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## Elective shoulder surgery during the coronavirus disease 2019 pandemic in Germany: the patients' perspective



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**Background:** The coronavirus disease 2019 (COVID-19) pandemic has impeded the treatment of elective shoulder patients all over the world. Owing to the constraints in personnel and operation theater capacities, many patients who should undergo planned surgeries could not receive medical care. In our study, we examined the status quo of elective shoulder arthroscopy during the pandemic in Germany.

**Methods:** Using a nonprofit database, 40 shoulder units that performed the most arthroscopic rotator cuff repairs in Germany in 2018 were identified. Following a standardized protocol, the web pages of these units were screened, and their strategy for elective procedures during the COVID-19 pandemic was analyzed. Special emphasis was put on the use of new digital technologies.

**Results:** At the time of the study, no unit had stopped scheduling appointments for elective shoulder patients because of the pandemic. Almost all units (97.5%) offered explicit information about COVID-19 and their strategies toward it. The possibilities of visiting patients in shoulder units varied owing to local restrictions. Two units (5%) offered digital consultations.

**Conclusion:** At the time of the study, elective shoulder procedures could be planned and carried out at the largest centers in Germany. Local restrictions had a great influence on the organization of the procedure and hospital stay during the COVID-19 pandemic. Digital consultations were not available in every unit.

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The coronavirus disease 2019 (COVID-19) pandemic is a challenge for health professionals all over the world.<sup>1</sup> With more than 42 million cases worldwide as of October 25, 2020, it poses a substantial threat on the capacity of numerous global healthcare systems.<sup>5</sup> To provide as many critical care beds as possible, elective procedures of all specialties were postponed in spring 2020 in many countries.<sup>2</sup> As the pandemic stretches over more than a year without a definite end in sight and the number of infected individuals has peaked multiple times, many hospitals that depend on elective procedures are developing strategies to return to regular schedules while maintaining high safety standards for their patients. At the same time, many patients urge for surgery of the shoulder to lower their pain, improve range of motion, and restore their quality of life.

In this study, the management strategies of units performing elective shoulder surgeries during the “second wave” of the pandemic in German hospitals were analyzed. We hypothesized that there are differences in the management of elective patients in different regions and different hospital types.

### Patients and methods

#### Study design

Using a public nonprofit database, we identified 40 shoulder units and hospitals in Germany that performed the most arthroscopic rotator cuff repairs in 2018.<sup>7</sup> To do so, we used the hospital search function of the database and inserted the Operationen- und Prozeduren- Schlüssel code 5-814 (“reconstructive arthroscopic surgeries of tendons of the shoulder”).

Then, the names and addresses of the 40 hospitals with the highest number of the aforementioned procedures in 2018 were identified.

No institutional review board approval was required of this study.

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An examiner on fellowship level analyzed the web pages of these 40 units as per a standardized protocol. This protocol included the following items:

- hospital type (private, public, or church owned);
- localization of the hospital (east: Berlin, Brandenburg, Mecklenburg-Vorpommern, Saxony, Saxony-Anhalt, Thuringia; southeast: Bavaria; southwest: Baden-Württemberg, Rhineland-Palatinate, Saarland; northwest: North Rhine-Westphalia, Lower Saxony, Schleswig-Holstein, Bremen, Hamburg);
- possibility of scheduling an appointment for elective shoulder surgery;
- presence of a distinct COVID-19 information section for patients;
- recommendation of wearing a face mask and performing disinfection of hands on entering the hospital;
- performance of a body temperature measurement on all patients on entering the unit;
- possibility of receiving visitors while hospitalized; and
- use of digital patient consultations.

In the next step, we recorded the number of elective arthroscopies and urgent trauma cases in our shoulder unit (a large surgical center with 708 hospital beds and more than 30,000 hospitalizations each year) during October 2020 and compared them with those of the year before.

**Statistics**

The results of the aforementioned analysis were noted in an Excel database (Microsoft Excel 2016 for Mac; Microsoft, Redmond, WA, USA). For data analysis, IBM SPSS Statistics 22 (Statistical Package for the Social Sciences; IBM Corporation, Armonk, NY, USA) was used.

To evaluate the significance of regional differences concerning visitors, Mann-Whitney U-tests were used.

**Institutional review board approval**

As no patient-related data were collected and our study had a quality management character, no institutional review board approval was required as per the local ethics committee restrictions.

**Results**

Forty hospitals with the highest number of rotator cuff repairs carried out 44,782 of these procedures in 2018 (range 741-1794).

