Acute appendicitis in the COVID-19 era: a complicated situation?

A retrospective cohort analysis

Joel M Bowen[1], Jonathon R C Sheen[2], Helen Whitmore[3], Chloe Wright[1], Kirk B Bowling[4]

[1]Department of General Surgery, Torbay and South Devon NHS Foundation Trust

[2] Department of Trauma & Orthopaedics, Torbay and South Devon NHS Foundation Trust

[3] Department of Colorectal Surgery, Torbay and South Devon NHS Foundation Trust

[4] Department of Upper G.I. Surgery, Torbay and South Devon NHS Foundation Trust

Background

- The rise and rapid spread of the COVID-19 virus, and subsequent pandemic has impacted the health of millions globally.
- While the focus of the world, the media and much of the healthcare sector was drawn to managing the novel virus, other more familiar pathologies did not wait for us to catch up.

Aim

- The aim of this study was to investigate the impact of the COVID-19 pandemic on the nature of pathology found in patients undergoing appendicectomy for acute appendicitis at our centre.
- Our null hypothesis was that there would be no difference in the proportion of patients presenting with complicated appendicitis during the first year of COVID-19 vs the prior year

Methods

- A retrospective study was performed, including all patients who underwent an appendicectomy at our centre between 11th March 2019 to 10th March 2021.
- Patients were then categorised into ‘pre-COVID’ and ‘COVID’ groups (groups 1 and 2 respectively) in relation to 11th March 2020 - the date on which the WHO declared a pandemic.
- The histopathological findings in each case were analysed, and the incidence of complicated appendicitis in each group analysed and tested for statistical significance.

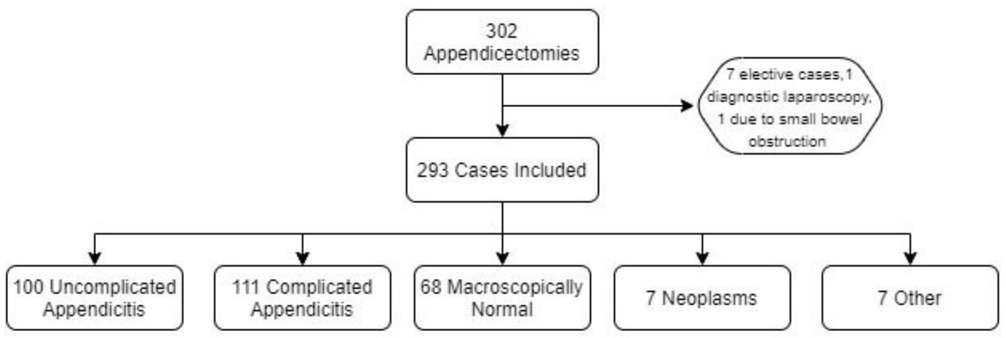

Figure 1: ‘pre-COVID’ group

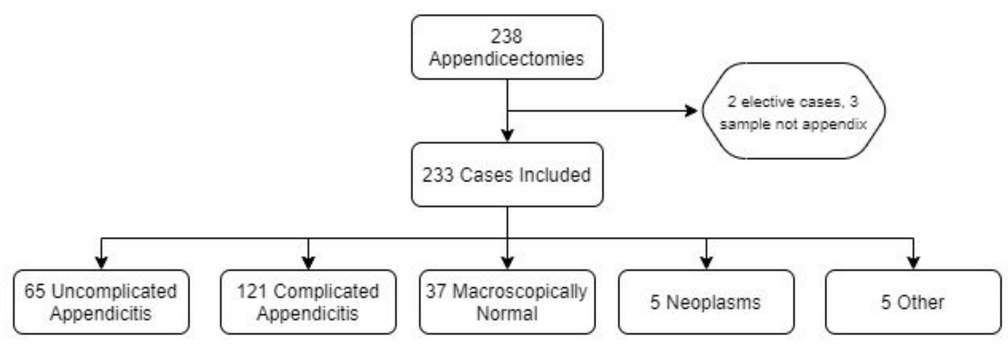

Figure 2: ‘COVID’ group

Of note:
Our accepted definitions are ‘uncomplicated’ to include simple, focal or suppurative, and ‘complicated’ to include a gangrenous or perforated appendix and any displaying peritonitis or periappendiceal abscess formation.

