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Orthopedic Surgery Post COVID-19: An Opportunity for Innovation and Transformation

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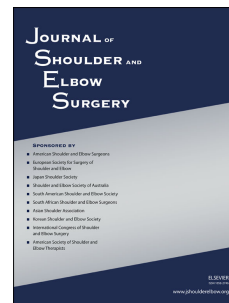
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Orthopedic Surgery Post COVID-19: An Opportunity for Innovation and Transformation

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1 From The Codman Shoulder Society:

2 As the scale of the coronavirus pandemic continues to grow, so does the amount of
3 uncertainty. This virus has upended life as we know it. And we, as surgeons, are not particularly
4 good at dealing with uncertainty.¹¹ While uncertainty is the norm in areas such as business
5 forecasting and stock price valuations, we feel uneasy when grappling with tough questions, such
6 as whether to cancel elective surgeries that aren't immediately life-threatening, but could result
7 in more serious complications down the line. Take, for instance, cholecystectomy to remove
8 symptomatic gallstones: failure to provide timely definitive treatment may increase the risk of
9 potentially life-threatening pancreatitis.¹² How about delaying timely repair of an acute rotator
10 cuff tear in a young patient, which likely could impact the outcome? It can be hard to draw the
11 line for what is critical, urgent, or non-urgent surgical care. Many questions remain unanswered.

12 But this crisis also presents value-maximizing opportunities for innovation in the delivery
13 of healthcare, with orthopedic surgery as a particular segment presenting opportunity for value
14 creation.

15 The current period of turbulence and fear may be a learning experience for providers,
16 industry, and patients. It may promote collaboration and creative thinking that could spur
17 changes in behavior. Such changes would potentially create value for all stakeholders.

18 Here, we would like to share our thoughts of some changes that may permanently impact
19 orthopedic surgery going forward. We group these changes into three broad categories: (1)
20 technology-aided replacement of in-person services with virtual ones, (2) a greater shift in
21 surgeries from hospitals to surgery centers, and (3) increased pressure to be cost-conscious and
22 to follow evidence-based medicine guidelines.

23 **1) Technology-aided replacement of in-person services with virtual ones:**

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24 **A) Telehealth and virtual visits.** This may represent perhaps the biggest example of
25 change associated with the coronavirus outbreak. Initial telehealth-related concerns regarding
26 insurance resistance, billing complexities, and privacy have evaporated as everyone is now
27 striving to keep providers and patients separate. We believe that long-lagging telehealth is here
28 to stay and will become the norm for orthopedic surgery. And there is early encouraging
29 evidence of its use for postoperative visits after rotator cuff repair.⁴ Even before this outbreak,
30 our group was doing a study in collaboration with Harvard Business School looking at the safety
31 and effectiveness of virtual visits during the 90-day post-acute care period following shoulder
32 surgery. It was evident that most patients who underwent rotator cuff repair as well as shoulder
33 arthroplasty simply did not need to return to the office during this period. In fact, we could easily
34 see their surgical wound and instruct them how to self-examine themselves to alert us if there
35 was an issue. Moreover, it was evident to us that this would free up office capacity, ultimately
36 affecting the patient experience and cost-effectiveness of clinic utilization overall.

37 **B) Decreased utilization of formal physical therapy.** There is little evidence that the
38 amount of formal physical therapy after orthopedic surgery correlates with an improved ultimate
39 recovery.⁸ We believe that home-based physical therapy surrogates through digital tools will
40 facilitate recovery for patients, increase compliance, and ultimately optimize costs and outcomes.
41 Virtual coaching with feedback and videos uploaded to media-sharing platforms such as
42 YouTube will reduce the need for as much hands-on physical therapy as we have come to
43 expect. Moreover, some companies are creating new technology inclusive of wearable devices
44 that interface with new computer monitoring programs to allow careful management of virtual
45 recovery with physical therapy. One such example is PT Genie (<https://ptgenie.com>; Beachwood,
46 Ohio, USA).

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47 **C) Online tools for postoperative recovery.** We and others are creating interactive
48 modules either through third parties or through our own institutions that will concierge patients
49 through their recovery. This may include apps and websites with interactive input that identify
50 patients who need to return to the office and see a provider. Examples of such companies include
51 myHealthTrack (<http://myhealthtrack.com>; San Diego, California, USA) and PostopQRS
52 (<https://www.postopqrs.com>; London, UK).

