

Clinical Paper

Regional Elective Day Procedure Centre Pilot– the solution to waiting lists and trainee deficit in the reshaping of services following COVID-19?

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ABSTRACT

Background: Consequences from the COVID-19 pandemic have resulted in the secondary impact of cessation of elective surgical services, amplifying the waiting list problem with devastating patient and surgical training repercussions. With the introduction of the first regional inter-trust daycase elective care centre pilot in Northern Ireland, we aim to assess the impact of this pathway on elective inguinal hernia waiting lists, patient outcomes, and influence on surgical training.

Methods: Data was collected prospectively over a 10-week pilot of consecutive elective day case hernia lists at a newly established regional day surgery centre. Key operative time points for each patient were collated via the Theatre Management System (TMS). Retrospective patient feedback was collected from participating patients via 26-question telephone survey at 6 weeks post-operatively. Trainees allocated to the participating units during this pilot received a retrospective electronic survey.

Results: Fifty-five patients underwent open unilateral elective inguinal hernia repair, 54% of cases were trainee led. Median trainee operating time of 53 minutes compared with 51 minutes for consultant led procedures, with no significant difference consultant vs non-consultant as primary operator ($p>0.05$). On completion of the pilot, waiting list numbers were reduced by a third, 75% of trainees feedback reported increased confidence with surgical operative exposure, and high levels of patient satisfaction reported.

Conclusion: Inter-trust day surgery at a dedicated green site could successfully contribute to resuming and reforming surgical services, addressing the impact on mounting waiting lists with positive patient impact as well as providing an excellent training opportunity to narrow the observed training deficit.

Key words: Day Case, Centre of excellence, trainees, surgical workforce

INTRODUCTION

In the post-COVID-19 healthcare era, services and systems are restructuring with renewed opportunity to meet patient

and workforce interests¹. Elective surgical procedures were withdrawn from March 2020 due to demand for urgent and emergency resources and critical care facilities in response to the pandemic. Consequently, elective surgery and day case operating has been one of the casualties of COVID-19 with ramifications for patient, surgical waiting times, and trainees. The COVIDSurg Global Collaborative study estimated the UK would cancel or postpone more than 40000 elective operations per week during the peak of the pandemic and this downturn in surgical capacity was observed, devastating for patient scheduled care as well as training opportunities². Further to the acute burden on healthcare structures, the pandemic exposed existing faults in the framework of services^{3,4}. As healthcare trusts and their leadership look to restart and reorganise services, initiatives are needed to regenerate beyond pre-existing systems to redesign services fit for patients and address the training deficit created for a long-term sustainable workforce^{5,6}.

Prior to the pandemic, waiting times in Northern Ireland for elective care were the worst in the UK and amongst the worst in Europe with 2017 figures outlining 11,261 patients waiting more than 52 weeks for a day case admission⁷. Recent Department of Health statistics within Northern Ireland show in March 2020 that 94,000 patients are on waiting lists for day case and inpatient admissions. There are significant mental and physical health implications as well as widening healthcare inequalities. An all-region strategy has been proposed with a commitment to narrow the gap between demand and capacity by 2026. The resumption of services has given the opportunity of redesigning patient care with a proposed elective care road map developed, aiming to meet the needs of the patient population and secure a future workforce through a newly established regional centre of excellence for day case elective surgery^{8,9}.

Elective care delivered in centres with streamlined patient pathways have been successfully modelled in the wider UK as an initiative to meet the rising demands. This has

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transformed the elective treatment landscape to improve patients' timely access to care, travelling beyond their local hospital to independent centres with devoted service provision and staffing undisrupted by emergency and unscheduled work in the context of COVID-19 guidance. In addition to improved patient outcomes, professional guidance has outlined the benefit of elective day case working for staff with productivity and standardisation of care as well as excellent training opportunities. Therefore, in line with the strategic framework for rebuilding of services, recruitment and training of staff is essential for retention of a trained workforce required for service recovery^{7,8,10,11}.

We have selected a pilot set from the general surgery elective population waiting list; identifying patients waiting for unilateral open inguinal hernia repair at a newly established regional centre of excellence for day surgery to assess the impact of this 10-week pilot on waiting list numbers, theatre efficiency, and acceptability of this experience and service for patients. In addition, review the impact of non-consultant led operating on theatre list productivity to identify the potential training opportunities daycase can offer to overcome this training shortfall.

