MEIR MEDICAL CENTER
Affiliated with the Sackler Faculty of Medicine, Tel Aviv University

# Lockdown with a price: the impact of COVID-19 pandemic on the incidence and outcome of complicated appendicitis

TEL AVIV UNIVERSITY
אוניברסיטת תל-אביב
הפקולטה לרפואה ע"ש סאקלר

**Rudnicki Yaron MD**, **Soback Hagai MD**, **Mekiten Ori**, **Lifshiz Guy MD**, **Avital Shmuel MD** Surgery B, Meir Medical Center, Tel-Aviv University, Israel

## BACKGROUND

- Patient attendance at emergency departments during the COVID-19 pandemic outbreak have decreased dramatically under the Lockdown restrictions. A rise in severity of various surgical conditions was observed, suggesting that the restrictions coupled with fear from medical facilities, might have a negative impact on non-COVID-19 diseases.

## AIMS

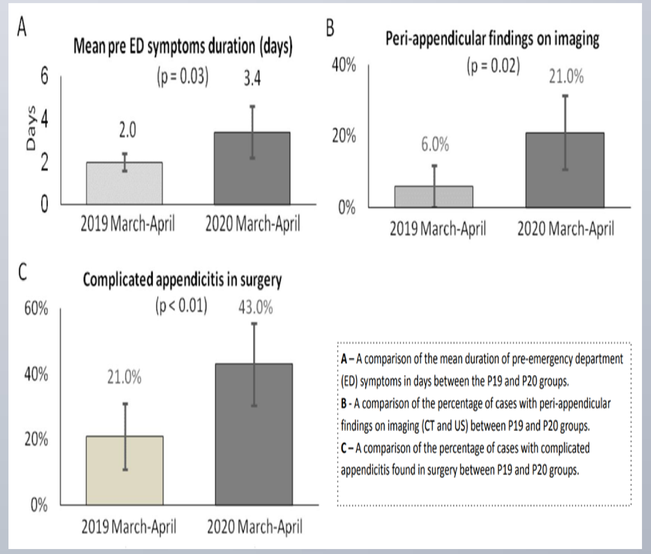
- To assess the incidence and outcome of complicated appendicitis cases during the COVID-19 lockdown period, as an exemplar for other acute surgical conditions.

## METHODS

- A retrospective study comparing the rate and severity of acute appendicitis cases during the COVID-19 initial outbreak in Israel during March and April of 2020 (P20), to the corresponding period in 2019 (P19). Patient data included demographics, pre ED status, surgical data and post-operative outcome.

## RESULTS

- Overall, 123 patients were diagnosed with acute appendicitis, 60 patients during P20 were compared to 63 patients in P19.
- The rate of complicated appendicitis cases was significantly higher during the COVID-19 lockdown with 43.3% (26 pts) vs. 20.6% (13 pts) respectively (p<0.01).
- The average delay in ED presentation between P20 and P19 was 3.4 vs. 2 days (p=0.03).
- The length of stay was 2.6 days in P20 vs. 2.3 days in P19 (p=0.4) and readmission rate was 12% (7 pts) vs. 4.8% (3 pts), p=0.17 respectively.
- Logistic regression demonstrated that a delay in ED presentation was a significant risk factor for complicated appendicitis (OR 1.139, CI 1.011-1.284).




## CONCLUSIONS

- The effect of the COVID-19 initial outbreak and lockdown coupled with hesitation to come to medical facilities, appears to have discouraged patients with acute appendicitis from presenting to the ED as complaints began.
- Causing a delay in diagnosis and treatment which might have led to a higher rate of complicated appendicitis cases and a heavier burden on health care systems.

| Characteristic | March-April 2019 group (n=63) | March-April 2020 group (n=60) | P Value |
|---|---|---|---|
| **Clinical and Imaging Characteristics of Patients** | | | |
| Pre ED symptoms duration (days) mean±SD | 2±1.6 | 3.4±4.8 | 0.03 |
| Peri-appendicular findings on imaging – n (%) | 4 (6%) | 13 (21%) | 0.02 |
| Peri-appendicular abscess – n (%) | 0 | 9 (15%) | <0.01 |
| Peri-appendicular phlegmon – n (%) | 3 (5%) | 0 | 0.08 |
| Appendiceal fecalith on imaging – n (%) | 8 (13%) | 11 (18%) | 0.39 |
| Appendix diameter on imaging - (mm) - mean±SD | 11.8±4 | 12±5.6 | 0.82 |
| **Intervention approach** | | | |
| Laparoscopy converted to Open Appendectomy – n (%) | 1 (2%) | 0 | 0.32 |
| Abdominal drain + ABX (No surgery) – n (%) | 0 | 3 (5%) | 0.08 |
| **Finding in surgery or non operative treatment** | | | |
| **Complicated Appendicitis – n (%)** | 13 (21%) | 26 (43%) | <0.01 |
| **Type of Complicated Appendicitis** | | | |
| Perforated Appendicitis – n (%) | 7 (11%) | 3 (5%) | 0.22 |
| Phlegmonous Appendicitis – n (%) | 2 (3%) | 8 (13%) | 0.04 |
| Localized pus – n (%) | 1 (2%) | 8 (13%) | 0.02 |
| Purulent peritonitis – n (%) | 3 (5%) | 0 | 0.08 |
| **Intra-operative Complications – n (%)** | 8 (13%) | 14 (24%) | 0.15 |
| Bleeding – n (%) | 4 (7%) | 4 (7%) | 0.88 |
| Spillage of bowel contents – n (%) | 2 (3%) | 2 (4%) | 0.92 |
| Other complications | 2 (3%) | 7 (11%) | 0.18 |
| No. of Operations that took ≥ 90 min – n (%) | 4 (7%) | 10 (17%) | 0.1 |
| **PostOp Complications and Clinical Outcome** | | | |
| No. of Pts received PostOp ABX (IV/PO) – n (%) | 20 (32%) | 28 (47%) | 0.09 |
| PostOp Complications - (SSI) – n (%) | 0 | 2(4%) | 0.16 |
| Readmission within 30 days – n (%) | 3(5%) | 7(12%) | 0.17 |
| No. of Pts w/ Clavien Dindo ≥ grade 2 at 2nd Admission- n (%) | 0 | 5(8%) | 0.02 |

## Correspondence

Yaron Rudnicki, MD - yaron217@gmail.com