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Variations in colorectal cancer surgery practice across the United Kingdom during the COVID-19 pandemic – ‘Every land has its own law’



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ABSTRACT

Background: In March 2020 NHS England issued guidelines recognizing the elective component of cancer surgeries may be ‘curtailed’, due to staffing and supply shortages during the COVID-19 pandemic. However, it suggested, ‘local solutions’ should be sought in order to protect the delivery of cancer services.

We aimed to compare surgeons’ practice for the provision of colorectal (CR) cancer surgery across the United Kingdom (UK), against updated Joint Royal Colleges & ACPGBI guidelines and highlight differences in practice, if any.

Method: An online survey was conducted. It examined surgical practice across the UK against current protocols for CR cancer surgeries, during the COVID-19 pandemic.

Results: 29 individual responses were received from 23 NHS Trusts across the UK. 23/29 (79%) surgeons ceased or experienced delays in their CR cancer surgeries during the pandemic, with 3/29 (10%) yet to reintroduce these services. 19/26 (73%) surgeons instructed their patients to self-isolate prior to surgery, of which 5/19 (26%) correctly enforced a duration of 14 days. 10/19 (53%) participants adhered to guidelines of performing a CT chest within 24 h of surgery. 10/26 (38%) participants believe their patients are experiencing longer hospital admissions in the COVID-19 setting.

Conclusion: This snap shot survey highlights the dramatic variations in CR cancer surgery practice within the UK and inconsistent adherence to protocols. Guidelines will no doubt change as our knowledge of COVID-19 increases both nationally and internationally. It is essential CR surgeons keep up to date with changes in guidance, so uniformity in practice can be maintained.

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Introduction

In December 2019 cases of a novel virus - SARS-CoV-2, emerged from the Hubei province of China.¹ The World Health Organisation (WHO) went on to declare the viral outbreak a ‘Public Health Emergency of International Concern’ on January 30th 2020. At the time of writing this article, this global pandemic has claimed over 315 000 lives worldwide.²

The SARS-CoV-2 virus belongs to the Coronavirus family; a group of viruses from which the infamous SARS (Severe Acute

Respiratory Disease) and MERS (Middle Eastern Respiratory Syndrome) are also derived. The WHO officially named this new virus COVID-19 and it is thought that similarly to the afore mentioned viruses, its ecological origin lies within the bat species.³ Current evidence suggests that COVID-19 is predominantly transmitted through respiratory droplets and contact routes, but it has also been isolated in blood, faeces, urine and peritoneal fluid.^{4,5} Airborne transmission of the virus has also been recognised in aerosol generating scenarios.⁴

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In late February 2020, the first cases of COVID-19 were identified in the UK. In less than one month, the number of confirmed cases exceeded 11 000 nationally and the UK government implemented a nationwide lock-down from 23rd March 2020.^{6,7} This pandemic was declared the greatest challenge the NHS would face since its creation and in a bid to free up 12 000–15 000 hospital beds, all non-urgent elective operations were postponed from April 15th 2020. This ultimately led to the disruption of planned cancer surgeries across the UK. Hospitals were forced to rapidly restructure their surgical services, in order to provide 'COVID-free' areas in which these patients could not only undergo surgery, but also be recovered post-operatively.⁸

The last global pandemic caused by a Coronavirus strain was SARS. SARS led to nearly 800 fatalities worldwide between 2002 and 2004, but only 4 cases were identified in the UK.⁹ Other countries more severely affected by the SARS outbreak saw an impact on their provisions for colorectal (CR) cancer surgery. One study from Hong Kong reported a major reduction in their CR caseload, with a 52% decline in new outpatient attendances for suspected cancers, 32% fewer surgical procedures and colonoscopies were reduced by 48%.¹⁰ Another study from Toronto highlighted the complex decision making required to preserve vital clinical needs, whilst attempting to contain a viral outbreak. In 2003, Toronto hospitals took the difficult decision to cancel all non-emergency surgery in the initial 7–10 days of the SARS outbreak in their region. Operative time was allocated to specific surgical teams depending on the urgency of their cases and this was ultimately determined by the hospital's command centre.¹¹

But what have we learned from these previous pandemics? As SARS-CoV-2 is a novel virus, the international medical community is comparing rapidly evolving data and practice, in order to implement their own evidence based national protocols. When reviewing CR surgical practice during this COVID-19 era, key questions have been raised with regards to the process of prioritisation of CR cancer surgeries, the use of laparoscopic or open surgical techniques and the preferable approach (anastomosis or stoma) for colonic resections.