Aim

We aim to assess the introduction of a regional inter-trust daycase open inguinal hernia day case pilot in a dedicated elective pathway site outside and the impact on patients and surgical training.

METHODS AND MATERIALS

A prospective database was established over a 10-week pilot of consecutive elective daycase inguinal hernia operating lists at a newly established regional centre of excellence for day surgery. Specifically, key time points in surgical cases including time ready, knife to skin, last suture, theatre exit and operator were recorded. This was achieved using the Theatre Management System (TMS). Patients were selected having completed a telephone preassessment, consultant consideration deemed suitable for a daycase list and on an existing waiting list for open unilateral inguinal hernia repair. They attended a COVID free corresponding community hospital for pre-operative blood tests and a COVID PCR test within 72 hours pre-operatively following which all patients self-isolated. Anaesthetic techniques included general anaesthetic, spinal or local anaesthesia. Exclusion criteria included recurrent hernias, complex medical needs requiring post-operative admission or possible need for level 3 care.

All patients who underwent hernia repair from September to November 2020 were contacted retrospectively six weeks postoperatively by telephone offering an opportunity to participate on a voluntary basis in a 26-question telephone survey assessing patient outcomes, complications, and their experiences. This was governed by members of the clinical team involved in the pilot. Verbal consent was obtained at time of contact. Patients who did not respond were given

further opportunity by being contacted at an alternative time; minimum of two attempts greater than 24 hours apart.

In addition, trainees allocated to the participating units during this pilot were sent a voluntary 10-question electronic anonymised trainee satisfaction survey to assess their experience of attendance at these lists. Trainees were contacted via a central single email administrator to ensure confidentiality. A completion period of 6 weeks was outlined with further reminder emails at 4-weeks and prior to survey closure.

Analysis

A comprehensive review of the collated database was completed. Surgical case time in minutes was collected for time ready, knife to skin, last suture placement, theatre exit time, and primary operator grade. Time ready is categorised as patient preparation for theatre is completed including consent, gown, TED stocking placement, and care plan complete. Knife to skin was decided by: anaesthetic administration, draping, skin preparation, and commencement of the operation. Last suture with closure of skin.

Patient feedback information from the telephone survey was compiled into a database to include surgical consultant, date of operation, age at time of surgery, pre-operative written information received, and length of travel time to the regional centre; category one: 0 to 30 minutes, category two: 30 to 60 minutes, category three: 60 to 90 minutes, category four: 90 to 120 minutes, or category five: greater than 120 minutes. Employing the Likert scale (1-5), patients' feedback in relation to the location and facilities were collected. Questions included if the regional centre was deemed a convenient location, how they rated hospital facilities, clarity of travel directions and signposting as well as car parking facilities. In addition, usefulness of post-operative written discharge information, pain score at discharge, pain score at 6 weeks, 30-day post-operative complications and if the patient returned to baseline activity at 6 weeks postoperatively. A cross analysis of the theatre data and patient database was completed to catalogue the patient reported outcomes by primary operator, surgical trainee versus consultant. Trainee led operations were performed by core trainees year 2 up to specialty trainees year 6, with the majority of trainee led operations by higher specialty trainees.

Electronic feedback was collected from trainees identified as part of the pilot and in a training placement via anonymised survey. General surgical higher specialty trainees and core surgical trainees were included in the survey; foundation doctors were excluded as they have not been recruited to a surgical training programme or engage with the Intercollegiate Surgical curriculum. The trainee information collated included level of training and the impact of COVID-19 on training, specifically access to surgical cases, cases logged as primary operator, impact on confidence of surgical skills,

and access to supervised training opportunities during the pandemic. As a consequence of the daycase pilot, trainees were asked if they had more access to surgical cases, logged more primary operator cases, the impact on their confidence in surgical skills, and opportunities for supervised learning. Statistical analysis was performed via IBM SPSS using t-test and ANOVA techniques. Significance was defined as a p-value of less than 0.05.

RESULTS

A total of 55 patients underwent an open unilateral elective inguinal hernia repair; 46 of which had complete theatre data available. The median age at time of operation was 52 years old.

Prior to the pilot, 165 patients were awaiting open unilateral inguinal hernia repair. From September to November 2020 on completion of the 10-week pilot, 110 patients remained on the waiting list.

