Bariatric surgery during COVID-19 in the UK: a British Obesity and Metabolic Surgery Society (BOMSS) survey

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Abstract

Background After the declaration of COVID-19 as a pandemic last March 2020, several adjustments in surgical services were implemented. Plans are now being formulated for restarting bariatric surgery. The aim of this survey is to capture the practice during the pandemic and the readiness to restart to provide a framework to deal with the backlog of bariatric cases.

Method A survey was delivered to consultant surgeon members of the British Obesity and Metabolic Surgery Society and non-bariatric surgery consultant members of the Association of Upper GI Surgeons.

Results The survey elicited a response rate of 40% ($n = 66$) among bariatric surgeons and 15.5% ($n = 34$) between non-bariatric surgeons. The average question response rate was 93% (88–100%). Most of the elective bariatric surgeries and clinics were cancelled early after declaration of the pandemic. Remote technologies for patient education evolved and were used heavily during the pandemic. The average cancelled elective bariatric surgery operations per week was 9. Nearly a quarter of responders reported performing emergency bariatric surgery during the pandemic. Most of the bariatric surgeons reported being ready to restart the service within 1–2 months. Responders recommended using private sector beds to increase NHS capacity and using the link between obesity and poor COVID-19 outcomes to push for prioritisation of bariatric patients.

Conclusion This survey is an attempt to understand the impact of COVID-19 on UK bariatric service and the preparedness to restart. It expressed the bariatric surgery consultants' view of prioritisation of bariatric patients on clinical basis rather than the first-come-first-served basis.

Keywords COVID · Obesity · Bariatric · Laparoscopy · Survey · BOMSS

Currently there is no controversy that obesity is associated with multiple comorbidities impairing quality of life and decreasing life expectancy [1, 2]. Results of medical treatment for obesity have been disappointing so far, therefore

bariatric surgery has been considered the most effective treatment for morbid obesity [3].

On 31 December 2019, the World Health Organization (WHO) reported that a novel coronavirus “SARS-CoV-2” was identified in Wuhan Municipal Health Commission, China where a cluster of cases of pneumonia were reported. COVID-19 was declared as a pandemic by the WHO on the 11th March 2020 due to its alarming levels of spread over a wide geographic area affecting an exceptionally high proportion of the population [4].

After the pandemic status declaration, several adjustments in surgical services were made to cope with the predicted increased demand of intensive therapy units (ITU) and medical wards. NHS England informed hospitals to postpone elective surgical procedures for three months starting on 15th April 2020. The Royal College of Surgeons (RCS) recommended that where appropriate, hospitals and surgical teams should aim to deliver virtual outpatient appointments

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by video link, email or telephone for the duration of the COVID-19 outbreak to support infection control [5].

Plans are now being made for the restart of elective surgery. Given the special medical and cultural aspects regarding obesity and bariatric surgery, there was a concern that bariatric surgery patients may well be disadvantaged by this process.

This survey of UK bariatric consultant surgeons is an attempt to report on surgeons' readiness and preparedness to restart bariatric practice and aims to provide a framework to deal with the backlog of bariatric cases that has built up since the pandemic started.

Materials and methods

Rationale for the survey

This survey was implemented to capture the current situation of bariatric surgery practice amid the COVID-19 pandemic and to provide a framework to deal with the backlog of bariatric cases that has built up since the pandemic has started.

Targeted audience of the survey

Consultant surgeon members of the British Obesity and Metabolic Surgery Society (BOMSS) and non-bariatric surgery consultant members of the Association of Upper GI Surgeons (AUGIS).

Process of designing the survey

At the time of the survey there were no guidelines for managing patients with morbid obesity during and after COVID-19, and so the survey questions were designed based on NHS and Royal College of Surgeons recommendations for elective surgeries [6], twitter hashtag #bariatric and #obesity and public news.

A series of 28 questions were designed. The questions covered enquired surgeons' experiences and bariatric surgery practice during the COVID-19 pandemic and their plans for managing the backlog of bariatric patients during and after COVID-19 time. The survey was designed by bariatric surgery consultants in conjunction with a bariatric surgery fellow and a bariatric anaesthetist. After designing the survey, it was reviewed and amended by BOMSS council before going live. An electronic invitation was sent by email to the consultant surgeon members of BOMSS and AUGIS to complete the survey. The invitation explained the proposed questionnaire and included a link to an online survey. The survey was set up using SurveyMonkey® and went live on 30 April 2020 and closed on 8th May 2020.

