

COMMENTARY

Conducting A Physical Postgraduate Orthopaedic Exit Examination During COVID-19 Pandemic

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ABSTRACT

During the coronavirus disease 2019 (COVID-19) pandemic, the worldwide medical education system was affected tremendously due to the suspension of clinical activities and lockdown to prevent the spread of the disease. The delivery of clinical training was modified to alternative methods including online classrooms, recorded video, use of simulated patients and hybrid teaching. Several institutions worldwide chose to postpone their scheduled examination, which requires physical attendance or opted for virtual examination. Malaysian centralised postgraduate orthopaedic exit examination was postponed in 2020 and later recommenced in 2021 with three different centres across the country: north, east and central Malaysia. This article describes the preparation and challenges faced in conducting a face-to-face clinical exit examination for postgraduate orthopaedic candidates in Universiti Putra Malaysia in May 2021, during the Conditional Movement Control Order phase. The examination was a success, and no outbreak of COVID-19 was reported from the event.

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INTRODUCTION

A severe acute respiratory illness identified as coronavirus disease 2019 (COVID-19) was first reported in Wuhan, China, in November 2019, which was later declared a global pandemic disease by the World Health Organisation on 11 March 2020, claiming millions of deaths globally. This disease is caused by the SARS-CoV-2 virus, which spreads rapidly through respiratory droplets and air inhalation between infected individuals and their close contacts (1). Malaysia reported its very first case on 25 January 2020 where three imported cases were confirmed in Johor (2).

Orthopaedic postgraduate training in Malaysia was greatly affected in 2020 and 2021. Several faculty members and trainees were called to serve as frontline healthcare providers. Clinical training was modified and delivered via a virtual platform (3–6). Bedside clinical teaching, clinic sessions and elective surgery were suspended and replaced with clinical case discussions using recorded video, clinical and radiographic pictures

or simulated patients (3,4,6,7). The scheduled biannual orthopaedic postgraduate exit examination 2020 in Malaysia was postponed due to the escalating numbers of individuals affected by COVID-19 and death toll that led to a strict Movement Control Order (MCO) in Malaysia known as 'lockdown', on 18 March 2020. By early 2021, most medical institutions had started back their educational activities under strict standard operation protocol. Some institutions worldwide have initiated clinical examinations virtually (4,8) or physically (9). Malaysian Orthopaedic Specialty Committee Board had decided to proceed with standard face-to-face orthopaedic postgraduate exit examination that year. This article highlights our approach and strategies in conducting this examination at Universiti Putra Malaysia on 3–6 May 2021 for theory session and 18–20 May 2021 for clinical session, during the Conditional Movement Control Order (CMCO) phase, also known as 'partial lockdown'.

CONVENTIONAL WAY OF CONDUCTING POSTGRADUATE ORTHOPAEDIC EXAMINATION IN MALAYSIA

To become an eligible orthopaedic surgeon in Malaysia, one must obtain a Master of Orthopaedic Surgery awarded by one of the local universities recognised

by the National Orthopaedic Specialty Committee (OSC). This is a 4-year course that consists of intensive clinical training programme at accredited government and university hospitals. At the end of the programme, candidates are required to take an exit examination known as the OSC exit (Part 2) Examination to be qualified as orthopaedic surgeons in Malaysia. This examination is crucial to assess a candidate's competency to be a qualified orthopaedic surgeon.

OSC member universities have scheduled rotations to host the examination. These universities are Universiti Kebangsaan Malaysia (UKM), Universiti Malaya (UM), Universiti Sains Malaysia (USM), Universiti Islam Antarabangsa (UIA), Universiti Putra Malaysia (UPM) and Universiti Malaysia Sarawak (UNIMAS). The examination is held biannually, with the April/May session being a major examination and the October/November session for repeaters. On average, the number of candidates is approximately 60–70 for the April/May session and 20–30 for the October/November session. OSC exit examination format consists of three components: (1) written examination, (2) viva voce and Objective Structured Clinical Examination (OSCE) and (3) clinical examination. In short, written examination is also known as Part 1 examination, whereas viva voce, OSCE and clinical cases are grouped as Part 2 examination. The written examination includes 100 Best Answer Questions (BAQ) and two Multiple Essay Questions (MEQ) papers. Clinical examination comprises two long cases and three short cases. In general, Parts 1 and 2 will take 2 and 4 days to complete respectively with 2 weeks interval in between those sessions.