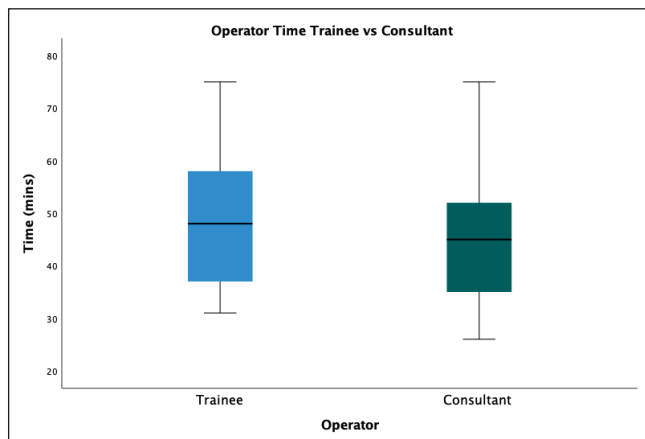


Figure 1: Demonstrating trainee vs consultant operative time

Fifty four percent (N=25) of cases were trainee led with median trainee operating time of 53 minutes compared with 51 minutes for consultant led procedures with all lists at theatre capacity with no significant difference ($p>0.05$) (Figure 1). Theatre capacity was standardised across the pilot of patient cases.

There was no significant difference between patient pain score on discharge or at 6 weeks postoperatively for trainee or consultant led procedures ($p>0.05$). Eight patients reported a postoperative complication at six weeks classified by the Clavien-Dindo grading; six patients had a grade 1 complication and two patients with a grade 2 complication. The trainee led group did not have a higher rate of complication compared with the consultant led group. No patients required readmission to hospital.

Patient experience

Forty-nine patients completed the follow-up survey, 1 patient declined to participate, and 5 patients were non-

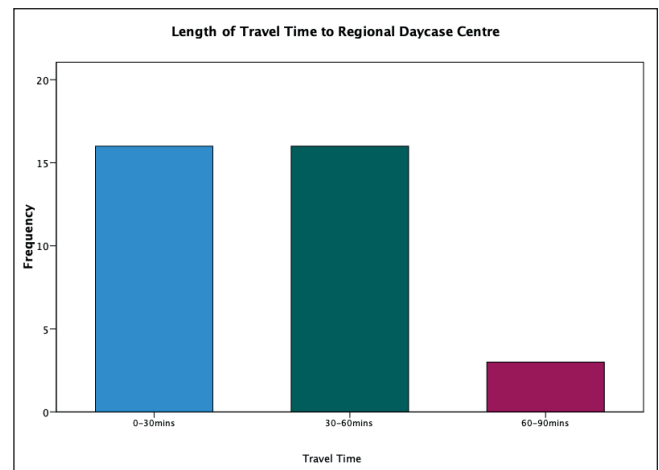


Figure 2: Demonstrating patient travel time to regional daycase centre

responders. One hundred percent of patients received pre-operative written information, 96% (N=47) of which found the information useful.

Location of the daycase centre was reported as convenient in 94% (N=46) of patients; 92% (N=45) of participants had a travel time of less than 60 minutes (Figure 2). Furthermore, patients scored the daycase centre facilities as excellent; median Likert score 9.6 (Likert scale 1-10).

Written discharge information was given to 90% of patients, all of which stated they found it useful. Overall high levels of patient satisfaction were reported with a median Likert score was 9.5. Ninety eight percent (N=48) of patients reported return to baseline activities at 6 weeks.

Trainee experience

Eighteen trainees were identified as having rotated through the unit during the pilot, 12 of which responded. Level of training were categorised into 5 core surgical trainees and 7 higher training specialty registrars (Figure 3).

As a result of the diversion of workforce and resource to address the COVID-19 demand, 92% (N=11) of trainees stated they have had less access to surgical cases in addition to less access to supervised training opportunities. One

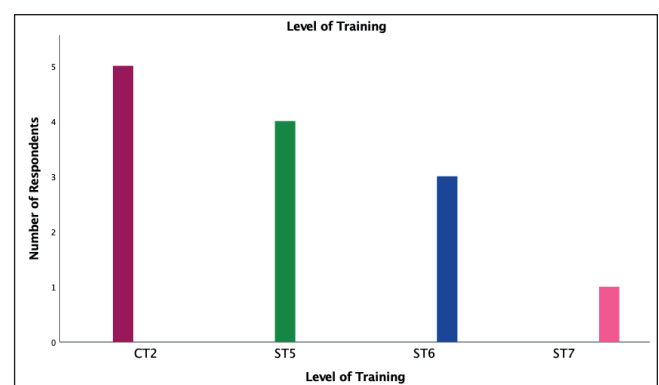


Figure 3: Training level of respondents



hundred percent (N=12) of trainees stated they had logged less cases as the primary operator as a result and 83% (N=10) stated their confidence in performing surgical skills had been negatively impacted.