Data analysis was done using SPSS version 22, data were described as mean and standard deviation (SD) or median and range for continuous variables and numbers and proportions for categorical variables. Chi-square test was used for statistical analysis of data. *P* values less than 0.05 were significant.

Results

The survey was sent to 164 bariatric surgery consultants (BOMSS) and to 220 non-bariatric surgery consultants (AUGIS). A total of 120 consultants opened the survey link and 100 answered the survey. The average question response rate was 93% (88–100%) (Fig. 1).

Non-bariatric surgeons were only asked about their view regarding the restart of elective bariatric surgery, commissioning criteria for bariatric surgery, and prioritisation of bariatric surgery.

Elective bariatric surgery

While cancelling of elective bariatric surgery started as early as the third week of January 2020, some of our responders reported operating till the first week of April 2020 (Fig. 2).

97% of bariatric surgeons reported stopping bariatric outpatient clinics for new and follow-up cases, mainly in the period 10/03/2020 to 20/03/2020. Some 73% of surgeons used video/telephone conferencing to continue outpatient activity whilst physical consultations were halted (Fig. 3).

Fig. 1 Types of responders

Fig. 2 Majority of elective bariatric surgeries were cancelled from mid-March 2020

Activity of bariatric out-patient clinic

Fig. 3 Reporting the activity of the outpatient clinic

Remote technologies for patient education

Remote technologies as video conferencing and web links were used by one-third of the responders to communicate with the patients during the pandemic (Fig. 4).

Tier 3 service and MDT

Less than one-tenth of responders reported their local bariatric tier 3 service was running during the peak of COVID-19, and only a quarter of bariatric multidisciplinary teams (MDTs) continued to discuss both new referrals and postoperative problems (Fig. 5).

In England, patients need to successfully complete a certain pathway through sequential tiers before being considered for surgery in tier 4 (Table 1) [7].

Fig. 4 Using remote technology for patient education during and after COVID-19 pandemic

Are you planning to continue using remote technology for patient education after COVID-19 pandemic ends ?

Bariatric surgery waiting lists seemed to be affected as more than half of the responders stopped adding new patients to the waiting list (Fig. 6).

Responders from 22 bariatric units around the UK reported an average of 9 elective bariatric surgery operations per week (range 2–18) to be cancelled. From individual perspective, an average of 4 (range 1–15) cases per week

per surgeon were reported to be cancelled due to current COVID-19 situation (Fig. 7).

While the majority reported seeing less bariatric emergency referrals compared to pre-COVID-19, almost a quarter of bariatric surgeons had performed emergency bariatric surgery since elective surgery stopped, 80% of which were undertaken laparoscopically. (Fig. 8).

Fig. 5 Almost half of tier 3 service (right-sided pie chart) were stopped and more than half of bariatric MDT meetings were not held (left-sided pie chart) during COVID-19 peak

Table 1 Explaining the different tiers of care for patients with morbid obesity

Tier 1	Public health programmes aimed at preventing and improving physical activity and healthy eating
Tier 2	Lifestyle weight management advice. Usually given in primary care
Tier 3	One to one management by a medically qualified specialist in obesity. It includes physical activity, psychological and specialist dietetic input in addition to full range of medical specialists as required for comorbidity management It can be either community or hospital based
Tier 4	Specialist obesity medical and surgical MDTs provide one-to-one management with full access, as needed, to a full range of medical specialists Patients will be referred to tier 4 by tier 3. A qualitative level of expertise in patient care makes the difference between a medical specialty at levels 3 and 4 All surgical procedures will take place in tier 4

Fig. 6 Demonstrating bariatric surgery waiting list during the pandemic

Fig. 7 Number of cancelled bariatric surgeries per week due to COVID-19

Fig. 8 How was emergency bariatric surgery performed?

Only 8% of surgeons were aware of situations where patients had come to harm due to complications of bariatric surgery because the patient did not seek help because of COVID-19 or help has been sought and either 111, primary care or secondary care who had not made a referral on for specialist bariatric advice.

Some of the reported complications included slipped band, intragastric balloon spontaneous rupture, and a patient needing emergency band de-fill who could not access care locally because of COVID-19 and subsequently had to travel to another unit for urgent band removal two weeks later.

