Light is transmitted through an optical fiber on one side to illuminate the cavity, while interior images are observed with a camera connected to the same television socket.

Video laparoscopy highlighted the need to insufflate air into the cavity to be explored to achieve sufficient space to prevent injury to the underlying organs. In this sense, from 1918 onwards, Goethe developed safer needles, and Veres, in 1932, used the trocar of his name, incorporating springs that protected the bevel of the needle from pneumoperitoneum, thus avoiding visceral punctures. He published his work in 1938, and its initial application was to perform therapeutic pneumothorax in tuberculosis patients.[11-13]

The diagnosis of acute abdomen is based on an adequate anamnesis and physical examination supported by laboratory and imaging studies. Sometimes, these are insufficient, and video laparoscopy plays an essential role since it avoids an unnecessary laparotomy and can be used simultaneously as a therapeutic procedure. This technique makes it a good option for the etiological diagnosis and adequate treatment of acute surgical abdomen. However, it is an invasive method that is not free of complications, so its indication should be established at the appropriate time, without replacing clinical examination at regular intervals, a well-established principle for surgical diagnosis.[14]

The advantages of emergency video laparoscopic surgery include the following: unlimited access to all organs in the abdominal cavity, less likelihood of postoperative complications, reduced pain and paralytic ileus and intra-abdominal adhesion formation, shorter hospital stay, rapid return to work and social life, and excellent cosmetic results.[14-20]

MATERIAL AND METHODS

We report a prospective observational case series study in patients over 60. The universe was constituted by all patients with a diagnosis of acute appendicitis who underwent appendectomy by video laparoscopic surgery in the General Surgery Service of the Clinical Surgical Hospital «Lucía Íñiguez Landín» of Holguín from January 2014 to December 2015.

Inclusion criteria: all patients over 60 who underwent video laparoscopic appendectomy were included.

Exclusion criteria: patients with ASA IV or V anesthetic risk. Patients with chronic comorbidities: heart failure, chronic renal failure, chronic respiratory failure, chronic liver disease, hypothyroidism, hyperthyroidism, diabetes mellitus, and obesity. And patients with an appendicular plastron were all excluded.

Obtaining the information: The author prepared a model to collect data from medical records and patient interviews. The operative reports were also reviewed.

Tables and graphs were prepared from the results obtained for analysis, discussion, and interpretation.

The following variables were collected for the study: 1. Age (continuous quantitative variable). 2. Surgical time (discontinuous quantitative variable). 3. Evaluation of postoperative pain according to the verbal-numerical scale (VNS) (nominal qualitative variable). 4. Hospital stay (continuous quantitative variable). 5. Postoperative complications (nominal qualitative variable).

Statistical analysis: the data were processed in the Microsoft Excel program, which allowed us to organize them using qualitative (nominal and ordinal) and quantitative (ratio and proportion) scales according to the variables used. The results were expressed in whole numbers and percentages in simple double-entry distribution tables.

RESULTS

The video laparoscopic surgery applied in appendectomy patients over 60 showed a higher representation in patients between 60 and 65, reflecting 45.83% of the universe *(Table 1)*.

Table 2 shows the surgical time required to perform appendectomy by video laparoscopy. A predominance was observed between 31 and 60 minutes of surgical time, representing 75% of the total number of patients and about the anatomical variants of the cecal appendix.

Table 3 shows the evaluation of postoperative pain using the verbal-numerical scale (VNS). Mild pain was the most common, recorded in 83.33% of the cases. Only 16.67% suffered moderate pain, which subsided with light analgesia.

The length of hospital stay is shown in *Table 4*. It may be seen that 45.83% of the patients who underwent surgery remained hospitalized between 24 to 48 hours due to the phase in which the surgeon classified the nosologic entity since, in general, uncomplicated appendicitis with a short stay predominated. In four (16.67%) cases, there was a hospital stay of 49 to 72 hours related to institutional factors or the patient's geographical location. Another four (16.67%) had a hospital stay of more than 72 hours because, during the surgical procedure, complicated appendicitis was found.

Table 5 shows the postoperative complications of this type of surgery. A low percentage of postoperative infection was observed, evidenced in the immediate postoperative period, representing only 4.16% of the patients who underwent surgery.

