Short Communication

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Health Economics and Safety of Frontline Carers in the COVID-19 Era: Time to Abolish Routine Group and Save for Emergency Appendicectomies?

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Abbreviations: NHS: National Health Service; PPE: Personal Protective Equipment; COVID-19: Coronavirus Disease 2019; SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2; G&S: Group and Save; NCEPOD: National Confidential Enquiry into Patient Outcome and Death; NICE: National Institute for Health and Care Excellence

ABSTRACT

Introduction: We have stepped into a global health pandemic. The face of healthcare, patient safety and personal protection of healthcare providers has been completely transformed. However, emergency surgical procedures must still be performed, with the commonest one being appendicectomy.

Background: Appendicectomy is a safe operation, with low rates of bleeding complications. It is common practice across National Health Service (NHS) trusts to collect a G&S sample pre-operatively. This procedure increases healthcare staff exposure to the patient and the use of personal protective equipment in this pandemic.

Methods: Comparative prospective study of adult patients undergoing emergency appendicectomy since the transformation of emergency care with the emergence of COVID-19 induced restrictions compared with patients undergoing the same operation before the pandemic.

Results: 179 adult patients underwent emergency appendicectomy over a 6-month-long period in 2019-2020, 60 patients underwent the same operation in a 12 week-long period from the start of the transformed emergency services due to the pandemic. Pre-operative group and save samples were taken for 60 (33.5%) patients in the pre COVID-19 period, whereas 7 (11.6%) were taken in the group of patients undergoing appendicectomy in the COVID-19 period. None (0%) of the patients in either group had intra-operative blood loss of more than 500 milliliters and none (0%) of the patients required peri-operative blood transfusion.

Conclusion: Our study demonstrates that the routine pre-operative group and save can safely be abandoned as a routine practice for all patients undergoing emergency appendicectomy.

Short Communication

We are at a watershed moment in healthcare. The consideration for any emergency surgery needs to balance patients' need, the risk to hospital staff, personal protective equipment (PPE) availability and health economics. During the coronavirus disease 2019 (COVID-19) pandemic an unprecedented crisis caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), these considerations are magnified and more crucial. International guidelines suggest rationalizing the number of staff that are involved in the peri-operative and operative management of acute surgical admissions in hospitals [1,2]. Individual hospitals must consider resources, capacity and safety in determining the best approach.

Appendicectomy still remains the commonest emergency operation. Group and save (G&S) blood sampling in this cohort of patients have traditionally been the norm, but are they really indicated or necessary? Each patient usually requires two separate

blood samples to process the G&S. This incurs an additional cost of £36.98 per patient and increases the risk of exposure and transmission of the coronavirus (SARS-CoV-2) from asymptomatic patients and/or staff. Appendicectomy is a safe routine emergency operation with minimal blood loss, with most procedures recorded as none or less than 500 milliliters in the operative notes. Our study sheds light on the necessity of G&S samples, which have been largely abandoned at this time. We provide evidence to justify the decision with a robust six months' worth of data in the pre-COVID-19 period and a comparative snapshot of six weeks into this pandemic.

Background

A routine G&S is obtained to establish both the blood group (ABO and RhD) and presence of any abnormal antibodies in the serum of the patient undergoing an emergency appendicectomy. Two separate samples are required for the above, with each sample valid for five days only. At £18.39 per sample, the laboratory cost is £36.98. However, this cost does not include the use of the health care resources such as lab staff or clinicians' time. The sampling is performed in anticipation of any urgent requirement of blood in case of life-threatening intra-operative bleeding. The average time to obtain blood from the local blood bank is twenty-five minutes in our current trust for patients without a valid pre-operative G&S sample.

Aim

Our study was conducted with the aim of establishing the need for routine pre-operative G&S samples for emergency appendicectomies.

Methods

Emergency appendicectomies are performed in a dedicated emergency theatre in our trust, as per the National Confidential Enquiry into Patient Outcome and Death (NCEPOD) classification of intervention [3]. This constitutes the cohort of our study. Data within a National Health Service trust consisting of adult patients undergoing emergency appendicectomy over a period of six months prior to the declaration of the COVID-19 pandemic was collected retrospectively and analyzed. A comparative prospective study of similar patients undergoing emergency appendicectomy since the transformation of emergency care due to the emergence of COVID-19 was undertaken. Patients were identified using hospital coding records. Transfusion department records were reviewed to see which patients had undergone pre-operative G&S sample collection and peri-operative transfusion. Clinical notes were reviewed, and health care staff interviews were conducted to record the use and type of protective equipment used. Any adult patient with underlying pre-existing hematological condition was excluded from the study.