When bariatric surgeons were asked how BOMSS should help ensure bariatric surgery is not relegated to low priority status post COVID-19, most bariatric surgeons recommended using the link between obesity and poor COVID-19 outcomes to push for prompt priority treatment of bariatric patients and also advocated using private sector beds to increase NHS capacity. Other recommendations included: (i) specifying a COVID-19-free-area in each trust to operate, (ii) compare long-term survival outcomes for bariatric surgery patients to those of cancer surgery patients, (iii) stratify bariatric patients and prioritise those in utmost need for surgery (Fig. 9).

Discrepancy was obvious when asking about commissioning criteria to access bariatric surgery. Using Chi-square test, there was statistically significant difference between bariatric surgeons and non-bariatric surgeons regarding commissioning criteria for bariatric surgery (Fig. 10, Table 2).

The same statistically significant attitude was reported regarding the priority of bariatric surgery between bariatric and non-bariatric surgeons (Fig. 11, Table 3).

When bariatric surgery restarts, the majority of bariatric surgeons (61.5%) would give highest priority to those patients suffering postoperative complications. 30% would give priority to type 2 diabetics and 21% to patients needing bariatric surgery as a bridge to other treatments. High BMI ranked lowest with only 9% of surgeons giving priority to this group (Fig. 12).

Fig. 9 How to ensure bariatric surgery is not relegated due to low priority status

Fig. 10 Bariatric surgeons reported bariatric surgery as a high/medium priority, while non-bariatric surgeons reported the opposite

Table 2 Showing statistically significant difference between two groups

Variable	Bariatric surgeons	Non-bariatric surgeons	P value
Change to make access easier	35	8	0.0018
No need to change	20	20	
Change to restrict access	3	6	

Readiness to restart bariatric surgery

More than half of bariatric surgeons reported being ready to restart the service within 1–2 months (Fig. 13).

Training programme for bariatric fellows

There were no plans to compensate for the loss of training for bariatric registrar/fellow as reported by the majority of responders.

Discussion

The COVID-19 pandemic has had unprecedented effects on global healthcare systems, employment, and the economy. To date, there have been well over 400,000 deaths due to this virus worldwide [8].

Recommendations from the NHS early on in the pandemic advised against non-life-saving surgery including bariatric surgery [9]. The reasons for this were: (i)

Fig. 11 Bariatric surgeons reported bariatric surgery as a high/medium priority, while non-bariatric surgeons reported the opposite

Table 3 Illustrating the statistically significant difference in bariatric surgery priority between the two groups

Priority	Bariatric surgeons	Non-bariatric surgeons	<i>P</i> value
High	15	0	0.000025
Medium	33	14	
Low	10	20	

perceived increased risk of nosocomial infections (ii) perceived increased risk of complications including mortality by operating on asymptomatic COVID-19 cases and (iii) the need to keep in-hospital bed capacity prioritised for COVID-19 patients as well as more urgent cases such as oncology surgery patients. On the other hand, the risks of delaying surgical treatment for patients with morbid obesity and/or metabolic diseases are very high and should

Fig. 12 Prioritisation of patients for bariatric surgery

Fig. 13 Time needed to restart bariatric surgery

not be overlooked. The findings of Fontaine et al. confirm that obesity is a key public health problem that lessens life expectancy obviously, particularly among the younger individuals. A U-shaped curve was observed illustrating the association between BMI and years of life lost (YLL) at all ages [1]. It's not only YLL that are a concern, but also health-related quality of life (HRQOL). Jia and Lubetkin report that individuals with obesity suffer from lower HRQL than their normal weight counterpart even for individuals without obesity linked chronic disease [10].

Furthermore, there is increasing evidence about the effects of obesity and poor COVID-19 outcomes. It has been known for some time that infections to various organs and systems are more common among individuals with obesity than those of normal weight, although the mechanism is not completely understood [11].

Recent cohort studies from China [12], France [13] and the US [14] all demonstrate that the higher the BMI, the greater the risk of needing mechanical ventilation in COVID-19 cases [15].

Semple et al. also demonstrated using population data the increased risk of mortality in the obese from COVID-19 [16]. Bariatric surgeons are anxious to ensure that their patients are not ignored as elective surgery restarts and have suggested that the link between obesity and poor COVID-19 outcomes highlights the need for not delaying treatment.

Whilst the impact of suspending bariatric surgery due to the current pandemic can be predicted, the effects have not been clearly measured.

This is the first survey in the UK that explores the views of bariatric surgery consultants to give an idea of current practice, and future plans for managing patients with morbid obesity in the UK in the aftermath of COVID-19.