Written examination and OSCE are conducted in the examination hall. In OSCE, there are 20 questions in separate stations, with questions on clinical and radiological images, clinical apparatus and result interpretation. Candidates are given a stipulated time to complete each station.

Viva voce and clinical examination are conducted in the examination ward. Viva voce consists of two stations that cover principles of orthopaedic and operative orthopaedic, respectively. Thirty minutes were allocated for each station. The candidates were given 30 minutes to take the long case examination, which included history taking, physical examination and discussion. Candidates were given 30 minutes to examine three cases in the short case examination (Figure 1).

CONDUCTING WRITTEN AND CLINICAL EXAMINATION IN UPM, MAY 2021

UPM is a new member of OSC and had just introduced Master of Surgery (Orthopaedic) in 2015. UPM hosted the OSC entry examination once in 2019, and this was its first experience hosting the OSC exit examination at the newly launched Hospital Pengajar Universiti Putra

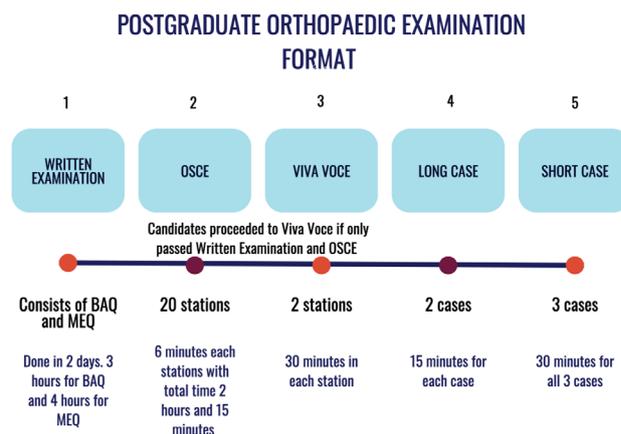


Figure 1: Postgraduate Orthopaedic Exit Examination format

Malaysia (Universiti Putra Malaysia Teaching Hospital). This examination was conducted in a conventional physical attendance face-to-face method that involved a total of 45 candidates from UM, UKM, UPM and UNIMAS, 65 examiners, 83 patients, 15 academic staff, 9 observers, 17 invigilators, 10 facilitators and 10 supporting staffs over 7 days. The total number of people involved was 254. Examination for candidates from the east coast, namely USM and UIA was conducted in UIA. The first part of the examination was conducted on 3–6 May 2021, and the second part was organised 2 weeks later on 18–20 May 2021.

Preparation for this examination includes obtaining permission from different authorities to conduct physical examination, restructuring the examination flow and preparing the COVID-19 screening area and isolation bay for suspected participants with COVID-19. More quarantine rooms for candidates were prepared to allow safe distancing.

Recruitment of patients started 4 months before examination with combinations of new and existing patients from orthopaedic outpatient clinics and wards. Twelve patients from UM and UKM were selected from Paediatric Orthopaedic and Musculoskeletal Oncology units. A total of 101 patients were listed and categorised before it was re-examined by a senior member of the OSC Board. Eighty-three patients were selected and agreed to participate.

Examiners were selected from various institutions according to their experience. Shortly before the clinical examination, six out of 35 examiners requested withdrawal due to personal reasons and were replaced by other examiners.

WRITTEN EXAMINATION

The written examination was conducted in two examination halls. All participants were required to

submit COVID-19 Risk Declaration Form before the examination. They were subjected to COVID-19 PCR testing 48 hours before examination if they experienced influenza-like illness, with history of exposure to patients infected with COVID-19 or travelled from a red zone (Enhanced Movement Control Order, EMCO).