In the vast majority of hospitals (n = 39, 97.5%), it was possible to make an appointment to plan an elective arthroscopy of the shoulder. Only 1 hospital (2.5%) was unable to schedule appointments, which was associated with a hospital being shutdown and not directly associated with the COVID-19 pandemic. Of note, 1 hospital clearly stated that it was not allowed to treat patients from “risk areas” with a high incidence of COVID-19 infection.

Of all hospitals (n = 40), 3 (7.5%) were located in the east, 9 (22.5%) in the southeast, 8 (20%) in the southwest, and 20 (50%) in the northeast of Germany.

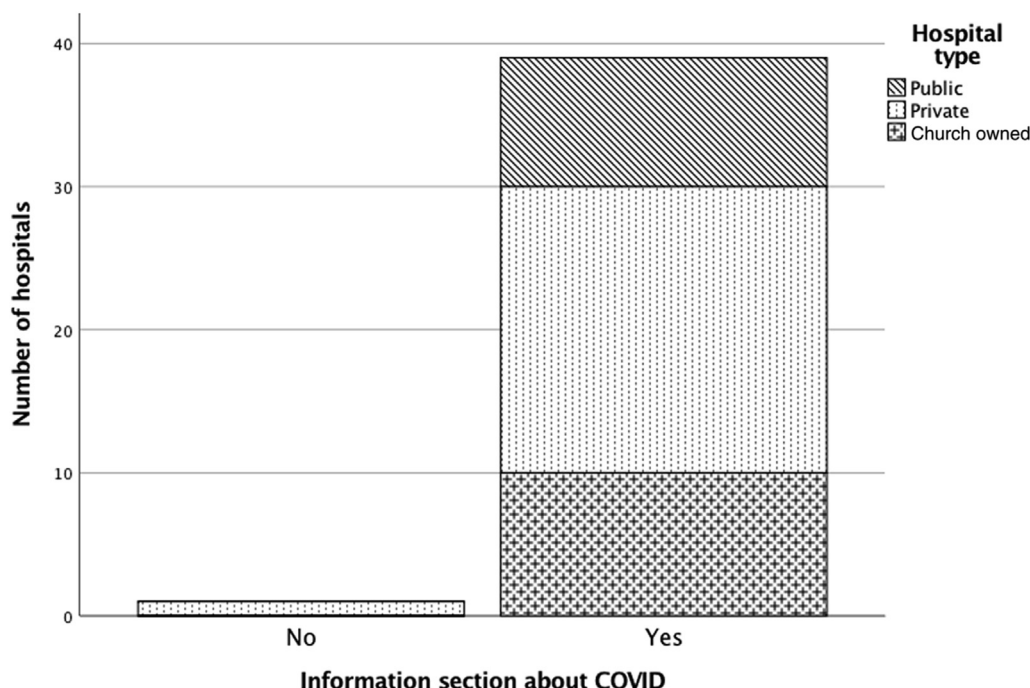
The ownership was mostly private with 21 units (52.5%), followed by 10 confessional hospitals (25%), and 9 (22.5%) public hospitals.

Only 1 hospital (2.5%) did not provide explicit information about the COVID-19 pandemic and how it is handled in the respective unit, while all other web pages have arranged special sections on their web pages (Fig. 1).

Twenty-eight web pages (70%) explicitly advised patients to wear a face mask, and in 19 cases (47.5%), disinfection of the hands was advised when entering the respective hospital.

Nine hospitals (22.5%) informed patients that a COVID-19 test has to be performed before surgery, and in 5 cases (12.5%), patients were warned about a measurement of body temperature on entering the hospital.

The possibility of visits varied from hospital to hospital. In total, 18 units (45%) did not allow any external visitors (Fig. 2). In 21 hospitals (52.5%), hospital visits were allowed under certain



**Figure 1** Number of hospitals providing explicit information about the COVID-19 pandemic including the hospital type. COVID-19, coronavirus disease 2019.