The survey demonstrated that almost all bariatric activity, including outpatient services, operations, and MDT meetings, ceased on or around mid-March 2020. This went along with the NHS plan to postpone all non-urgent operations in England to free up to 30,000 beds [17].

As an alternative to direct face-to-face outpatient clinics, most surgeons were able to use tele-conferencing as a surrogate to in-person outpatient activities. Indeed, telemedicine has been described as a convenient way to connect doctors and their patients in disasters and public health emergencies as it is well suited for scenarios where the infrastructure remains intact and clinicians are available to see patients [18]. It's reported that in March 2020 the proportion of telephone appointments increased by over 600% [19].

Bariatric MDT meetings have mostly ceased, except in a few units that continued MDT discussions to help patients with postoperative problems. Virtual MDT meetings have been described in the field of oncology amid the current COVID-19 pandemic. The virtual MDT meeting can be held via video conference with one person assigned as a coordinator with other MDT members [20]. Therefore, it may be plausible and more practical to resume MDT meetings on the virtual platform even after the resolution of the pandemic. MDT meetings were not automatically transitioned to a tele-platform at the time of this survey and the possible cause for this is the absence of common secure platform approved by the NHS to discuss patients, but now after the introduction of Microsoft teams, this can be easily done or even can replace the physical MDT.

Tier 3 lifestyle programme services which normally feed into tier 4 bariatric surgery services have also been affected by the pandemic. Although this is unlikely to have a significant effect on bariatric activity when it restarts as almost all units have enough cases on their existing waiting lists, stopping tier 3 service will affect the progression of obesity related comorbidities and quality of life [21]. Dietary and/or pharmacological strategies for weight loss can be adopted as an alternative for patients with weight-responsive comorbidities who may have to wait long for bariatric and metabolic surgery, depending on the evidence regarding their efficacy [22, 23].

Most bariatric units stopped adding new patients to waiting lists for bariatric surgery. An average of four bariatric cases per week were cancelled in 23 bariatric surgery units

in the UK that responded to the survey. This implies that over the months of March and April, at least 736 patients in the UK would have had their bariatric surgery cancelled. Encouragingly, the majority of surgeons, given the opportunity, could restart bariatric surgery within 1 month of the recommencement of elective surgery. However, the impact of elective surgery cancellation has been studied and statistical analysis shows that even when the normal surgical volume is increased by 20%, a median of 45 weeks will be needed to clear the backlog of operations [24].

As compared to March 2019, emergency attendances have dropped by approximately 44% during March 2020 which indicates that fewer patients are seeking help for emergencies [25]. The findings of this survey are consistent with bariatric emergency operations being performed less than before COVID-19. This may be explained by the fewer primary operations being performed after the onset of COVID-19 pandemic; hence one would expect fewer postoperative complications such as leaks and/or bleeds. But this still does not explain the low rates of patients presenting with slipped bands, internal hernias, and/or bowel obstruction. This may in part be related to fear of patients to seek emergency care amidst the pandemic as patients worry about contracting the infection from hospitals [26].

There has been some controversy over performing laparoscopic surgery during the pandemic due to the presumed risk of aerosolisation of viral particles, which has never been proven [27]. Some hospitals have set rules that only allow open surgery to be performed. For bariatric patients presenting with an emergency this can be challenging as the risks associated with open surgery including the need for ITU admission and pulmonary or wound-related problems, far outweigh the potential risk of viral aerosolisation. Fortunately, this survey found that in the rare circumstances where emergency surgery had to be performed, for the most part this was performed laparoscopically. Published guidelines exist on precautions needed intraoperatively to prevent potential aerosolization of the virus in the operation theatre [28].

When it comes to patient selection, the survey revealed that 60% of surgeons would give the highest priority to patients presenting with postoperative complications after bariatric surgery. This is not surprising as these patients would already be on semi-urgent lists before the pandemic. The next priority was given to type 2 diabetic patients which is expected as studies reported that the probability of hyperglycaemia remission depends on when the operation is performed during the diabetes' natural history [29]. The SOS study reported decreased rate of remission of type 2 diabetes in patients with 4 year history of the disease in comparison with patients with only 2 years history [30]. The least priority was given to patients with BMI > 60 kg/m² perhaps because it was compared against other important

priorities for bariatric surgeons who took the survey. The other indications that took priority over BMI > 60 kg/m², namely diabetes mellitus and multiple comorbidities, were associated with a higher risk for developing severe COVID-19 complications. In addition, patients who need surgery to resolve complications of previous bariatric surgery had the top priority as these patients needed quick corrective intervention before developing more serious consequences.

