



Safe surgical pathway -A Retrospective study on scoliosis surgery during the Covid-19 pandemic from a South Indian state on 69 patients from a single centre

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Abstract

The COVID-19 pandemic stumbles the whole healthcare system throughout the nation. In the spine surgery field, it stocks the list of elective cases. The elective cases in spine surgery piled up, and scoliosis corrective surgery which happens in children and adolescents age was the top. By attaching to a proper protocol derived from our institution and the availability of surgeons, nursing staff, and implants. It is still possible to overcome the transmission and carry safe spine surgery.

Aim And Objectives: To assess the safe spinal surgery and viral transmission during the pandemic and also the postoperative outcomes following the scoliosis surgery

Material And Methods: A retrospective study was done between March 2020 to March 2022. A total of 69 patients had undergone scoliosis corrective surgery. All the patients were admitted to a separate ward in our hospital with COVID-19 negative RTPCR reports. All the surgery is done by a senior spine surgeon by following the proper protocol. The average time duration of surgery was 4.5 hours. The average stay in hospital was 5 days. All are followed for one month for COVID-19 transmission and post-surgical events.

Results: 69 patients had posterior scoliosis correction. No transmission of COVID during the stay in the hospital and up to for one month. No surgical complications were noted.

Discussion: The impact of COVID-19 in the field of spine surgery on elective cases was significant. Elective-safe spine surgery can be possible by strictly adhering to the framed protocol. This can be taken as a way to challenge future pandemics. Thereby can reduce the burden of the piled list in the field of spine surgery.

Introduction

The COVID-19 pandemic has affected the entire healthcare system. In our country a southern state, Kerala reported the first confirmed case on 30th January 2020[1,2] Our nation went into lockdown from March 31 to May 31 in four phases and unlocked in 22 phases in a step-wise manner depending on the COVID-19 cases from June 2020 to March 2022 [3]. It has significantly impacted the surgical field by creating a huge backlog of surgical cases. In the Spine surgery field pile up of scoliosis cases has created a strain for spine surgeons [4,5]. Scoliosis is the coronal deformity affecting the spine mostly seen in the adolescent age group. Posterior scoliosis correction is the procedure done for treating scoliosis. Even then the literature clarifies the protocol or framework to resume elective surgery during the pandemic but there is a lacuna for

the structured protocol, especially for scoliosis surgery [6]. This study aims to assess the safe surgical pathway for scoliosis surgery during the COVID-19 pandemic and also to analyze the outcome of those patients

Materials and Methods

It is a retrospective study done on 69 scoliosis patients from March 2020 to March 2022 who indicate scoliosis surgery with negative RTPCR and excludes all COVID-positive patients. We framed a safe surgical pathway for those patients who were undergoing surgery. It includes a team of surgeons and anesthetists. All the surgery was done by a single senior spine surgeon and team. Posterior scoliosis correction was done in all the cases and followed up until one year over video consultation. A total of 69 patients were included in the study (TABLE 1,2)

MALE	FEMALE
11	58

Table 1: Sex distribution of patients.

Adolescent idiopathic scoliosis	Early onset scoliosis	Adult scoliosis
54	3	12

Table 2: Type of scoliosis.

Safe Surgery Pathway:

Our hospital-framed protocol includes three phases preoperative, intraoperative, and postoperative. All three phases have equal significance. Our team includes a senior spine surgeon, a senior anesthetic, two scrub nurses, one anesthetic technician, and one operative theatre personnel. After the outpatient consult and decision for the surgery. They have given proper counseling on our safe surgery pathway and awareness of the COVID-19 pandemic. They have been advised to follow every step in our pathway for a successful outcome.

Preoperative phase:

Home isolation for both patient and their bystander for two weeks is very essential. We make sure that they should follow strict home isolation before the surgery. They will be out of our pathway when they breach the home isolation. All should undergo RTPCR tests before coming to the hospital within 72 hours before surgery. Only RTPCR-negative individuals were allowed to enter our pathway. In our hospital, they have been admitted to a separate ward where there won't be any COVID-19-positive patients, even the staff nurses recruited there won't be allowed to work in COVID wards. All the patients were admitted a day before surgery.