At the venue, candidates were required to scan for the MySejahtera QR code, check body temperature, wear a face mask at all times and maintain 1-metre safe distancing. MySejahtera is an application developed by the Malaysian Government to assist in managing the COVID-19 outbreaks in Malaysia. It displays each individual's health status in relation to COVID-19 and reports from which area they are travelling from, which is either a low- or high-risk area. Candidates who fulfilled the requirements stated were allowed to proceed with the examination. The examination duration was 3 hours for BAQ and 2 hours for each MEQ paper.

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Twenty-two examination desks were arranged in a circle in each examination hall at a 1-metre distance. A total of 20 OSCE questions were set on each desk with two empty desks as rest stations. The distance between desks was sufficient for COVID-19 safe distancing as well as to avoid exam misconduct. Candidates were given 6 minutes to answer the questions, placed the answer sheets in an envelope and guided to the next station. The examination took 2 hours and 15 minutes. At each station, candidates were required to use hand sanitiser.

VIVA VOCE

Viva voce evaluated the candidate's knowledge of orthopaedic operatives and principles, led by three senior examiners and an observer (junior examiner). Examiners and candidates were positioned 1 metre apart and maintained contactless throughout the examination. Candidates sanitised their hands each time during arrival to and departure from the stations.

CLINICAL EXAMINATION

This is an interactive session between candidates, patients and examiners. Patients were recruited during their treatment visits in hospital and later confirmed their participation via phone calls or text messages. Patients were informed regarding COVID-19 protocol and safety before the event. A letter of permission to enter the premises (HPUPM) was sent to all patients to assist them in travelling during EMCO and CMCO. EMCO restrictions in certain areas have prevented some patients from travelling to the venue and hence multiple replacements of patients were necessary. Three patients were unfortunately infected with COVID-19 and withdrew from examination. Forty-one patients participated in long case sessions, and 42 patients in

short case sessions)

At the venue, all patients and accompanying persons (for paediatric or elderly patients) were screened for body temperature. MySejahtera QR code scanning was compulsory. Patients were registered and their COVID-19 Health Declaration Forms were checked. All of them underwent rapid test kit antigen for COVID-19. The results were negative. Examiners, candidates and host members were not required to test for COVID-19, except for those who travelled from Sarawak (by air transport). Candidates attending clinical sessions were again required to provide a COVID-19 Risk Declaration Form 7 days before examination. All participants wore face masks, face shields and plastic gowns at all times and were advised to maintain 1-metre safe distancing and regular hand sanitising routines (Figure 2).



Figure 2: (a) A candidate with protective equipment. (b) The atmosphere in one of the cubicles showing safe distancing between individuals

COVID-19 Screening Process for Patients

A total of 98 patients and their accompanying persons were screened for COVID-19 using an RTK Antigen nasal swab test kit for the 2-day clinical examination. The test was conducted on the morning of the examination at a temporary COVID-19 screening tent (Figure 3). The entire process took 180 minutes from 7:00 a.m. to 8:30 a.m. All reported negative results. The clinical examination started at 9:00 a.m. as scheduled. The flow process of screening patients and registering candidates and examiners is illustrated in Figure 4.

Examination Flow

In the morning, 44 candidates who passed the written examination were briefed regarding clinical examination flow and COVID-19 protocol. Examiners were divided into nine groups, with three examiners in each group. Patients were allocated into nine four-bedded open cubicles. Extra patients were placed in the daycare ward as reserves. Each group of examiners were stationed in one allocated cubicle. Examiners were given time to assess the patients and change to other reserve cases if needed. They could only use cases from two cubicles to minimise unnecessary physical contact with other groups.



