

PERSPECTIVE

COVID-19 Pandemic Acute-care Surgery Practice Survey Results from the Panamerican Trauma Society International Trauma Tele-Grand Rounds

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ABSTRACT

Objective: As of June 9, 2020, the coronavirus disease 2019 (COVID-19) pandemic has affected more than 7 million people worldwide, causing more than 400,000 deaths. Acute-care surgery approaches in times of the COVID-19 pandemic were discussed during the Panamerican Trauma Society International Trauma Tele-Grand Rounds meeting in April 27, 2020. The purpose of this study is to identify practice patterns among surgeons treating acute surgical diseases during the pandemic.

Materials and methods: COVID-19 epidemiology, prevalence in surgical patients, and treatment options of patients with acute surgical diseases in the presence of SARS-CoV-2-positive status were discussed. An electronic audience response system was used to assess opinions and practice patterns of the participating surgeons. Deidentified data collection was performed, stored, and subsequently analyzed using Excel software 2018.

Results: The conference was attended by 91 participants from 20 countries. Forty-six surgeons participated in the survey, with 36% practicing at a hospital with >80 active COVID-19 inpatients. Forty-eight percent of the participating surgeons had provided surgical care for SARS-CoV-2-positive (CoV+) patients. At the time of provider-patient interaction, 58% of surgeons were not aware of the CoV+ status. Surgeons reported changing practice patterns during the pandemic. They would treat CoV+ patients with acute cholecystitis with antibiotics only (64%), IR drain (12%), laparoscopic (5%), open cholecystectomy (12%), and no opinion (7%). For acute appendicitis, 57% of surgeons favor antibiotics only vs open (29%), laparoscopic appendectomy (10%), and no opinion (4%). Gas/smoke-filtering systems for laparoscopy were available only to 14% of respondents. SARS-CoV-2 screening protocols utilize one RNA real-time polymerase chain reaction (RT-PCR) (29%), two RNA-RT-PCR 72 hours apart (7%), and IgG/IgM plus RNA RT-PCR (17%); 17% have no screening capacities.

Conclusion: Standard acute-care surgery practice patterns changed favoring nonoperative treatment. Testing protocols vary among healthcare systems. Further studies are needed to understand the impact of the COVID-19 pandemic on outcomes in acute-care surgery patients.

Keywords: Acute critical care surgery, COVID-19 pandemic, Emergency surgery, Surgery during COVID-19, The panamerican trauma society.

RESUMEN

Objetivo: A la fecha de junio 9, 2020, pandemia causada por el Coronavirus 2019 (COVID-19) ha afectado más de 7 millones de personas en el mundo, causando más de 400,000 muertes. El manejo de la Cirugía de Emergencias y Cuidados Intensivos en tiempos de COVID-19 fue discutido durante una conferencia ofrecida por "La Sociedad Panamericana de Trauma" el 27 de abril de 2020. El propósito de este estudio es identificar los patrones de práctica entre los cirujanos que tratan padecimientos que requieren cirugía de emergencia durante la pandemia.

Métodos: Durante la conferencia se expuso y fue discutida la epidemiología, la prevalencia en pacientes quirúrgicos y las opciones de tratamiento de pacientes positivos a SARS-CoV-2. Las opiniones y los patrones de práctica de los cirujanos participantes se registraron con un sistema electrónico de respuesta para la audiencia. Se realizó una recopilación de datos sin identificación, fue almacenada y posteriormente analizada utilizando el software de Excel® 2018.

Resultados: 91 participantes de 20 países diferentes atendieron a la conferencia. Cuarenta y seis cirujanos participaron en la encuesta. 36% de ellos mencionaron practicar en un hospital con >80 casos activos de pacientes con COVID-19 (internados). Cuarenta y ocho por ciento de los cirujanos participantes han atendido pacientes positivos para SARS-CoV-2 brindándoles atención quirúrgica. 58% de los cirujanos dijeron no haber estado enterados del estatus positivo para COVID-19 de sus pacientes al momento de la atención médica. Los cirujanos reportaron cambios en los patrones de su práctica quirúrgica durante la pandemia. 64% reportaron que en caso de tener pacientes positivos con COVID-19, tratarían a los casos de colecistitis aguda con antibióticos solamente, 12% utilizaría intervención radiológica, 5% laparoscopia, 12% colecistectomía abierta y 7% no dieron su opinión. Para apendicitis aguda, 57% de los cirujanos prefirieron usar solamente antibióticos contra 29% quienes prefirieron realizar una apendicectomía abierta. 10% optaron por laparoscopia y 4% no emitió su opinión. Solo el 14% de los encuestados respondió que su hospital cuenta con sistemas de ventilación adecuados. El protocolo de detección para SARS-CoV-2 fue un RNA-RT-PCR (29%), seguido de dos RNA-RT-PCR con 72 horas de diferencia (17%), IgG/IgM más RNA-RT-PCR (17%). 17% aseguraron no tener métodos de detección en sus hospitales.