Results

- Following application of our exclusion criteria (elective case, appendicectomy for indication other than appendicitis, diagnostic laparoscopy without appendicectomy, no histological sample received), the groups totalled at 293 and 233 cases respectively.
- Within Group 1, complicated appendicitis accounted for 37.9% of cases (111/293). This compared to a rate of 51.9% (121/233) in Group 2.
- The Fisher’s exact test statistic value was <0.00001, meaning the result was significant at p <0.05, thus disproving our null hypothesis.
- The same result was also reached when applying the test directly to complicated appendicitis vs uncomplicated appendicitis.
- The groups were reasonably homogenous, with differing group size accounted for, similar mean age, and exclusion rates low in both.

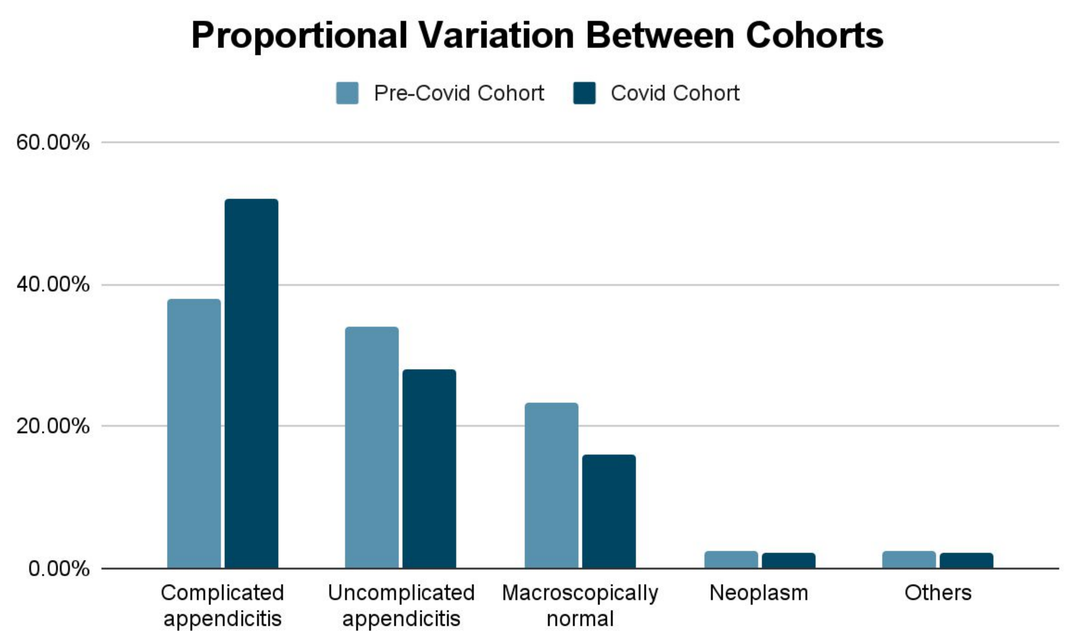

Figure 3: Comparison of group composition

Discussion

- To the best of our knowledge, this is the first study to compare an entire year of data from the pre-COVID to the COVID era in relation to cases of acute appendicitis.
- Our results demonstrate a significantly higher incidence of complicated appendicitis in patients who underwent appendicectomy during the COVID-19 era, when compared to those in the prior year.
- To what extent did the UK Government’s message to ‘Protect the NHS’ impact on people presenting further down the pathological timeline?
- To what extent did advice from the Royal College of Surgeons to consider non-operative management, during the pandemic, impact on our findings?

Conclusion

Our study found a significant increase in the proportion of complicated appendicitis in the first year of the COVID-19 pandemic compared to the previous year.

Acknowledgements: B Hardwell, KB

References:
(1) WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020
(2) Association of Surgeons of Great Britain & Ireland, Updated Intercollegiate General Surgery Guidance on COVID-19. [Online] 2020. https://www.rcseng.ac.uk/coronavirus/joint- guidance-for-surgeons-v2/

NHS
Torbay and South Devon
NHS Foundation Trust

TUGS