Table 1: Age groups.

Age (years)	Video laparoscopic surgery n (%)
60 to 65	11 (45.8)
66 to 70	9 (37.5)
71 to 75	4 (16.6)
76 to 80	0
Over 80	0
Total	24 (100.0)

Source: medical records.

Table 2: Surgical time.

Surgical time (minutes)	Video laparoscopic surgery n (%)
Less than 30	6 (25.0)
31 to 60	18 (75.0)
61 to 120	0
Over 120	0
Total	24 (100.0)

Source: medical records.

Table 3: Postoperative pain according to the verbal-numerical scale (VNS).

Pain assessment	Video laparoscopic surgery n (%)
None (0)	0
Mild (1-3)	20 (83.33)
Moderate (4-6)	4 (16.67)
Severe (7-10)	0
Total	24 (100.00)

Source: medical records.

DISCUSSION

Acute appendicitis is the most frequent acute abdominal inflammatory condition among

surgical entities worldwide and is very difficult to diagnose at the extreme ages of life. The advent of video laparoscopic surgery, while providing an accurate diagnosis, allows performing appendectomy with established technical principles. However, some detractors argue that there are no studies that show that the results of this surgery are significant in comparison to newly trained residents, who perform appendectomy through a small aesthetically acceptable incision, with minimal complications and short hospital stay.[1-4]

The age *(Table 1)* that predominated in our study coincides with that reported in the national and foreign literature.[5,6]

The predominant surgical time *(Table 2)* ranged between 31 and 60 minutes: 75% for those operated by video laparoscopic surgery; the average was 43.8 ± 18.9 minutes. Vallejos[7] reports a surgical time between 15 and 60 minutes for appendectomies. Luzardo[8] reports an average of 45 minutes for video laparoscopic surgery, and Morales[9] an average of 60.5 minutes. According to the literature reviewed, surgical time depends not only on the anatomical position of the cecal appendix and the preoperative evolution time -which is closely related to the anatomopathological status of the morbid process, especially on the experience of the entire team performing the appendectomy.[12,13]

Postoperative pain was defined through the EVN *(Table 3)*. In this series, mild pain predominated in 83.33% of the operated cases, comparable to that recorded in the randomized studies of Moazzez A,[14] in which a high prevalence of analgesia is reported. Ferrarese and Martino[15,16] used other scales, such as the FLACC, used in pediatric ages to discern postoperative pain through extraverbal expression, assigning a score of two points to each acronym collected.

Table 4: Hospital stay.

Stay (hours)	Video laparoscopic surgery n (%)
Less than 24	5 (20.83)
24 to 48	11 (45.83)
49 to 72	4 (16.67)
Over 72	4 (16.67)
Total	24 (100.00)

Source: medical records.

Table 5: Postoperative complications.

Complications	Video laparoscopic surgery n (%)
Port infection	1 (4.16)
Respiratory diseases	0
Residual peritonitis	0
Total	1 (4.16)

Source: medical records.

In this series *(Table 4)*, 45.83% of the patients operated by video laparoscopic surgery had a hospital stay between 24 and 48 hours; this coincides with the studies carried out by Frutos and Abrisqueta[16] from Spain in which there was a close relationship between the hospital stay of the patients and the anatomopathological status of acute appendicitis, which emphasizes the importance of early diagnosis and immediate treatment to prevent postoperative complications, with the consequent decrease in hospital stay time and the unfavorable socioeconomic repercussions of this.

One postoperative complication *(Table 5)* represented 4.16% of the total operations in this casuistry. Port infection occupied the first place. Masoomi,[17] in a retrospective analytical study, agrees that the rate of complications was lower in appendectomy performed by video laparoscopic surgery in older adult patients than in those performed with conventional surgery; he determined that video laparoscopic appendectomy can be performed safely with significant advantages compared to open appendectomy in older adult patients and should be considered the

treatment of choice for acute appendicitis in these patients.[17-20]

CONCLUSIONS

Appendectomy by video laparoscopic surgery in the elderly presented greater effectiveness in the use of surgical resources, shorter hospital stays, and a lower rate of postoperative complications. The video laparoscopic approach is suggested as a treatment for appendicitis in the elderly population.