Conclusiones: Los patrones de la cirugía de emergencia y cuidados intensivos han cambiado favoreciendo el tratamiento no quirúrgico. Los protocolos de detección varían entre sistemas de salud. Se necesitan más estudios para entender el impacto de la pandemia COVID-19 y sus resultados en el manejo de pacientes quirúrgicos.

Palabras clave: Cirugía de Cuidados Intensivos, Cirugía de Emergencia, Cirugía durante COVID-19, La Sociedad Panamericana de Trauma, Pandemia por COVID-19.

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INTRODUCTION

As of June 9, 2020, the coronavirus disease 2019 (COVID-19) pandemic has infected more than 7 million people worldwide, causing more than 400,000 deaths. The United States has been one of the most affected countries with over 1.9 million positive cases and more than 110,000 deaths.¹ In order to protect the population, states throughout the United States have placed stay-at-home orders, closed businesses, and promoted social distancing measures. Federal guidelines advise to wait until experiencing a downward trajectory of documented cases to proceed to a phase opening.¹

The rapid spread of the disease required urgent development of protocols and procedures guiding the care of surgical patients during the COVID-19 pandemic. Knowledge sharing and rapid dissemination of information among surgeons during the pandemic are of great importance.

Acute-care surgery approaches in times of the COVID-19 pandemic were discussed during the Panamerican Trauma Society International Trauma Tele-Grand Rounds meeting on April 27, 2020. Geographic disease prevalence, management of specific acute-care surgery patient scenarios, and relevant policies were discussed during the Tele-Grand Rounds meeting. A live audience survey among participating surgeons from different countries was conducted, and results were discussed during the meeting. The goal of this article is to share the survey results with the Panamerican Trauma Society membership and discuss relevant findings and practice patterns.

MATERIALS AND METHODS

An International Trauma Tele-Grand Rounds meeting discussing "Acute Care Surgery in Times of COVID-19 Pandemic" was conducted on April 27, 2020. A live audience survey among participating surgeons was conducted. De-identified data collection was performed utilizing the Zoom® meeting interactive audience response system. Demographic data, COVID-19 epidemiological data, prevalence in surgical patients, and treatment scenarios of patients with acute surgical diseases in the presence of SARS-CoV-2-positive status were collected. Three clinical cases were discussed and analyzed for the queries related to prevalence in surgical patients and treatment options. Data were stored and subsequently analyzed utilizing Excel software® 2018.² Students or residents present did not answer the survey (Figs 1 to 4).

RESULTS

A total of 91 acute-care and trauma surgeons from 20 different countries attended the meeting. Thirty-six percent of the participants practiced in North America, followed by South America (27%), the Caribbean (18%), Asia (12%), and Europe (6%). Forty-six surgeons participated actively in the survey for an overall response rate of 51%.

Epidemiology

The average inpatient census of SARS-CoV-2-positive (CoV+) patients at hospitals where participating surgeons practiced at the time of the survey was approximately 50 ± 39 (range from 1 to 100). Thirty-six percent of the surgeons were practising at hospitals with more than 80 active COVID-19 patients. Forty-eight percent of the participating surgeons had provided surgical care for at least one

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SARS-CoV-2-positive (CoV+) patient. At the time of provider–patient interaction, 58% of surgeons were not aware of the CoV+ status.

Surgical Practice Patterns

Three clinical cases were discussed with their respective surveys. Surgeons reported changing practice patterns during the pandemic.

Case 1 was a 22-year-old female patient who was diagnosed with acute appendicitis. The diagnostic computed tomography scan showed multiple ground-glass opacities in bilateral lung fields, giving the patient a high pretest probability for COVID-19 infection. Twelve percent of the surgeons preferred to get a COVID-19 nasopharyngeal swab test and favored using antibiotics only, deferring the decision for surgery until test returns after 24 hours. Regarding other approaches, 29% favored open appendectomy, 24% laparoscopic approach, 24% would use antibiotics only, and 10% had no opinion. With a positive SARS-CoV-2 real-time polymerase chain reaction (RT-PCR) test result, 40% of surgeons still opted to treat the patient with antibiotics only, 31% would perform an open appendectomy, 21% laparoscopic appendectomy, and 7% had no opinion.