By engaging in the pilot, 67% (N=8) of trainees reported more access to surgical cases as a result of their attendance at the elective care daycase operating lists. Seventy five percent (N=9) stated they logged more primary operator cases with more access to supervised training opportunities, and 83% (N=10) stated their confidence in performing surgical skills had been positively impacted. Overall, 75% (N=9) expressed attendance at the daycase operating lists had a positive impact on their training during the COVID-19 pandemic.

DISCUSSION

Unacceptable surgical waiting lists pre-pandemic have been witnessed across the UK; this has been exacerbated to unrepresented levels in the current 2022 COVID-19 era⁷⁻⁹. The waiting list for unilateral inguinal hernia repair trebled in parallel with the observed COVID-19 surges, compounded by the continued downturn in surgical activity. The daycase pathway is scheduled care with advanced planning separated from emergency workload centred on the ethos of providing an equitable and undisrupted service^{12,13}. UK based models have demonstrated success when adequate facilities, resource, and workforce are co-ordinated in centres of excellence. This requires patient empowerment with knowledge to facilitate same day discharge and training and education at its core for a sustained workforce. Within Northern Ireland, the Department of Health strategies have proposed an adaptive approach and overwhelming drive to deliver the right service to the right patient at the right time, aiming to create a restructured service ambition beyond the remit of geography with inter-trust regional working^{5,8,9,11}. This daycase elective surgery pilot within a centre of excellence was the first within Northern Ireland adopting this strategy. It has demonstrated the benefit of addressing waiting times without overwhelming acute systems, as well as providing effective training opportunities for general surgical trainees prioritising a surgical workforce.

A recent Northern Ireland Department of Health survey found 78% of patients questioned reported they would be prepared to travel beyond their local hospital, with up to one hour was deemed to be acceptable in 82% of cases to benefit from expedited care. Through this pilot of fifty-five-patients undergoing elective hernia repair, the concept of this survey in practical terms was supported by our findings; most patients travelled less than 60 minutes to reach this elective care service and reported that the daycase centre was convenient to them. This is important in the accessibility and acceptability of this format to patients^{8,9}.

The British Association of Day Surgery recommendations include inguinal hernia repair as an indicative general surgical procedure of which 80% should be carried out

as daycase despite operative technique^{15,16}. We have demonstrated through this pilot, inguinal hernia repair can be carried out as day case in an acceptable format to patients with significant positive impact on waiting list numbers. For same day discharge to be successful, adequate preoperative and discharge information is required. We evaluated patients experience having received written pre-operative information, which they deemed useful as well as discharge guidance. We observed patients had returned to baseline function at 6 weeks and at 30 days no reattendances or readmissions, critical elements in the daycase strategy. Patient selection regarding appropriateness for day case in the context of complex co-morbidities and an ageing population also need to be reviewed. Acceptability of this experience was demonstrated with high patient reported satisfaction scores, supporting that delivery of care within centres of excellence potentially outside patients' immediate locality can be effective but patient selection needs to be considered for this pathway to deliver maximum patient benefit.

Teaching, training, and research is recommended to be amongst the core functions of the elective care framework. A recent study of national surgical trainees analysing the COVID-19 training impact highlighted difficulty achieving indicative numbers with a significant reduction in recorded operative experience in 2020 compared to 2019 with elective surgery affected more than emergency operating^{17,18}. In addition, 1 in 8 trainees in their final year of training extended their training¹⁹. More than one quarter entering their final year of training stated this was below their expected training trajectory, emphasising a concern regarding available trained workforce as a key challenge in care delivery and sustained service^{17,19}. The Healthcare landscape has changed with the impact of COVID-19 influence aggravating workforce retention and shortages however a culture of resilience and innovation has developed.