REFERENCES

1. Lunca S, Bouras G, Romedea NS. Acute appendicitis in the elderly patient: diagnostic problems, prognostic factors and outcomes. Rom J Gastroenterol. 2014;13:299-303.
2. Rodríguez-Fernández Z. Current considerations on the diagnosis of acute appendicitis. Rev Cubana Cir. 2011;48(3). Available at: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0034-74932009000300004&lng=es
3. Wray CJ, Kao LS, Miles SG, Tsao K, Ko TC. Acute appendicitis: controversies in diagnosis and management. Curr Probl Surg. 2014;50:54-86.
4. Southgate E, Vousden N, Karthikesalingam A, Markar SR, Black S, Zaidi A. Laparoscopic vs open appendectomy in older patients. Arch Surg. 2014;147:557-562.
5. Pooler BD, Lawrence EM, Pickhardt PJ. MDCT for suspected appendicitis in the elderly: diagnostic performance and patient outcome. Emerg Radio. 2014;19:27-33.
6. Kirstein B, Perry ZH, Mizrahi S, Lantsberg L. Value of laparoscopic appendectomy in the elderly patient. World J Surg. 2014;5:918-922.
7. Vallejos C. Laparoscopic appendectomy vs open appendectomy in acute appendicitis. Rev Chilena Cir. 2014;58:114-121.
8. Luzardo-Silveira EM, Rodríguez-Ramírez R, González-Rondón PL, Puertas-Álvarez JF. Advantages of major ambulatory surgery in emergency medical situations. MEDISAN. 2009;13(3). Available at: http://bvs.sld.cu/revistas/san/vol13_3_09/san03309.htm
9. Gil F, Morales D, Bernal JM, Llorca J, Marton P, Naranjo A. Complicated acute appendicitis. Open versus laparoscopic surgery. Cir Esp. 2014;83:309-312.
10. Papandria D, Goldstein SD, Rhee D, Salazar JH, Arlikar J, Gorgy A, et al. Risk of perforation increases with delay in recognition and surgery for acute appendicitis. J Surg Res. 2014;184:723-729.
11. Fischer J. Mastery of surgery. 5th edition. Philadelphia: Lippincott Williams & Wilkins; 2010. pp. 129-130.
12. García-Romero LE, Bolaños-Badillo LE, Carrasco-Rojas JA, Betancourt-García JR. Is laparoscopic appendectomy adequate for complicated appendicitis? Cir Gen. 2010;32:175-179.
13. Soler-Dorda G. Intra-abdominal septic complications after laparoscopic appendectomy: description of a possible new complication specific to laparoscopic appendectomy. Cir Esp. 2014;82:21-26.
14. Moazzez A, Mason RJ, Katkhouda N. Laparoscopic appendicectomy: new concepts. World J Surg. 2011;35:1515-1518.
15. Ferrarese AG, Martino V, Enrico S, Falcone A, Catalano S, Pozzi G, et al. Laparoscopic appendectomy in the elderly: our experience. BMC Surg. 2013;13 Suppl 2:S22.
16. Frutos MD, Abrisqueta J, Luján JA, García A, Hernández Q, Valero G, et al Laparoscopic appendectomy by transumbilical single incision: initial experience. Cir Esp. 2013;89:37-41.
17. Masoomi H, Mills S, Dolich MO, Ketana N, Carmichael JC, Nguyen NT, et al. Does laparoscopic appendectomy impart an advantage over open appendectomy in elderly patients? World J Surg. 2012;36:1534-1539.
18. Sahm M, Kube R, Schmidt S, Ritter C, Pross M, Lippert H. Current analysis of endoloops in appendiceal stump closure. Surg Endosc. 2011;25:124-129.
19. Addiss D, Shaffer N, Fowler B, Tauxe R. The epidemiology of appendicitis and appendectomy in the United States. Am J Epidemiol. 2014;132:910-925.
20. Markides G, Subar D, Riyad K. Laparoscopic versus open appendectomy in adults with complicated appendicitis: Systematic review and meta-analysis. World J Surg. 2014;34:2026-2040.

Correspondence:
Ricardo Suárez Uria
E-mail: uriarayco@gmail.com