Case 2 was a 57-year-old male patient who presented with ileocolic intussusception. Although being asymptomatic, a COVID-19 screening test was ordered as part of his preoperative workup. SARS-CoV-2 RT-PCR resulted positive. Fifty-eight percent of the surgeons answered that in the absence of peritonitis, acidosis, or obstruction, they would defer operative intervention until SARS-CoV-2 status turns negative. Otherwise, 16% preferred to perform an open hemicolectomy with full personal and aerosolization protective precautions in a negative-pressure operating room; 7% would perform a laparoscopic approach, and 19% had no opinion. Given the situation that the patient develops peritonitis, acidosis, or obstruction requiring emergent surgical intervention, 79% of the surgeons opted to perform an open hemicolectomy, 10% laparoscopic intervention, 7% comfort care measures, and 5% had no opinion.

Case 3 was a 26-year-old male patient with a past medical history of insulin-dependent diabetes mellitus being diagnosed with a subfascial thigh abscess. The preprocedure screening test for SARS-CoV-2 RT-PCR resulted positive. Forty-three percent of the surgeons would perform urgent interventional radiology (IR) drain placement as treatment, 30% recommended an open surgical

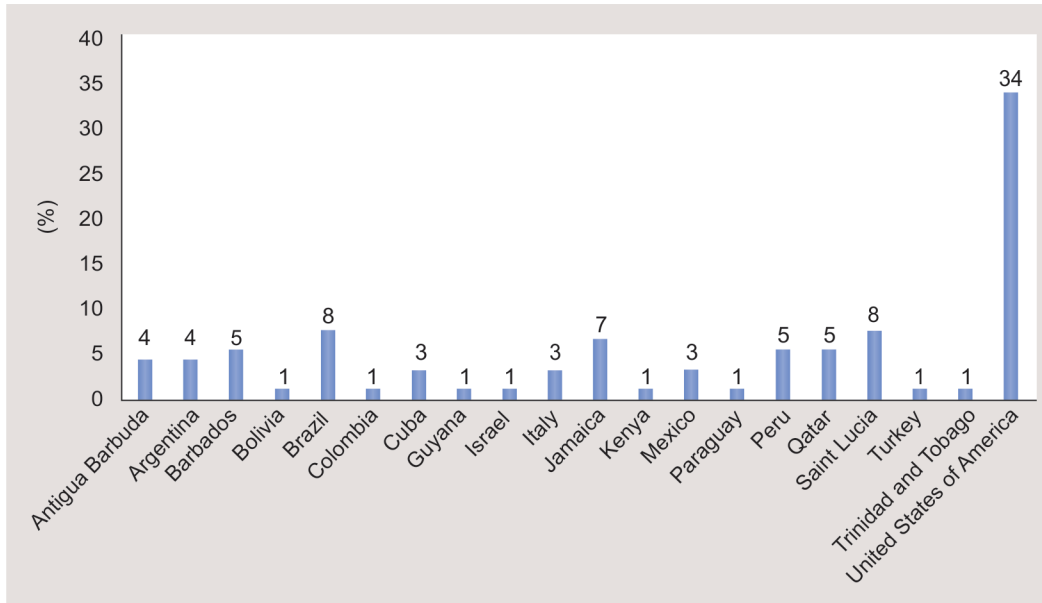


Fig. 1: Attending surgeons by country of origin

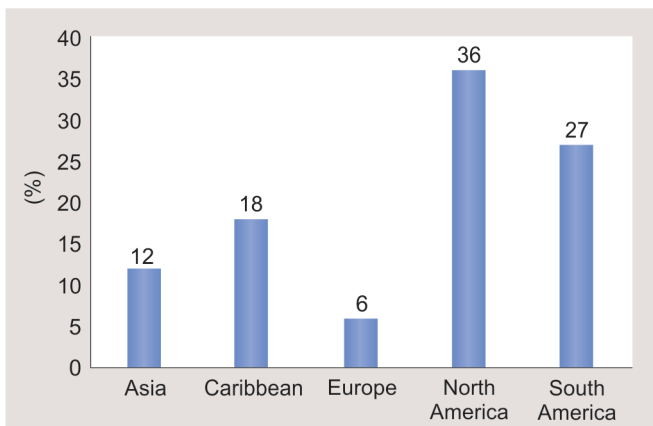


Fig. 2: Attending surgeons by geographic region

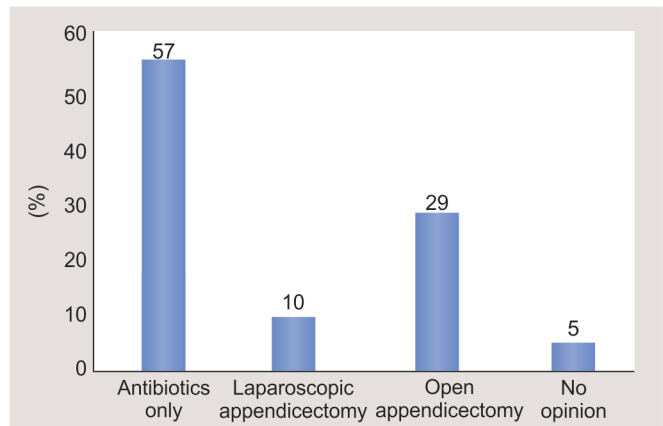


Fig. 3: How would you manage a patient with acute appendicitis and a positive COVID-19 status?