Figure 3: COVID-19 Screening Area and staffs involved in screening the patients prior to examination

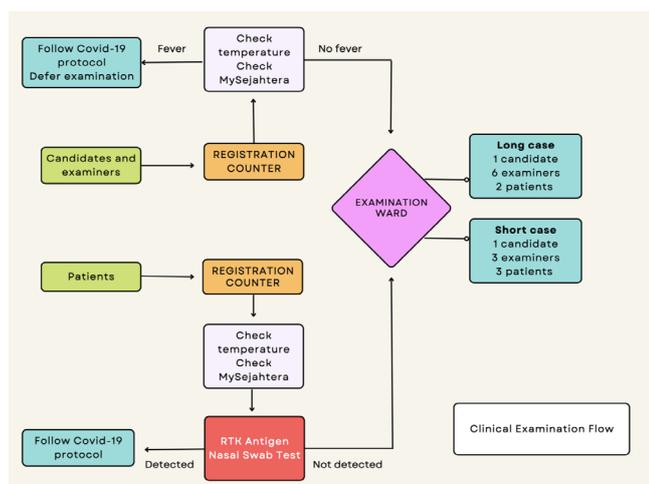


Figure 4: Flowchart for clinical examination

For long cases, candidates were given 15 minutes for history taking and physical examination and 15 minutes for discussion. They were ushered to the next station with a different group of examiners and repeated the same for the second case. Conversely, each candidate continues with one group of examiners for all three short cases. For short cases, candidates were given 10 minutes to perform physical examination and discussion on each patient. Candidates were subsequently placed in quarantine rooms. Each room was arranged according to safe personal distancing as per COVID-19 protocol. Candidates’ movements along the hallways and corridors were arranged in a one-way direction to avoid overcrowding.

DISCUSSION

Exit examination is the final assessment and imperative tool to evaluate a trainee’s orthopaedic knowledge and skill. This examination aims to uphold the exceptional quality of orthopaedic surgeons to practice independently, safely and ethically at their best capabilities. This examination is ideally to be conducted in a controlled environment to evaluate candidates’ knowledge, communication skills, confidence and professionalism in handling clinical cases.

A standard physical exit examination recreates an actual clinical scenario for examiners to evaluate the candidate’s ability to lead in history taking, perform correct physical examination technique and discuss patient management professionally. This key feature is irreplaceable by virtual or online examinations.

The standard exit examination format prior to the COVID-19 pandemic was adhered to maintain the standard of graduating orthopaedic surgeons. Standard operation protocols for COVID-19 were observed at all times. Performing COVID-19 RTK Antigen nasal swab tests on all patients and accompanying persons well-timed before the scheduled examination was challenging. Workforce and coordination were crucial to ensure these 98 tests were performed swiftly. Additional costs on test kits were inevitable during the pandemic.

Managing patient recruitment and examiners line-up was challenging as well. The list of examiners and patients was finalised 2 days before the clinical examination due to health concerns and personal issues. Replacement of patients and examiners during CMCO was difficult compared to pre-COVID-19 days. Travel restrictions, health issues, concerns about contracting or testing positive for COVID-19 and incomplete COVID-19 vaccination were the main barriers for them to participate in this examination. Due to the use of face masks and shields at a 1-metre distance, candidates and examiners were forced to speak louder and that led to noise nuisance between adjacent cubicles. Other challenges include venue preparation that requires open spaces with adequate ventilation, obtaining official letters from authorities for all involved individuals to cross districts and states, maintaining an adequate number and a good variation of cases for clinical examination and streamlining the examination flow. Fortunately, there were no positive cases or outbreaks reported from this event.

Positive feedback was received from examiners and candidates. Comments were given on the excellent number and variety of clinical cases, seamless and timely examination flow, neat and clean spaces and pleasant food. Performing COVID-19 RTK Antigen nasal swab tests on the examination day was a good strategy to reduce the risk of new outbreaks.

CONCLUSION

Conducting a physical postgraduate orthopaedic exit examination during the COVID-19 pandemic was an incredibly challenging task. Meticulous planning and preparation are critical to ensure that the examination standard is accomplished and organised in a safe environment. Performing COVID-19 RTK nasal swab tests on patients and accompanying persons was costly yet effective in lowering the risk of spreading COVID-19.

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