Results

179 adult patients underwent emergency appendicectomy over a 6-month-long period in 2019-2020, prior to the declaration of the global health pandemic. 60 patients underwent the same operation in a 12-week-long period from the start of the transformed emergency services. The male-to-female ratio of the two cohort groups remained similar at 1:1.6. Median age was 26 years and 3 months in the pre-COVID-19 period and 33 years in the COVID-19 group. Median ASA remained at 2. Pre-operative G&S samples were taken for 60 (33.5%) patients in the pre-COVID-19 period, whereas 7 (11.6%) were taken in the group of patients undergoing appendicectomy in the COVID-19 period. Of these 14 patients (7.8%) in the pre-COVID-19 period, one sample was rejected and required an additional sample collection, whereas 1 patient (1.6%) in the COVID-19 period group had a sample rejected. The reasons for rejection of the G&S sample were noted as: hemolyzed sample, insufficient sample, insufficient patient identification details and incorrect patient details. None (0%) of the patients in either group had intra-operative blood loss of more than 500 milliliters and none (0%) of the patients required peri-operative blood transfusion.

Discussion

The National Institute for Health and Care Excellence (NICE) published guidelines in 2003 concerning the use of routine pre-operative blood investigations for surgical procedures, as excessive pre-operative testing was causing significant anxiety among patients, creating unnecessary delays in treatment and increasing the cost [2]. Blood cross-matching was excluded from these guidelines because it was agreed by the panelists that its function is procedural rather than diagnostic; it does not change the management of the patient as there are no 'abnormal' results to consider. It was decided then that the need to cross-match (or take a G&S sample) is reliant on both the operative severity and the likelihood of blood loss (grade D recommendation, based on level IV evidence) [2]. This has been re-emphasized during the COVID-19 pandemic where the goal is to provide timely surgical care to patients presenting with urgent and emergent surgical conditions whilst optimizing patient care resources (e.g. hospital and intensive care unit beds, PPE, and ventilators) and preserving the health of caregivers [4]. The updated intercollegiate general surgery guidelines in the COVID-19 era recommends considering the possibility of COVID-19 infection in every patient. Diagnosis and risk of COVID-19 should be considered in all situations in emergency general surgery settings and to act and use PPE accordingly [5]. Presentations with intestinal symptoms is common and COVID-19 may present initially as an acute abdominal pathology [5] which warrants use of PPE in emergency settings whilst evaluating patients with abdominal symptoms; this includes performing clinical examination and taking routine blood tests.

In this scenario using necessary PPE twice for the same patient for G&S sample collection will not only increase the cost via additional PPE usage but also increase the contact of health care workers. Limited availability of PPE in general is another dilemma that we are facing with this global pandemic; hence, rational use of PPE is also one of the responsibilities of the health care providers

as excessive use of PPE will have a further impact on supply shortages. However, guidance on the level of appropriate PPE has varied throughout this pandemic; this may have furthered delays in communicating adequate protection and exacerbated risk to staff. Strategies to optimise the availability of PPE, suggested by the WHO, also include minimizing the need for PPE by restricting the contact of health care workers with patients [6]. G&S sample collection, sometimes twice, therefore introduces another step, heightens risk, and the entire process can potentially delay an urgent surgical procedure. Numerous adjustments have been made in the routine surgical practices to ensure adequate provision of optimal surgical care to our patients in this challenging time, employing common sense to avoid unnecessary practices which have no beneficial effect on patient care [7-9].

Conclusion

The routine practice of G&S blood sampling for patients undergoing emergency appendicectomy does not enhance patient care, threatens patient and health care provider safety and should be eliminated from common practice. Surgery in the global COVID-19 pandemic has highlighted the essential and non-essential pre-operative work-up for patients undergoing emergency appendicectomy. Our study concludes that routine G&S sampling for these cohort of patients should be abolished. Further multicentre collaborative studies on appendicectomy in the COVID-19 era would corroborate our findings.

Conflict of interest Statement

The Authors declare that there is no conflict of interest.

Funding

No funding was involved in this study.

Ethical Approval

Local approval was obtained from hospital ethical committee.

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