In the UK, CR cancer surgery is generally guided by the Joint Royal College of Surgeons and The Association of Coloproctology of Great Britain and Ireland (ACPGBI) recommendations. Their most recent publication, released 28th April 2020, stands to act as a framework for UK CR surgeons, advising professionals on how best to re-establish local and regional elective CR surgery during the COVID-19 pandemic; as well as in its aftermath.¹²

The aim of our study was to review the way in which CR surgeons across the UK have adapted their cancer surgery practice, but also to assess if these modifications are in line with updated guidelines. Are there significant variations in CR cancer surgery practice across the UK and if so, in what particular areas of operative planning and implementation are discrepancies most commonly seen?

Method

An online survey was created using *Google Forms*. The survey consisted of 20 questions which examined surgeons' and

departmental processes for the provision of CR cancer surgery, during the COVID-19 era. Participants completed questions by using single best answers, binary 'yes' or 'no' answers, or short answer options.

Participants were only asked to answer all of the questions if they had active protocols in place for the implementation of CR cancer surgery during the pandemic. If a respondent's Trust had delayed or stopped the facilitation of CR cancer surgery due to the COVID-19 pandemic and this was yet to be re-introduced, they were not required to complete the survey and therefore any additional data collected was excluded from the analysis.

The online survey was distributed to the authors' nationwide contacts in CR surgery. A web link for the survey was circulated amongst consultants in CR surgery, as well as general surgical registrars. Responses were collected over the time period of 1 week: 27th April – 4th May 2020.

Approval for this project was obtained through our hospital's Quality Governance Team. No confidential or identifiable patient data was required for participants to complete our survey.

Results

Over a period of 1 week of data collection, we received a total of 29 individual responses from 23 different NHS Trusts across the UK (excluding Scotland) (Fig. 1). Of the 29 individual responses, 3 reported CR cancer surgeries had stopped at their site and had not yet been reintroduced. These participants were unable to complete the entire survey and were therefore excluded, leaving a remainder of 26 responses for data analysis.

We received more than one response from 4 Trusts. Interestingly in these cases, the multiple answers we received from the same trust did not always concur. When analysing responses, if a participant did not document a clear answer or they did not enter a response, their entry for that question was deemed inconclusive.

Provision of planned CR cancer surgery during the COVID-19 era

26/29 (90%) of our respondents stated that their Trusts had stopped, or delayed CR cancer surgeries during the COVID-19 setting. At the time of our data collection, 3/29 (10%) hospitals were yet to reintroduce cancer surgeries at their site (Chart 1).

Site of planned CR cancer surgery during the COVID-19 era

Of the participants that had continued or re-introduced CR cancer surgery at their site during the pandemic, 18/26 (69%) were performing these surgeries in a designated 'COVID-free' area. 3/26 (11.5%) respondents had relocated cancer surgeries to a private hospital or separate site, whilst another 3/26 (11.5%) continued to perform surgeries in their usual theatres. 1/26 (4%) surgeon reported performing surgeries in both a 'COVID-free' theatre and a private hospital. 1/26 (4%) response was inconclusive as the question was not answered (Chart 2). Our figures show that the majority of surgeons are continuing



Fig. 1 – An illustration demonstrating the geographical location of responses to our survey.

CR surgery where possible in ‘cold’ areas, in line with ACPGBI recommendations.¹²

Prioritisation of planned CR cancer surgery during the COVID-19 era

In March 2020, national guidelines were introduced to aid surgeons with their prioritisation of cancer surgeries.¹³ 24/26 (92%) respondents told us that they were performing CR cancer surgery in line with these guidelines. 1/26 (4%) participant stated they were not following all guidelines. 1/26 (4%) surgeon confirmed ‘priority 3’ patients (a cohort of patients whose

surgery could be delayed for 10–12 weeks) were also undergoing surgery at their site.¹³

Consenting for planned CR cancer surgery during the COVID-19 era

Although there are no specific guidelines with regards to the consenting procedure for planned CR cancer surgery during the COVID-19 era, most surgeons add COVID related complications while consenting. Our survey demonstrated that the vast majority of surgeons – 24/26 (92%), are continuing with the traditional method of face to face consenting. 1/26 (4%)