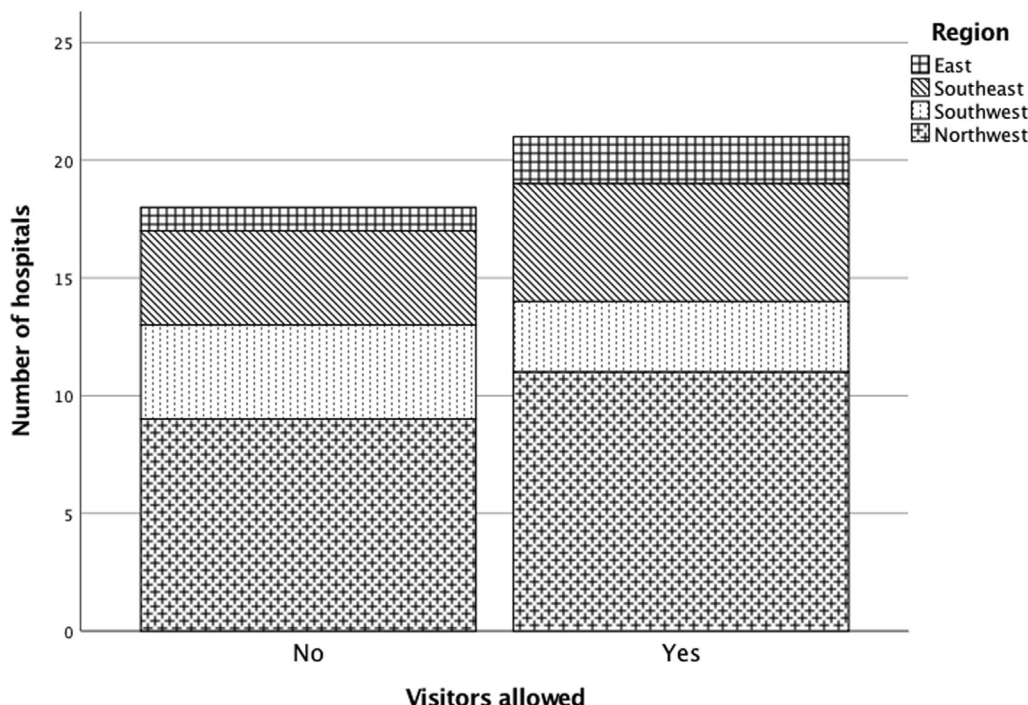


Figure 2 Allowance of visitors in the different shoulder units depending on the region in Germany.

restrictions. As mentioned previously, 1 hospital (2.5%) went out of business and did not provide information concerning visits. The permission of visits did not correlate with a certain region in Germany ( $P = .915$ ).

Of note, 2 hospitals (5%) offered digital consultations with orthopedic surgeons. Furthermore, 1 unit (2.5%) included a video that instructed patients to perform lung exercises to lower the risk of a severe clinical cause after an infection with the virus.

Concerning the development of patient numbers during the beginning of the second wave, our shoulder unit recorded an increase of urgent trauma cases (eg, fractures) of 50%, while elective shoulder arthroscopies decreased by 20%.

**Discussion**

This study has 3 major findings. First, the planning and execution of elective shoulder procedures was not hindered at the time of the study. This is good news from the patients' perspective because many of these procedures have a big impact on their quality of life. This development might have been caused by the fact that German hospitals were able to manage the first wave of the pandemic without challenging the capacities of intensive care units dramatically. Therefore, measurements taken at the beginning of the second wave were adjusted quite cautiously to hold up public life in Germany. As a consequence, we noted only a very slight reduction of elective procedures, which was mainly caused by the intelligible carefulness of older patients who chose to postpone their procedure out of their own free will. Second, restrictions and health regulations differ from city to city and not between the 4 big German regions. While some areas allow visitors under certain conditions, others strictly prohibit it. Third, the use of new technologies and alternative patient contact methods has not fully spread in Germany, yet. Only 2 units offered digital consultations. As the pandemic continues, this development might be accelerated.

Especially for elective surgeons, the COVID-19 pandemic has been a great challenge. The management of planned procedures

was handled differently in many countries. In some cases, elective specialists were used to ensure a fast and effective treatment of trauma cases and were thus unable to perform planned procedures.<sup>1</sup> As a consequence, this has led to a reduction of both operating room capacities and orthopedic personnel.<sup>4</sup> Furthermore, some units reported a shift toward the treatment of elderly patients, with a significant reduction of sports traumatology cases.<sup>3</sup>

On the other hand, the pandemic can also be a chance for improvement. Although only 2 units with digital consultations could be found in our study, modern technologies could be a great relief in the management of elective cases.<sup>6</sup> Even more, Ding et al<sup>2</sup> proposed different ways of improving the effectiveness of elective orthopedic procedures that can be used during and after the pandemic. The upcoming weeks and months will show if the current concepts and ideas will help to keep up the care for patients with planned procedures.

**Conclusion**

At the time of the study, elective shoulder procedures could be planned and carried out at the largest centers in Germany. Local restrictions had a great influence on the organization of the procedure and hospital stay during the COVID-19 pandemic. Only few hospitals offered digital consultations.

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