How should patients be prioritised in the COVID-19 era is now the key question. The classic principle of prioritisation in the NHS is based on first-come-first-served rule, so patients who needs surgery are placed on a waiting list for elective surgery by turn.

Our survey reported results in contrary to this principle, as the responders neither prioritised patients according to their BMI nor to their turn in the waiting list, but instead according the actual clinical need. We believe that the usual principle of prioritisation should be revised at least during this unprecedented time.

Our results are in line with Rubino et al. [21] in their recent recommendations on prioritisation of access to bariatric surgery. They suggested that access to surgical treatment of bariatric and metabolic surgery should be based on disease-focussed clinical needs instead of BMI alone.

The authors specifically prioritise three groups of patients: firstly, those with HbA1c $\geq 8\%$ on two or more oral medications, insulin use, history of cardiovascular disease, non-alcoholic steatohepatitis or two or more other metabolic conditions increasing cardiovascular risk, albuminuria or chronic kidney disease (stage 3 or 4) or > 5 years of diabetes history. Secondly, patients with BMI ≥ 60 kg/m² with more than two other metabolic conditions (other than type 2 diabetes) increasing cardiovascular risk, severe obesity hypoventilation syndrome, severe obstructive sleep apnoea, heart failure stage C or Chronic kidney (stage 3 or 4). The last group is patients who need weight loss surgery as a bridge to other operations which may be either life-saving as organ transplant or to improve quality of life as hip replacement.

Recent guidelines published by the Federation of Surgical Specialty Association (FSSA) recommended similar approach. Urgent cases to be done either less than 24 h or 72 h depending on the clinical emergency. Elective cases to be done in less than 1 month if as part of cancer/transplant treatment, less than 3 months if significant/multiple end organ failure, to facilitate Musculoskeletal (MSK) physiotherapy or other surgeries as hernia, overdue balloon removal or revision to stop excessive weight loss [31].

Although starting with such high-risk patients appears to be more appealing to bariatric surgeons as surgery will be easier to justify to the NHS and the Clinical Commissioning Groups (CCGs), an alternative view is to start with low risk patients based on the fact that they are less liable

to surgical complications and also perhaps less at risk of severe COVID-19 should they contract this in the peri- and postoperative period.

Another casualty of the COVID-19 pandemic is the compromised training opportunities for trainee surgeons. Very few consultants used e-training/simulations and for most trainees, there was no plan to compensate for the loss of training. This will likely have a significant impact on competence level of bariatric surgery trainees in the near future. The current pandemic is expected to negatively impact the provision of surgical education and training with unprecedented disruption in training programs and bariatric surgery programs are not an exception [32].

The survey was also sent to non-bariatric surgeons to ascertain their views about bariatric surgery recommencement after COVID-19. Unsurprisingly, there was a clear discrepancy between non-bariatric surgeons who classified it as low priority with no need to change commissioning criteria whilst most bariatric surgeons valued bariatric surgery as a medium to high priority with a need to change commissioning criteria to make access easier. We believe that the difference in sub-specialisation in surgery may create this type of discrepancy. Many non-bariatric surgeons consider bariatric surgery as non-urgent elective procedures that do not take top priority when compared to other domains including hernia surgery, breast surgery, trauma and emergency surgery and surgical oncology. According to this perspective, a patient with cancer should take the priority to prevent spread and a patient with hernia also should be prioritised since they can develop incarceration or strangulation of their hernia anytime. However, this perspective may not be accurate since patients indicated for bariatric surgery are also at high risk of developing serious morbidities in addition to being among the high-risk group for severe/critical COVID-19.

Limitations of this work include the low response rates which can be attributed to the short duration of the survey (1 week) during a period busy with emergency surgery, redeployment and many online meetings and webinars. Using surveys in research have their own limitations previously described such as skipped questions, personal agenda, accessibility issues and survey fatigue [33]. We believe that this is compensated by the diverse response from the highest volume bariatric surgery units around the UK.

Conclusion

This survey is an attempt to understand the impact of COVID-19 on UK bariatric surgery and the readiness of the specialty to restart. Also, it expresses the views of the bariatric surgeons regarding the restart plans.

Compliance with ethical standards

Disclosures Ahmed Ghanem, Sameh Emile, Jonathan Cousins, David Kerrigan, and Ahmed Rashid Ahmed have no conflicts of interest or financial ties to disclose.

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