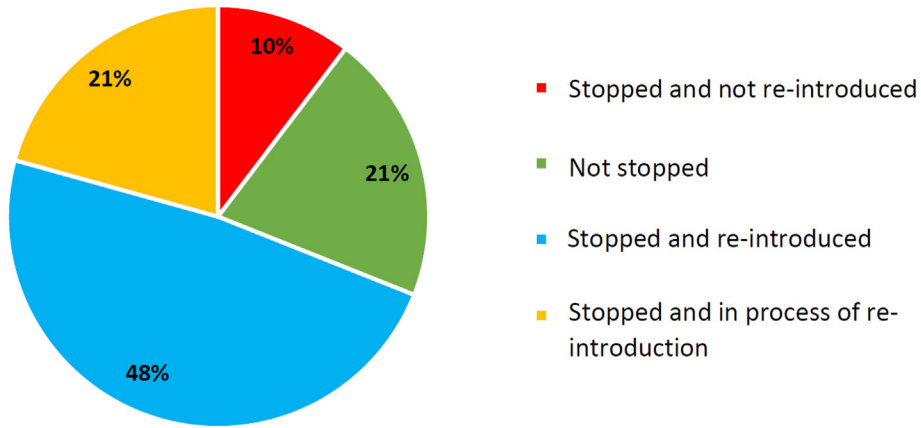


Chart 1 – Pie chart depicting participants' provision of planned CR cancer surgery during the COVID-19 era.

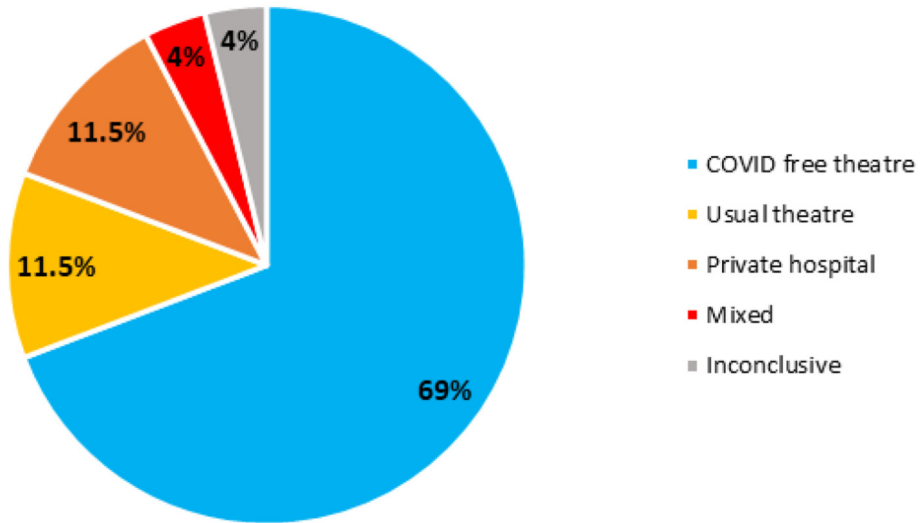


Chart 2 – Pie chart depicting participants' operating sites for planned CR cancer surgery during the COVID-19 era.

