

The Effects of COVID-19 on Elective and Non-Elective Case Volumes in Orthopaedic Hand Fellowships

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INTRODUCTION: The sudden and drastic changes caused by the COVID-19 pandemic inevitably impacted surgeons in training. Although there are studies that describe the effects of the COVID-19 pandemic on resident and fellowship training among several surgical specialties, the trends in case volumes for orthopaedic hand surgery fellows specifically and the impact of COVID-19 on their fellowship training has not been previously described. The purpose of this study was to 1) describe the general trends in case volume for orthopaedic hand fellows from the 2015-2016 academic year to the 2021-2022 academic year and to 2) compare the impact of the COVID-19 pandemic on non-elective and elective case volumes and the effect on orthopaedic hand fellowship training.

METHODS:

Using the surgical case log data released by the ACGME, we performed a retrospective comparison of cross-sectional case volume data to describe trends in case volume and to explore the effects of the COVID-19 pandemic on non-elective and elective orthopaedic hand surgery procedure volume. ACGME case logs for orthopaedic hand surgery fellows for academic years 2015-2016 to 2021-2022 were analyzed. Data in the case logs were reported as average number of cases with standard deviations for each academic year. Key procedures in the reports were separated into non-elective procedures and elective procedures.

Percent change of the total case volume was compared for consecutive years from 2015-2016 to 2021-2022 academic years. Unpaired two sample t-tests were conducted to identify significant differences in case volume between consecutive years.

RESULTS:

There was a total of 910 orthopaedic hand fellows included in the analysis (Table I). The total number of fellowship programs ranged from 64 –70 depending on the year.

As shown in Figure I, there were no statistically significant differences in total orthopaedic hand surgery cases between consecutive years from the 2015-2016 to 2019-2020 academic years. However, there was a statistically significant increase of 6.6% in total hand surgery case volume from the 2019-2020 to 2020-2021 academic year. Comparing the 2020-2021 to 2021-2022 academic years, there was a statistically significant decrease of 6.8% in total hand surgery case volume.

Although not statistically significant, the total elective procedures as well as all of the individual elective procedure case volumes decreased from the 2018-2019 to 2019-2020 academic year (Table II). The only statistically significant decrease was in congenital hand cases. In contrast, the total non-elective procedures increased, and all of the individual non-elective procedures remained unchanged or increased from 2018-2019 to 2019-2020 as shown in Table II. From the 2019-2020 to 2020-2021 academic years, there was a statistically significant overall increase in mean total hand surgeries. There were statistically significant increases in both the total non-elective procedures and total elective procedures.

From 2020-2021 to 2021-2022, there was a statistically significant decrease in overall total hand surgeries, indicating a return to pre-COVID-19 pandemic case volumes. There was a statistically significant decrease in elective procedures, but non-elective case volume remained constant. There were no statistically significant differences in individual procedures. All results are shown in Table II. Figure II demonstrates the increase in overall mean case volume from the 2019-2020 to 2020-2021 academic year immediately preceding the start of the COVID-19 pandemic, followed by the return to pre-COVID-19 pandemic case volumes in the 2021-2022 academic year.

DISCUSSION AND CONCLUSION: There were no statistically significant differences in overall, elective, and non-elective procedure volumes due to the start of the COVID-19 pandemic; however, there was a general trend of increased non-elective case volume and decreased elective case volume. There was an overall increase in orthopaedic hand surgery case volume from the 2019-2020 to 2020-2021 academic year, indicating a rebound of procedure volume after the shut downs from the COVID-19 pandemic. There was a return to baseline of case volumes from 2020-2021 to 2021-2022. In conclusion, the COVID-19 pandemic did not have a significantly negative impact on orthopaedic hand fellowship training, likely due to the high volume of non-elective procedures performed by orthopaedic hand surgeons compared to other orthopaedic subspecialties. Further studies are needed to understand the effects of elective and non-elective case volumes in training and competency of orthopaedic hand surgery fellows.

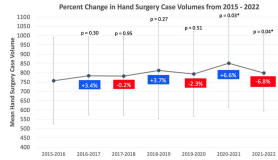


Figure 1. Percent Change in Mean Total Hand Surgery Case Volumes between Consecutive Years from the 2015-2016 to 2021-2022 Academic Year.

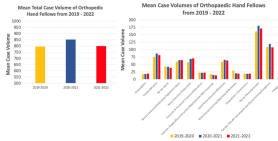


Figure 8. Mean Case Volumes for Academic Years 2019-2020 to 2021-2022.

Academic Year	Orthopaedic Hand Fellowship	
	Number of Programs	Number of Fellows
2015-2016	67	147
2016-2017	64	146
2017-2018	66	152
2018-2019	66	153
2019-2020	70	155
2020-2021	70	157
2021-2022	69	155
Total	452	910

Table 1. Orthopaedic Hand Fellows in ACGME-Accredited Fellowship Programs by Academic Year.

Site Name	Address	Number of Orthopaedic Hand Fellows				Total
		2019-2020	2020-2021	2021-2022	Total	
Orthopaedic Hand Fellowship						
Albany	1221-1243	449-1217	321-1212	1221-1218	891-1214	2,662
Armed Forces Health	8811-1211	821-1212	821-1212	821-1212	2,464	1,127
Case Western Reserve	8811-1211	821-1212	821-1212	821-1212	2,464	1,127
Case Western Reserve	8811-1211	821-1212	821-1212	821-1212	2,464	1,127
Cornell University	1211-1212	1211-1212	1211-1212	1211-1212	3,636	1,369
Duke University	1211-1212	1211-1212	1211-1212	1211-1212	3,636	1,369
Harvard Medical School	1211-1212	1211-1212	1211-1212	1211-1212	3,636	1,369
Johns Hopkins University	1211-1212	1211-1212	1211-1212	1211-1212	3,636	1,369
Northwestern University	1211-1212	1211-1212	1211-1212	1211-1212	3,636	1,369
Stanford University	1211-1212	1211-1212	1211-1212	1211-1212	3,636	1,369
University of California	1211-1212	1211-1212	1211-1212	1211-1212	3,636	1,369
University of Michigan	1211-1212	1211-1212	1211-1212	1211-1212	3,636	1,369
University of Texas	1211-1212	1211-1212	1211-1212	1211-1212	3,636	1,369
University of Washington	1211-1212	1211-1212	1211-1212	1211-1212	3,636	1,369
Yale University	1211-1212	1211-1212	1211-1212	1211-1212	3,636	1,369
Total						910

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