The pandemic has impacted trainees with less theatre access, redeployment, and disruption of competencies. Within this study, a survey of trainees has supported this operative impact, notably outlining a reduction of logged surgical cases, confidence in surgical skills, and supervised training opportunities. As a result of engaging in the pilot, trainees had access to these dedicated elective lists, without interference from emergency disruption or demands. They logged more primary operator cases, showing high levels of confidence, with supervised training opportunity and had a positive impact on training because of attending the lists²⁰⁻²². In order for trainees to avail of these daycase lists, provision of general emergency care and base hospital elective lists as well as inpatient cover had to be ensured. Consultant cover for the daycase lists were on an adhoc basis as established schedules had been disrupted over the pandemic. Safeguarding of these opportunities can be met through trainees driving and being motivated to identify potential lists and working together to rotate these opportunities with more senior trainees covering base sessions as well as a culture of change within units and approach to day case surgery.

Our results disclosed that trainee-led operating in this setting did not demonstrate a significant difference in theatre capacity or efficiency in terms of operative time when trainee led operating compared to consultant led. In relation to patient pain score on discharge and subsequent morbidity at follow-up no significant difference was demonstrated between consultant versus trainee primary operator. The implication of prioritising training does not confer negative patient outcomes or adversely impact productivity. Consistency of procedure under experienced supervision and feedback is an established formula for successful training. Given the success of the initial 10-week pilot, the service has become established beyond the pilot, with inter-trust staffing basis as an equitable regional service for patients. Restoration of systems should maximise opportunities for trainees to narrow the deficit of missed training opportunities, including enhanced theatre time with a change of the surgical curriculum to competency based and create an environment to support this; as if we don't train today, we will have no surgeons tomorrow^{17,23,24}.

LIMITATIONS

All initial survey non-responders were followed up with further telephone or electronic written communication to ensure the highest possible response rate. The COVID-19 pandemic has created a challenging environment with dynamic guidance changes and those within this pilot were in keeping with the COVID-19 recommendations at the time.

CLINICAL IMPLICATIONS AND FUTURE RESEARCH

COVID-19 is an ongoing healthcare preoccupation; we have demonstrated that elective care daycase centres of excellence can be utilised to address the waiting lists and training burden.

With the right framework and resource, there is an opportunity to redesign service delivery in a renewed way not limited by council or Trust. Patient selection and procedure consideration would need to be scrutinised to ensure the correct pathway for individual patient safely. Future research should focus on larger scale pilots, extending procedural type, and reviewing stakeholder and wider team feedback in service analysis.

CONCLUSION

This pilot has demonstrated a dedicated site for day case elective surgery can be successful during the period of COVID-19 restrictions and should be incorporated and prioritised in healthcare recovery planning. We have shown an opportunity to address the mounting waiting lists and develop training without negatively impacting patients experience or health outcomes which are key to the concept of regional day procedure centres.