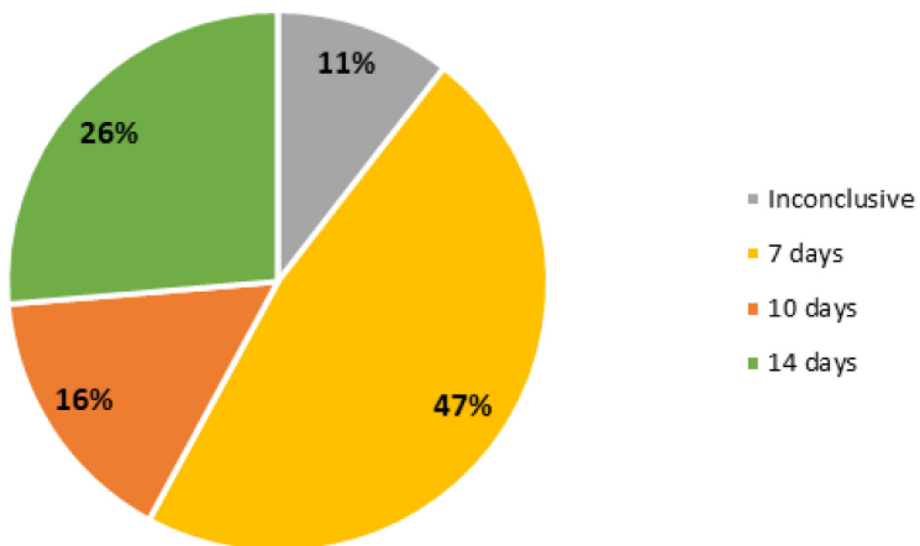


Chart 3 – Pie chart depicting the duration of time participants instruct patients to self-isolate for, prior to planned CR cancer surgery during the COVID-19 era.

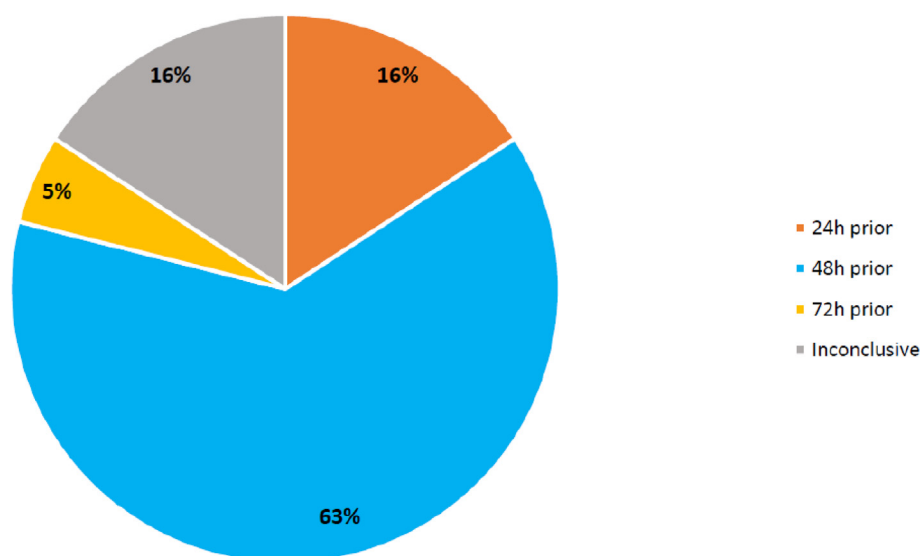


Chart 4 – Pie chart depicting number of hours prior to planned CR cancer surgery participants perform patient COVID-19 swab testing.

participant is completing consent via telephone with a witness.

Pre-operative planning for CR cancer surgery during the COVID-19 era

Pre-operative patient self-isolation

ACPGBI have circulated guidelines in relation to preparing patients for elective CR cancer surgery. In order to minimise the risk of pre-operative COVID-19 infections, they state patients should practice strict self-isolation for 14 days prior to their surgery.¹² 19/26 (73%) respondents are instructing their patients to self-isolate. 5/19 (26%) appropriately asked their patients to do so for 14 days pre-operatively (Chart 3).

Pre-operative swab testing during the COVID-19 era

ACPGBI state that all CR cancer patients not displaying COVID-19 symptoms should undergo swab testing 48–72 h prior to planned surgery.¹² The majority of surgeons 19/26 (73%), stated that pre-operative COVID-19 swabs were performed at their sites, whilst 6/26 (23%) of our participants did not complete swab screening. Of the respondents that did perform COVID-19 swab screening, 13/19 (68%) did so within the advised time of 48–72 h prior to surgery (Chart 4). It is worth noting, where multiple responses were received from one site, there were variations in the point in time that individual surgeons swabbed their patients pre-operatively.

Pre-operative chest imaging during the COVID-19 era

ACPGBI recognise that swab testing has a false negative rate of approximately 25% and for that reason at the time of this survey, they recommended that pre-operative chest imaging be used as an adjunct for COVID-19 screening in planned CR cancer surgery.¹² This supported intercollegiate guidance that advises a CT chest should be performed for all patients undergoing gastrointestinal surgery 24 h prior to theatre.¹⁴

19/26 (73%) of our participants stated that pre-operative chest imaging was performed at their site. 5/19 (26%) carried out a plain chest radiograph and 14/19 (74%) surgeons perform a CT chest. Of the respondents that did arrange a CT chest pre-operatively, 10/14 (71%) did so within 24 h prior to surgery.