Protocols for surgeon and team:

The team must undergo an RTPCR test every 7 days in our hospital. If any of our teammates had contact with a COVID-19-positive patient they will be out of the safe surgery pathway automatically. In the operative theatre, all should be in personal protective equipment (PPE).

Intraoperative phase:

We have a separate dedicated operation theatre for our cases with a negative pressure setup. The path to the theatre is formed in such a way as to avoid contact with other patients. During the intubation, only the anesthetist and his technician were in the theatre to avoid aerosol transmission. During the intubation and extubation, there might be high chances of transmission through the aerosol, all other teammates were advised to stay out of the operative room. During the surgery, we minimized the use of electrocautery or high-speed drills.

Postoperative phase:

All the patients were stayed in hospital for 5 to 6 days post-surgery. Before discharge, they have to undergo RT-PCR. Follow-ups were done by video consultation at regular intervals to teach post-surgical care including physiotherapy. After the surgery, two weeks of isolation should be followed by the patient. Only the medications for post-surgery care were prescribed. At the end of one year, they were advised to visit the hospital to assess clinical and radiological outcomes.

Results:

All 69 patients were followed up for one year. They were followed up

at 3 weeks, 3 months, and 6 months through video consultation and one year at our outpatient department. In our OPD we assessed clinically and radiologically. All the patients had excellent clinical and radiological outcomes. There were no post-operative complications. There were no COVID transmissions till one month post-surgery.

Discussion:

The COVID-19 pandemic has created a significant impact on our healthcare system. It piled up the number of elective cases in the register. It produces a huge impact on both the surgical team and surgical patients [6]. Scoliosis patients waiting for the surgery have sustained mental morbidity because of delays in the procedure. Even surgeons will have significant strain in managing the huge waiting list of surgical cases. On reviewing the literature few studies derived certain protocols for managing or resuming elective cases during the COVID-19 pandemic [6,7,8]. Safe surgical pathway is our hospital's own framed protocol which includes three phases. Many studies have specific considerations on the surgical team, operative room, anesthesia team, post-operative room, and other hospital personnel [9]. Patient and their bystander have been properly educated on our safe surgical pathway and advised to follow it strictly for a successful outcome which includes proper hygiene, social distancing, and awareness of COVID-19 [10]. Home isolation for two weeks before surgery and RTPCR testing within 72 hours before surgery have reduced viral transmission. Even literature also recommends home isolation for 2 weeks for patients who are waiting for surgery [11]. Separate admitting units, wards, and separate staff in the hospital for managing the surgical needs of patients had helped in preventing the transmission of the virus. A study by Dhanjaya Sharma et al [6] concluded that the hospital's logistical capability to meet the demand is one of the parameters for the final decision-making for the surgery. The main step in the intraoperative phase is the intubation and extubation process where the more chance of aerosol spread, to prevent limited operative room personnel. Many studies also conclude that limited staff during the intubation and extubation procedure prevents viral transmission [12]. We limited the usage of electrocautery, and high-speed drills to prevent transmission, even then little literature states its unknown on aerosol transmission using those instruments during the surgery [13]. The usage of personal protective equipment was mandatory for all the staff inside the operating room. We used an intraoperative neuromonitoring device for all the cases with separate staff as it is important for our procedure to prevent neurological deficits. Post surgery our patients were in the hospital for four to five days and discharged. Few studies recommend reducing the duration of post-surgical patients to prevent the transmission [14]. After discharge the follow-up was done by video consultation. Many studies advised reducing the hospital follow-up post-discharge and recommend telemedicine (telephonic consultation or video consultation). The patients were advised on wound care, physiotherapy, and mobilization during the video consultation [15]. Our safe surgery pathway helped us to do elective scoliosis surgery and provide efficient care with negligible viral transmission during the COVID-19 pandemic.

Conclusion:

The COVID-19 pandemic stumbled the healthcare system and produced a significant impact on the surgical field. By following the effective safe surgery pathway surgery can be possible with successful outcomes. Preparedness is the initial step for tackling any disaster. A safe surgery pathway is one of the framed protocols that can be followed during the pandemic to prevent viral transmission which was evident in our study.

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