

## **CHANGES IN PRACTICE DUE TO COVID-19 PANDEMIC ON EMERGENCY GENERAL SURGERY SERVICE**

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### **Background**

The early effects and rapid spread of the COVID pandemic forced changes and logistic challenges for all healthcare systems. This study tests the hypothesis that these temporary practice patterns altered outcomes for emergency general surgery (EGS) patients.

### **Methods**

Adults admitted to the EGS service at one institution during the statewide COVID-19 shutdown beginning 3/15 (COVID) were recorded until the shutdown was lifted 5/16, and were compared to those in the same 2019 period (nonCOVID). Practice patterns and outcomes of acute appendicitis (AA) and acute cholecystitis (AC) were compared between COVID and nonCOVID era using Chi square and Student's t-test.

### **Results**

(see Table). During COVID there were fewer overall admissions (32 vs 83) for appendicitis and cholecystitis. AA patients presented perforated more often during COVID (29% vs 5%,  $p=0.012$ ). AA patients during COVID were more often treated initially with antibiotics alone (52% vs 0%,  $p<0.001$ ), underwent open surgical approach (33% vs 0%,  $p<0.001$ ), had longer LOS (3 vs 1 day,  $p=0.012$ ), and discharged home with antibiotics (62 vs 24%,  $p=0.004$ ) compared to nonCOVID. 36% of AA pts initially treated with antibiotics subsequently required OR. Similarly in AC, more were treated with antibiotics alone initially (52% vs 0%,  $p<0.001$ ), had open surgical approach (29% vs 3%,  $p=0.01$ ) and were readmitted (27% vs 2%,  $p=0.004$ ) in COVID vs nonCOVID.

### **Conclusion**

More patients presented with perforated AA during the COVID-19 era, suggesting they may have stayed home longer. These delays, along with practice changes due to the pandemic, led to fewer operations, more antibiotic use, longer LOS, and more readmissions after otherwise common and treatable AA and AC pathologies.

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**TABLE 1: Effect of COVID-Era on Appendicitis and Cholecystitis Management**

|   | COVID Era<br>N(%) | NonCOVID Era<br>N(%) | P-value |
|---|-------------------|----------------------|---------|
| <b>Appendicitis</b>                     |                   |                      |         |
| Total                                   | 21                | 38                   |         |
| Age (years)*                            | 36±13             | 41±15                | 0.163   |
| Female                                  | 10 (48)           | 19 (50)              | 0.861   |
| Perforated at presentation <sup>a</sup> | 6 (29)            | 2 (5)                | 0.012   |
| Initial treatment choice                |                   |                      | <0.001  |
| Abx only                                | 11 (52)           | 0 (0)                |         |
| OR                                      | 8 (38)            | 36 (95)              |         |
| IR (drain)                              | 2 (10)            | 2 (5)                |         |
| Failure of Abx <sup>b</sup> (n=11)      | 4 (36)            | 0 (0)                | -       |
| Surgical approach (n=48)                |                   |                      | <0.001  |
| Open                                    | 4 (33)            | 0 (0)                |         |
| Laparoscopic                            | 6 (50)            | 36 (100)             |         |
| Convert to Open                         | 2 (17)            | 0 (0)                |         |
| Perforated on pathology (n=48)          | 4 (33)            | 7 (19)               | 0.322   |
| LOS <sup>^</sup>                        | 3 [2-4]           | 1 [1-2]              | 0.012   |
| Discharged with home abx                | 13 (62)           | 9 (24)               | 0.004   |
| Days of home abx <sup>^</sup>           | 5 [4-7]           | 2 [2-3]              | 0.051   |
| Readmitted within 90 days               | 5 (24)            | 3 (8)                | 0.087   |
| <b>Cholecystitis</b>                    |                   |                      |         |
| Total                                   | 11                | 45                   |         |
| Age (years)*                            | 45±10             | 45±16                | 0.944   |
| Female                                  | 9 (82)            | 30 (67)              | 0.327   |
| Initial treatment choice                |                   |                      | 0.002   |
| Abx only                                | 7 (64)            | 6 (13)               |         |
| OR                                      | 4 (36)            | 37 (82)              |         |
| IR (tube)                               | 0 (0)             | 2 (4)                |         |
| Failure of Abx <sup>**</sup> (n=13)     | 3 (43)            | 2 (33)               | 0.725   |
| Surgical approach (n=46)                |                   |                      | 0.010   |
| Open                                    | 2 (29)            | 1 (3)                |         |
| Laparoscopic                            | 5 (71)            | 38 (97)              |         |
| LOS <sup>^</sup>                        | 3 [1-4]           | 2 [2-3]              | 0.640   |
| Discharged with home abx                | 3 (27)            | 5 (11)               | 0.170   |
| Days of home abx <sup>*</sup>           | 4±1               | 4±1                  | 0.855   |
| Readmitted within 90 days               | 3 (27)            | 1 (2)                | 0.004   |

<sup>a</sup>perforated based on imaging; <sup>b</sup>pt subsequently required OR during index admission

\*mean±standard deviation; <sup>^</sup>median [interrquartile range]