Surgical approach to planned CR cancer surgery during the COVID-19 era

Surgical team for CR cancer surgery during the COVID-19 era

ACPGBI have emphasized that Trusts will need to optimise the use of time in theatres during the COVID-19 era. They have suggested that where possible, dual-consultant operating should be implemented so as to not only reduce the length of operative procedures, but also to limit the number of staff required in theatres.¹²

10/26 (38%) participants report dual consultant operating at their site and 9/26 (35%) stated that more than the recommended number of surgeons were present in theatre (Chart 5).

Operative approach for planned CR surgery during the COVID-19 era

Since the onset of the COVID-19 pandemic, there has been much debate surrounding laparoscopic versus open surgery and the risks associated with each technique. ACPGBI have stated that as the safety of laparoscopy in the COVID-19 setting is yet to be proven, open surgery may be the safest choice. However, they do acknowledge that patient wishes, as well as 'cold' operating sites may reduce the threshold for laparoscopy.¹²

The majority of our participants – 16/26 (61%), stated that they were adopting an open surgical technique in planned CR cancer surgery, compared to 9/26 (35%) using laparoscopy. 1/26 (4%) respondent reported using a combination of both techniques (Chart 6).

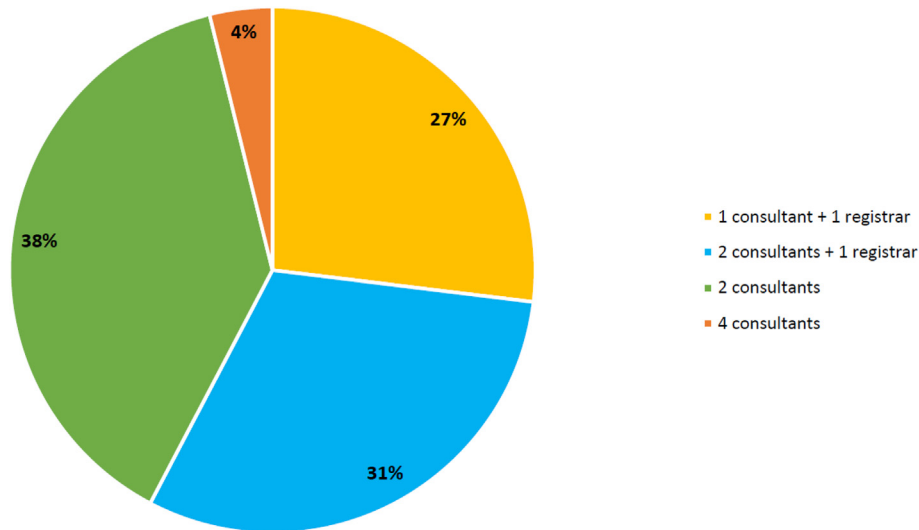


Chart 5 – Pie chart depicting the members of the surgical team performing planned CR cancer surgery at our participants' sites, during the COVID-19 era.

For right sided CR cancers, the majority of surgeons are performing primary anastomoses – 24/26 (92%), compared to 2/26 (8%) respondents forming stomas. Conversely, for left sided CR cancers our results demonstrate that surgeons are more likely to form a stoma – 17/26 (65%), compared to 9/26 (35%) performing anastomoses. Factors most likely to influence these operative decisions included the patient's age, comorbidities, medications and the present COVID-19 climate (Chart 7).

Post-operative recovery for CR cancer surgery patients during the COVID-19 era

Prior to the COVID-19 pandemic, a number of patients undergoing CR cancer surgery would be admitted to the intensive care (ICU) or high dependency (HDU) unit post-operatively. However, with a high proportion of these beds now being required for COVID-19 patients' respiratory support, hospitals may need to provide alternative post-operative recovery sites.

14/26 (54%) of our participants stated that their patients are now receiving immediate post-operative care on surgical wards. 7/26 (27%) of respondents are still admitting their patients to HDU or ICU following surgery. 3/26 (11%) surgeons specified that their patients receive Level 1 care post-operatively and 1/26 (4%) participant's patients receive ward and/or HDU care. It is worth noting, where multiple responses were received from one site, there were variations in the response of individual surgeons.