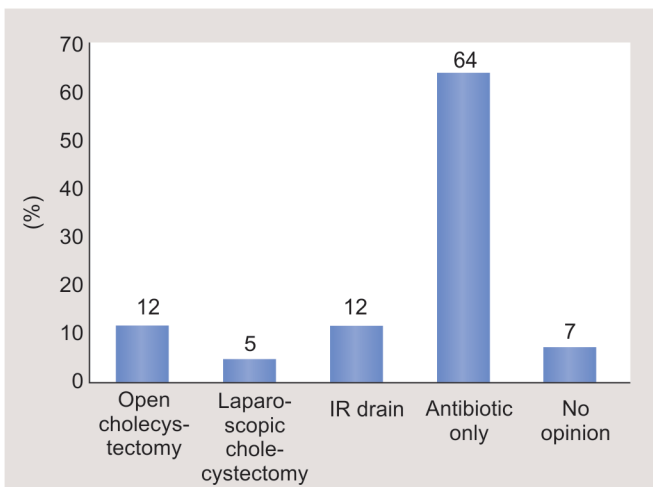


Fig. 4: How would you manage a patient with acute cholecystitis and a positive COVID-19 status?

drainage in the operating room, 19% would give antibiotics only until COVID-19 infection resolves, and 8% had no opinion.

The most preferred surgical technique to drain this abscess was scalpel only with 78%, while only 2% of the surgeons would use electrocautery and 20% had no opinion. Negative-pressure wound dressing was the preferred management for the wound (46%), followed by packing with a gauze (22%), and Penrose drain (15%). Seventeen percent of the participants had no opinion.

Detection and Diagnosis

Surgeons were asked which screening protocols for SARS-CoV-2 were utilized at their hospitals. The majority of protocols used one RNA-RT-PCR test (29%), two RNA-RT-PCR tests 72 hours apart (7%), and IgG/IgM antibody test plus RNA-RT-PCR (17%); seventeen percent had no screening capabilities. Gas/smoke filtering systems for laparoscopy were available only to 14% of surgeons, while 86% had no gas/smoke evacuation filter system available. Seventy-six percent of the surgeons confirmed that they had policies and

procedures in place for surgical procedures on COVID-19-positive patients.

New Surgical Practice Patterns

Surgeons were also asked how in general they would treat the following common acute-care surgery diagnoses. In a case scenario with a patient with acute appendicitis and positive COVID-19 status, 57% of surgeons would use antibiotics only as treatment, while 29% would perform an open appendectomy, 10% laparoscopic appendectomy, and 5% had no opinion.

For a patient with acute cholecystitis and positive COVID-19 status, 64% of surgeons would treat with antibiotics only, while IR drain placement was favored by 12% of surgeons, laparoscopic-cholecystectomy only by 5%, open cholecystectomy in 12% of patients, and 7% had no opinion.

DISCUSSION

Results from the survey demonstrate that standard acute-care surgery practice patterns changed favoring nonoperative over operative treatment during the COVID-19 pandemic. Some studies in the literature suggested noninferiority of antibiotic treatment relative to surgery in the case of simple acute appendicitis, which may support this treatment option in patients who are asymptomatic SARS-CoV-2 carriers or exhibit symptoms of COVID-19.³ Antibiotic therapy may be a safe and acceptable first-line therapy in selected patients.⁴ Surgery in patients with active COVID-19 disease is associated with an increase in perioperative morbidity and mortality.⁵ Using antibiotics may mitigate the risk of surgery in COVID-19 patients and decrease the exposure risk for COVID-19 to surgical team member.⁶

Testing protocols vary among healthcare systems. As seen in the survey, one-time RNA RT-PCR for SARS-CoV-2 was shown to be the most commonly used among hospitals. Test results return within hours, and several types have been approved by the US Food and Drug Administration under Emergency Use Authorization (EUA).⁷ Besides this, many hospitals have limited or no screening

capabilities, and so, the diagnosis has been made based on clinical history and image studies.³

The Panamerican Trauma Society Tele-Grand Rounds provide a useful forum for surgical education and rapid knowledge dissemination during the COVID-19 pandemic. The management of acute-care surgery patients and associated policies and procedures will continue to evolve during the COVID-19 pandemic. Further studies are needed to understand the impact of the COVID-19 pandemic on outcomes in acute-care surgery patients. In the interim, interactive telemedicine surgical conferences, grand rounds, and discussion forums are an effective platform for knowledge sharing among surgeons and are an important tool that may aid in the development of surgical treatment policies and guidelines.

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