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REFERENCES

1. Department of Health. Elective care framework - restart, recovery and redesign. [Internet]. Belfast: Department of Health; 2021. [cited 2022 Jun 2]. Available from: <https://www.health-ni.gov.uk/publications/elective-care-framework-restart-recovery-and-redesign>.
2. COVIDSurg Collaborative. Elective surgery cancellations due to the COVID-19 pandemic: global predictive modelling to inform surgical recovery plans. *Br J Surg.* 2020;107(11):1440–9. doi: 10.1002/bjs.11746.
3. Bengoa R, Stout A, Scott B, McAlinden M, Taylor MA. Systems not structures: changing health and social care. Expert Panel Report. Belfast: Department of Health. Systems; 2016. Available from: <https://www.health-ni.gov.uk/sites/default/files/publications/health/expert-panel-full-report.pdf>
4. Bengoa R. Transforming health care: an approach to system-wide implementation. *Int J Integr Care.* 2013;13(3):e039. doi: 10.5334/ijic.1206.
5. COVID-STAR Collaborative Study Group. COVID-19 impact on Surgical Training and Recovery Planning (COVID-STAR) - A cross-sectional observational study. *Int J Surg.* 2021;88:105903. doi: 10.1016/j.ijisu.2021.105903.
6. British Medical Association. Consultant workforce shortages and solutions: now and in the future. [Internet]. London: British Medical Association; 2020. (cited 2021 Dec 11). Available from: <https://www.bma.org.uk/media/3430/bma-consultants-retention-paper.pdf>.
7. Department of Health. Publication of the quarterly Northern Ireland waiting times statistics - Position at 31 march 2020. [Internet]. Belfast Department of Health; 2020. [cited 2022 Feb 12]. Available from: <https://www.health-ni.gov.uk/news/publication-quarterly-northern-ireland-waiting-times-statistics-position-31-march-2020>.
8. Department of Health. Health and wellbeing 2026: delivery together. [Internet]. Belfast: Department of Health; 2017. [cited 2022 Jan 28]. Available from: <https://www.health-ni.gov.uk/sites/default/files/publications/health/health-and-wellbeing-2026-delivering-together.pdf>.
9. Department of Health. Elective care plan: transformation and reform of elective care services. Belfast: Department of Health; 2018. [cited 2022 Jun 4]. Available from:
10. <https://www.health-ni.gov.uk/publications/elective-care-plan-transformation-and-reform-elective-care-services>
11. Levy N, Selwyn DA, Lobo DN. Turning 'waiting lists' for elective surgery into 'preparation lists'. *Br J Anaesth.* 2021;126(1):1-5.
12. Stevens S, Pritchard A. Next steps on NHS Response to COVID-19. [Internet]. London: NHS England 2020 [cited 2021 Dec 11]. Available from: <https://www.england.nhs.uk/coronavirus/publication/next-steps-on-nhs-response-to-covid-19-letter-from-simon-stevens-and-amanda-pritchard/>
13. RETAINER Collaborative Group; Irish Surgical Research Collaborative. International snapshot study exploring the impact of COVID-19 on elective inguinal hernia repair. *Br J Surg.* 2021;108(9):e301-e1173. doi: 10.1093/bjs/znab198.
14. Köckerling F, Köckerling D, Schug-Pass C.. Elective hernia surgery cancellation due to the COVID-19 pandemic. *Hernia.* 2020;24(5):1143–5.
15. British Medical Association. The hidden impact of COVID-19 on patient care in the NHS in England. [Internet]. London: British Medical Association; 2020. [cited 2021 Dec 11]. Available from: https://www.bma.org.uk/media/2841/the-hidden-impact-of-covid_web-pdf.pdf
16. Solodkyy A, Feretis M, Fedotovs A, Di Franco F, Gergely S, Harris AM. Elective "True Day Case" Laparoscopic inguinal hernia repair in a district general hospital: lessons learned from 1000 consecutive cases. *Minim Invasive Surg.* 2018;2018:7123754. doi: 10.1155/2018/7123754.
17. HerniaSurge Group. International guidelines for groin hernia



management. *Hernia* 2018;22(1):1–165 doi: 10.1007/s10029-017-1668-x.

18. Clements JM, Burke JR, Hope C, Nally DM, Doleman B, Giwa L, *et al.* The quantitative impact of COVID-19 on surgical training in the United Kingdom. *BJS Open*. 2021;5(3):zrab051. doi: 10.1093/bjsopen/zrab051.
19. Lund J, Sadler P, McLarty E. The effect of COVID-19 on surgical training. *Surgery (Oxf)*. 2021;39(12):829-33.
20. COPMeD. Conference of Postgraduate Medical Deans (UK). Implementing ARCP Outcomes 10.1 and 10.2 during COVID-19. [Internet]. London: RCoA Royal College of Anaesthetists; 2020. [Cited 2021 Nov 11]. Available from: <https://www.rcoa.ac.uk/media/14006>.
21. Coleman JR, Abdelsattar JM, Glocker RJ; RAS-ACS COVID-19 Task Force. COVID-19 pandemic and the lived experience of surgical residents, fellows, and early-career surgeons in the American College of Surgeons. *J Am Coll Surg*. 2021;232(2):119–135.e20. doi:10.1016/j.jamcollsurg.2020.09.026.
22. Hope C, Reilly JJ, Griffiths G, Lund J, Humes D.. The impact of COVID-19 on surgical training: a systematic review. *Tech Coloproctol*. 2021;25(5):505–20
23. Aziz H, James T, Remulla D, Sher L, Genyk YS, Sullivan ME. *et al.* Effect of COVID-19 on surgical training across the United States: a national survey of general surgery residents. *J Surg Educ*. 2021;78(2): 431-39.
24. English W, Vulliamy P, Banerjee S, Arya S. Surgical training during the COVID-19 pandemic – the cloud with a silver lining? *Br J Surg*. 2020;107(9):e343–e344. doi:10.1002/bjs.11801.
25. The Intercollegiate Surgical Curriculum [ISCP]. Educating surgeons of the future. General Surgery. [Internet]. London: Joint Commission on Surgical Training [JCST];2013. [cited 2021 Nov 11]. Available from: https://www.iscp.ac.uk/static/public/syllabus/syllabus_gs_2016.pdf