Length of stay for CR cancer surgery patients during the COVID-19 era

10/26 (38.5%) respondents believed that there was no difference in the length of stay of their patients during the COVID-19 era, compared to before the pandemic. Equally 10/26 (38.5%) respondents, felt that the length of stay for patients undergoing planned CR surgery was longer in the current COVID-19 climate, whilst 5/26 (19%) felt it was shorter.

Follow-up for CR cancer surgery patients during the COVID-19 era

In order to prevent unnecessary patient contact and to limit the spread of COVID-19, the NHS have recommended the implementation of remote consultations via video, or telephone clinics. Face to face clinics should now only take place when absolutely necessary.⁸

Our survey demonstrates that in the current COVID-19 climate, 23/26 (88%) participants are following up their patients in accordance with NHS guidelines, via telephone clinics. These telephone clinics are either being led by specialist nurses – 10/26 (38%), or with the surgical registrar/consultant 13/26 (50%). Interestingly, 2/26 (8%) hospitals are still conducting face-to-face follow up clinics (Chart 8).

Discussion

NHS guidelines covering the acute management of cancer patients during the pandemic were released in March 2020 – approximately 2 months after confirmation of the first case of COVID-19 in the UK.^{6,13} This document highlighted the need for operative prioritisation, but official statements had already reassured that '... cancer treatment ... should continue unaffected' during the COVID-19 era.⁸ Our data, however echoes international findings of reductions in cancer surgery during the pandemic, due to the prioritised treatment of COVID-19 patients.¹⁵ Studies from previous viral pandemics also reported a dramatic decrease in the workload of CR services, including diagnostic procedures. During the SARS pandemic in Hong Kong, colonoscopy numbers fell by 48% and patients experienced a 3-week increase in waiting times for urgent colonoscopies.¹⁰

CR cancer is the third most prevalent cancer in the UK and the proposed optimal timing of resectional surgery is 3–6 weeks from diagnosis.^{16,17} This is significant, as studies have shown delays in surgery to have a detrimental effect

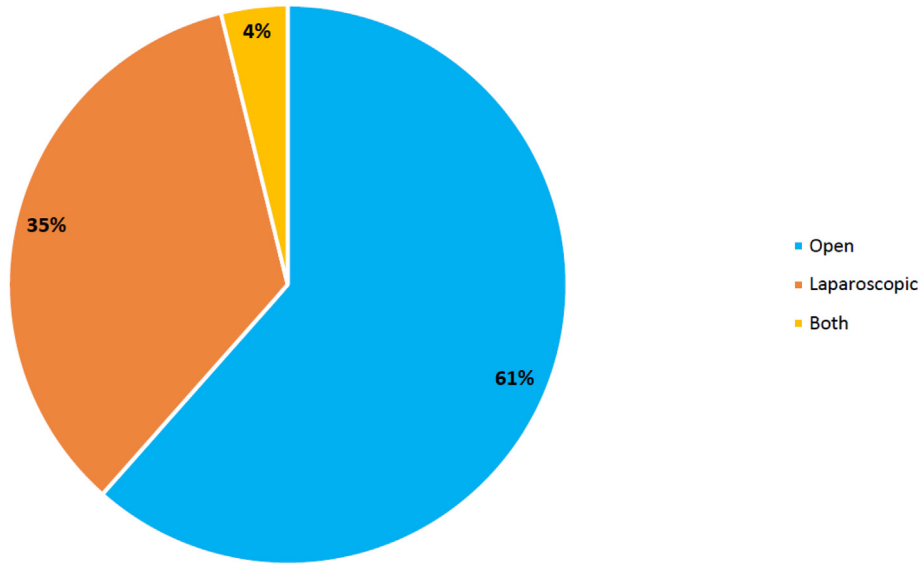


Chart 6 – Pie chart depicting participants' choice of surgical technique in planned CR cancer surgery, during the COVID-19 era.

on the overall survival of patients with non-metastatic CR cancer.¹⁸ With the combination of postponed CR cancer surgeries and likely delays in CR cancer diagnoses, we are yet to see the long-term effect COVID-19 will have on CR cancer outcomes.

