Acute appendicitis does not quarantine: surgical outcomes of laparoscopic appendectomy in COVID-19 times

Editor

Coronavirus disease (COVID-19) became pandemic on the 11th of March, 2020[1]. An early obligatory confinement policy was taken by the Argentinian government on 20 March. Non-emergent surgical procedures and outpatient clinics were suspended so as to have all resources readily available for COVID-19 patient care. We hypothesize that the delays in consultation due to the obligatory confinement may have affected the postoperative outcomes of acute appendicitis.

We prospectively collected data from all adult patients who underwent laparoscopic appendicectomy (LA) for acute appendicitis between April 1, 2020 and April 30, 2020 during COVID-19 confinement (G1) and we compared them to a control group of patients who underwent LA the same month in 2018 and 2019 (G2). Reverse-transcription polymerase chain reaction (RT-PCR) testing for SARS Cov 2 in G1 was only performed in symptomatic patients. All procedures were performed with droplet personal protective equipment. Severity of peritonitis found was classified as mild: turbid/purulent fluid localized in one quadrant, or severe: fecal peritonitis or turbid/purulent fluid in more than one quadrant. Complicated appendicitis was defined as perforation of the appendix, gangrene, empyema, or abscess formation. Primary outcomes of interest were: time elapsed between symptom's onset and patient consultation, severity of peritonitis, complicated appendicitis rate, and length of hospital stay (LOS). The Student's t-test was used to compare continuous variables, whereas the χ^2 and Fisher tests were used for categorical variables. A p value <0·05 was considered statistically significant for all tests. The institutional review board of our institution approved this study.

A total of 80 LA was included for the analysis: 15 during COVID-19 quarantine (G1) and 65 in the control group (G2). Significant delays in consultation (G1: 58·4 vs. G2: 32·8 hours, $p = 0·002$), higher rates of severe peritonitis (G1: 53% vs. G2: 9%, $p < 0·001$) and higher rates of complicated appendicitis (G1: 47% vs. G2: 17%, $p = 0·03$) were found in the COVID-19 quarantine cohort. Although not statistically significant, higher rates of postoperative intraabdominal abscess (G1: 20% vs. G2: 6% $p = 0·11$), readmissions (G1: 13% vs. G2: 3%, $p = 0·15$), reoperations (G1: 13% vs. G2: 1%, $p = 0·08$), and longer LOS (G1: 3·9 vs. G2: 1·9 days, $p = 0·11$) were found in COVID-19 quarantine patients (Table 1).

Table 1 Perioperative variables and outcomes after laparoscopic appendicectomy

	G1 (COVID-19 quarantine) *n* = 15	G2 (Control group) *n* = 65	*p*
Sex			0·51
Female, *n (%)*	6 (40)	32 (49)	
Male, *n (%)*	9 (60)	33 (51)	
Mean age, *(range) years*	39·4 (16-80)	41·8 (16-83)	0·65
BMI >30 kg/m^2, *n (%)*	2 (13)	5 (8)	0·61
ASA, *n (%)*			
I-II	14 (93)	60 (92)	0·89
III-IV	1 (7)	5 (8)	
Previous abdominal surgery, *n (%)*	4 (27)	22 (34)	0·59
Arterial Hypertension, *n (%)*	2 (13)	10 (15)	0·84
Diabetes, *n (%)*	0 (0)	2 (3)	1
Mean White blood cell count (/mm^3)	13,136 (6,500-22,000)	12,908 (4,500-22,600)	0·84
Mean time to consultation, *(range) hours*	58·4 (12-120)	32·8 (6-144)	**0·002**
Complicated appendicitis, *n (%)*	7 (47)	11 (17)	**0·03**
Severe peritonitis, *n (%)*	8 (53)	6 (9)	**<0·01**
Mean operative time, *(range) minutes*	50·6 (24-70)	44·3 (15-90)	0·19
Conversion rate, *n (%)*	0 (0)	1 (1)	1
Mean LOS, *(range) days*	3·9 (1-17)	1·9 (1-30)	0·11
LOS with readmissions	4·9 (1-17)	2·1 (1-30)	**0·03**
Readmissions, *n (%)*	2 (13)	2 (3)	0·15
IAA, *n (%)*	3 (20)	4 (6)	0·11
Reoperations, *n (%)*	2 (13)	1 (1)	0·08

p values < 0·05 are denoted in bold.

The COVID-19 crisis has changed the healthcare system in many aspects. Several reports have been published describing alternative therapeutic paths for oncologic and surgical patients[3-4]. Although surgery is considered the gold-standard treatment for acute appendicitis, antibiotic therapy alone has been proposed as a potential alternative in this scenario[5]. In countries and healthcare institutions where the COVID-19 crisis has not severely impacted their working capacity, LA seems reasonable. However, the COVID-19 pandemic can still affect patient outcome by other means. In fact, we have seen delays in patient consultation that resulted in worse postoperative outcomes after LA. 'Stay at home' policy and the population's fear of the Hospital environment might have contributed to the progression of the disease. Therefore, we strongly believe that the medical community and Public Health officers should advise the population about the detrimental effect of delaying medical attention.

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