53 **D) Innovations in education: virtual and augmented reality training, digitalization**
54 **of meetings and lectures.** Given the cost of travel and the pressure to catch-up with all the
55 elective care that has been unmet after the pandemic, virtual educational alternatives will become
56 more widespread. Remote conferencing services companies such as Zoom (www.zoom.us; San
57 Jose, California, USA) have seen a sharp increase in their utilization and stock price during the
58 first few months of 2020. Many organizations such as the American Academy of Orthopaedic
59 Surgeons and American Shoulder and Elbow Surgeons may start offering more Continuing
60 Medical Education (CME) online virtual alternatives to meetings and travel. And educational
61 organizations such as Vumedi (www.vumedi.com; Oakland, California, USA) will also step up
62 by offering more educational opportunities with strategic collaborations with industry and
63 healthcare organizations. What is perhaps more exciting is the growing role that virtual and
64 augmented reality training will have on resident and fellow education.⁶ These technologies may
65 not only reduce the cost of education for the salesforce of device companies, but also improve
66 surgeon engagement and customer acquisition. Examples include virtual surgical planning
67 offered by many companies (e.g. BlueprintTM, Wright Medical, Memphis, Tennessee, USA;
68 VIPTM, Arthrex, Naples, Florida, USA) and virtual reality training programs (e.g. Precision OS,

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69 www.precisionostech.com, Vancouver, Canada; Osso VR, www.ossovr.com, Palo Alto,
70 California, USA).

71 **E) Simplification and enhanced access to appointments.** Patients may not want to wait
72 for several weeks or months to see their provider after the outbreak. Services such as UberDoc
73 (<https://uber-docs.com>; Boston, Massachusetts, USA) and Zocdoc (<https://www.zocdoc.com>;
74 New York City, New York, USA) that facilitate direct access to available providers at
75 transparent prices may gain momentum. Such networks source patients who have a need with
76 doctors who have capacity.

77 **2) A greater shift in surgeries from hospitals to surgery centers:** There is mounting evidence
78 that ambulatory surgery centers can maximize the value of most orthopedic surgery procedures,
79 including shoulder arthroplasty.^{1,2} Following the outbreak, there will be such a backlog of cases
80 in hospitals that many of them will get shifted to surgery centers. As surgeons get increasingly
81 comfortable performing more procedures such as shoulder (or knee and hip) arthroplasty in
82 surgery centers, they will want to keep doing them there. Patients are likely going to increasingly
83 prefer a surgery center—where there are no coronavirus patients—to a hospital as well.
84 Similarly, patients may be more motivated to go home after surgery, and avoid post-acute care
85 facilities to minimize the risk of contracting the virus.

86 **3) Increased pressure to be cost-conscious and to follow evidence-based guidelines:**

87 **A) Increased cost pressure within hospitals.** There will be more pressure to tightly
88 manage costs within hospitals. This will initially be driven by the coronavirus. For instance, the
89 stock prices of the two largest hospital chains in the United States, HCA and Tenet, declined by
90 roughly twice as much as the S&P 500 from the end of 2019 through March 27, 2020. The
91 \$100B that was allocated for hospitals as part of the \$2.2T stimulus bill that was signed on

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92 March 27, 2020 only represents one month's worth of revenue for hospitals, and so if the
93 coronavirus pandemic continues for more than a few months, it is unlikely to be sufficient to
94 stem the financial losses experienced by hospitals. Even now in the midst of the crisis, some
95 hospitals are already cutting back on the compensation of their physicians and staff. Once we are
96 through the coronavirus crisis, hospitals will likely continue to face financial pressure due to the
97 migration of profitable orthopedic cases from hospitals to surgery centers.

98 In order to survive economically, hospitals will need to adopt more cost-conscious and
99 effective practices. Identifying these practices will require the use of sophisticated clinical and
100 operational analytics, and advanced cost measurement methodologies such as Time-Driven
101 Activity-Based Costing.⁷ One of the first targets will be orthopedic implant costs, given the wide
102 variability and lack of transparency in their purchase prices across institutions.³

103 **B) Stricter adherence to evidence-based medicine.** Much of what we do in orthopedic
104 surgery is based more on anecdotal than empirical evidence. The considerable accumulation of
105 cases after the outbreak may prompt stricter adherence to evidence-based practice guidelines as
106 to who to prioritize for surgery. This will create an opportunity to decrease unwarranted variation
107 of orthopedic procedures that provide questionable value to certain patients (e.g. arthroscopic
108 partial meniscectomy for degenerative meniscal tears,¹⁰ subacromial decompression for shoulder
109 impingement)⁵. However, it is important to note that rigid approaches to care that don't allow for
110 any adaptation may pose barriers to innovation. Now actually may be a great time to innovate.
111 Either fail fast or allow the patients to reap the benefits. Creative thinking will be needed to
112 accelerate progress after this outbreak, and innovation is critical to creating future evidence.⁹

113 For too long, healthcare has been a nidus for inefficient use of time and resources. The
114 future may not permit this in the United States any longer. No one knows exactly what will come

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115 of the coronavirus pandemic, but this was our best stab at some of the unexpected ways that
116 orthopedic surgery may change for the good.

117

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