ACPGBI released guidance which considered environmental risk assessments for the resumption of elective CR surgery. They advise the use of ‘cold’ or ‘COVID-free’ areas as sites for elective surgery and this is supported by the international surgical community.^{19,20} Our data shows that the majority of Trusts have been able to implement this. Nevertheless, some respondents stated they were yet to re-introduce CR cancer surgery at their site, whilst others were using private hospitals’ facilities. Two of the three

respondents that stated CR cancer surgery was yet to be re-introduced worked within district general hospitals and the site at which ‘priority 3’ surgery was maintained was a tertiary centre. Our survey did not enquire after the reasons for these differences in practice, but individual hospital’s provisions, staffing levels or regional variance in COVID-19 prevalence could have influenced decision making. The variation in practice suggests that long-term solutions for CR cancer service provision are still required, as the UK prepares for the next stages of this pandemic.

ACPGBI have proposed a pre-operative screening pathway for planned CR cancer surgery. At the time this survey was conducted, the ACPGBI advised patients self-isolate for 14 days pre-operatively, COVID-19 swabs be processed 48–72 h

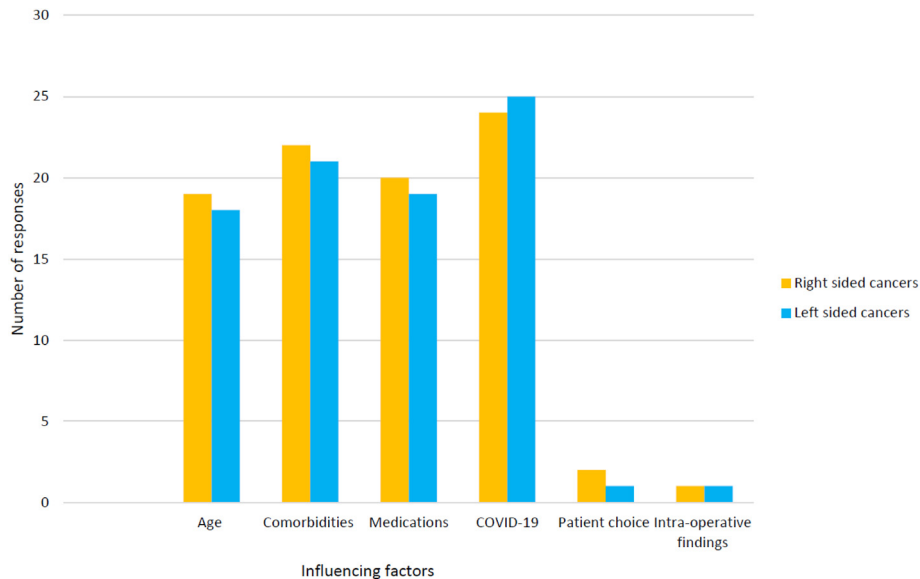


Chart 7 – Bar chart depicting the factors influencing participants' choice of anastomosis versus stoma for planned CR cancer surgery, during the COVID-19 era.

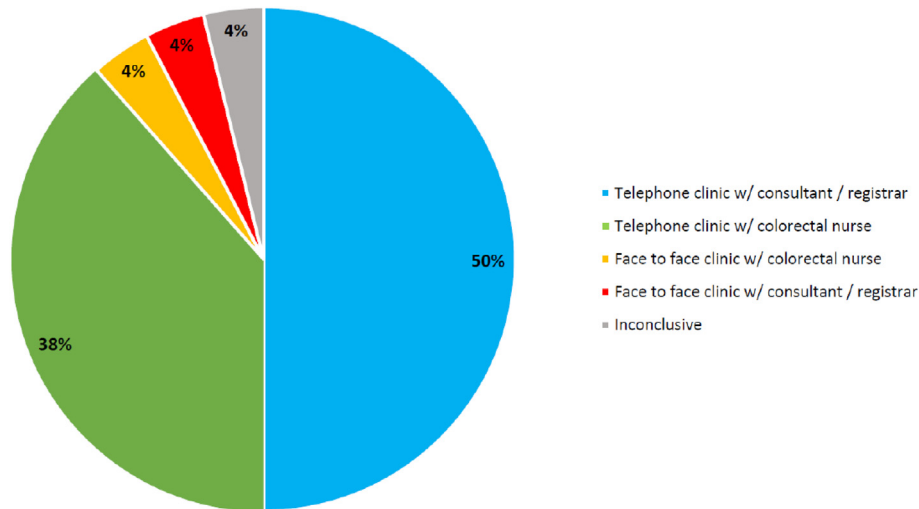


Chart 8 – Pie chart depicting the type of follow up patients receive after planned CR cancer surgery, during the COVID- 19 era.

prior to surgery and a CT chest be performed within 24 h of admission.¹² These recommendations are upheld by international protocols, although some of these hospitals have gone even further with their pre-operative precautions. The set-up of designated COVID-19 operating teams has been suggested, with the purpose of limiting the movement of staff and preventing nosocomial spread of COVID-19. Routine swab testing of staff has also been advised.^{19,21} Our data shows that despite clear guidelines, there is wide variation in the practice of pre-operative COVID-19 screening across the UK. Our survey does not elucidate to the reason behind these discrepancies in practice, however it could be attributed to the logistical challenges different Trusts have faced whilst reorganising their cancer surgery pathways. Nonetheless, commitment from hospital administrators, as well as surgeons, is required if 'cold' elective cancer surgery sites are to remain 'COVID-free'. It is worth noting since the distribution of this survey, the ACPGBI have updated their guidance which states a CT chest for elective cancer patients is now not required pre-operatively.²²

Within the surgical community there has been much debate surrounding the use of open or laparoscopic techniques during the COVID-19 era. Electrocautery and ultrasonic (harmonic) scalpel tissue dissection are routinely used in laparoscopic and open surgery and therefore, both run the risk of producing hazardous aerosols and smoke.²³ It has been theorised that COVID-19 contamination could occur through aerosol generation in laparoscopic procedures; however other studies have confirmed viral transmission to occur via operative smoke.^{20,23} In this pandemic, there are key concerns surrounding the possible isolation of COVID-19 in pneumoperitoneum gases, which when released into the operating theatre could potentially infect multiple members of staff. ACPGBI guidance suggests that until solid evidence confirms the safe use of laparoscopy, in this pandemic, open surgery with smoke extraction may be the safest option.¹² The respondents to our survey are following this advice with 16/26 (61%) adopting an open surgical approach. It has been stated that laparoscopic surgery can be performed in

the COVID-19 setting, by an experienced laparoscopic surgeon using specialist equipment. In order to safely evacuate pneumoperitoneum gases, suggested equipment can be: the closed circuit of a pressurized intraperitoneal aerosol chemotherapy system, extension lines with water sealed containers, or an ultrafiltration system.^{20,21} However, we question how readily available this equipment is in operating theatres nationwide and this again may account for the higher proportion of open surgeries being performed in the COVID-19 era.

ACPGBI stated that only a minimum number of staff should be present in operating theatres during the pandemic and this is endorsed by international surgical bodies.^{12,20} Our survey shows that rather than the suggested dual consultant operating, 9/26 (35%) of respondents report more than 2 surgeons in theatre; with one site having 4 consultants in surgery. 15/26 (58%) participants describe the presence of surgical registrars in theatre. This could be justified by consultants attempting to maintain training and teaching opportunities for their junior staff. The NHS has sanctioned the redeployment of junior staff during the COVID-19 pandemic.²⁴ However, we must consider the detrimental impact this, as well as the current reduced elective work and clinical opportunities, could have on a surgical trainee's career progression, as well as mental health. We agree with the statement that this pandemic lays the foundations for 'countless uncertainties for surgical trainees'.²⁵

We acknowledge that there are limitations to this study. Firstly, although we saw a mixed geographical distribution amongst our participants (*Diagram 1*), we only received a total 29 individual responses over a short period of data collection. Within this limited number of respondents, some did not accurately answer all of the questions by not submitting responses. Our survey did not explore why there are current variations in practice, or if the participants had solutions to reducing these inconsistencies. We also received multiple individual responses from single Trusts and this could produce a level of bias when commenting on the practice in one location.

Conclusion

In conclusion, this snap shot survey highlights the dramatic variations in CR cancer surgery practice within the UK and the patchy adherence to protocols; which will no doubt continue to change during the COVID-19 pandemic. Do these dissimilarities stem from varying interpretations of guidelines, lapses in communication between advisory bodies and their members, or logistical difficulties due to strains on a Trust's resources and staffing? As CR surgeons during a pandemic, we are faced with the dilemma of exposing our high-risk cancer patients and staff to a possibly fatal novel virus, or jeopardizing potentially curative treatment by delaying surgery. There is an urgent need for ongoing solid scientific research to advance our evidence base for decision making in cancer surgery, in what remains a rapidly changing global situation.

Availability of data and material

Not applicable.

Code availability

Not applicable.

Declaration of Competing Interest

Nil to declare.

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