Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

anatomies, possibly explaining why systolic but not diastolic LVOT eccentricity is predictive. Moreover, annular structures are larger in systole (5), aggravating undersizing if diastolic dimensions are used for sizing. In addition, greater amounts of oversizing are used in SEV, ameliorating the effect of eccentricity. Conversely, malapposition caused by large or eccentric foci of calcium, especially in the fibrous NCC area, and the lower radial force of nitinol-based devices, might cause PVR.

Focus on these parameters for valve choice might increase risk of annular injury. Its incidence in our study was too low to find a possible "break-even" point. If the prosthesis anatomically more prone to PVR must be chosen, careful optimization of procedural parameters might balance the risk of both complications.

Limitations of the current study are lacking MDCT standardization, with only one cardiac phase available in a part of the population. Second, unlike the Sapien 3, the Evolut R does not feature a sealing skirt, hence sealing might be poorer, although we did not note significant differences in overall PVR incidence. Third, as predictive power was only moderate, the models need to be developed further to improve predictive performance.

In conclusion, we found different predictors of mild or more PVR in SEV and BEV. Our findings might aid in making an individualized choice of prosthesis type.

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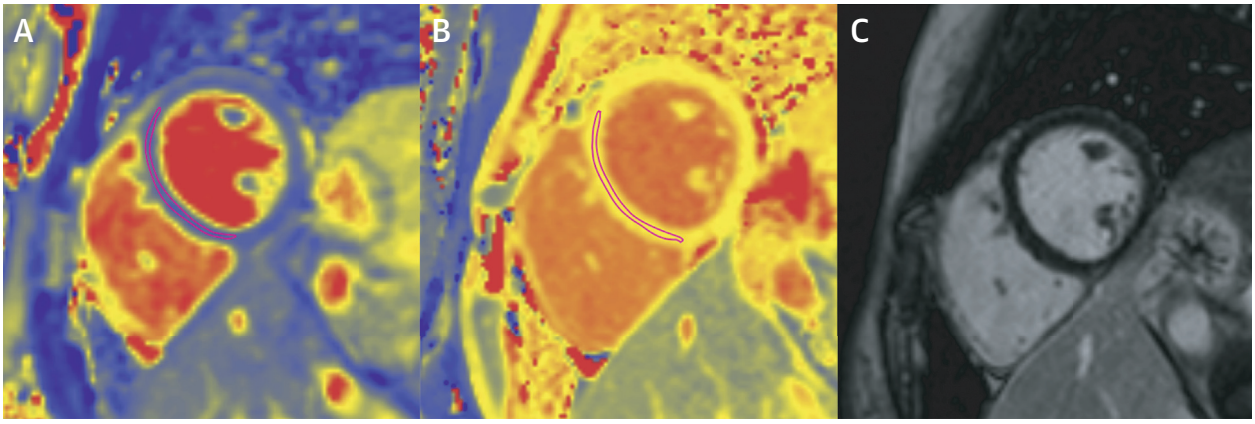
Cardiac Magnetic Resonance Findings in Patients Recovered From COVID-19

Initial Experiences in Elite Athletes

A new study by Puntmann et al. (1) investigating an unselected group of 100 middle-aged patients who had recently recovered from coronavirus disease-2019 (COVID-19) without cardiac symptoms, suggests that an overwhelming 78% of the cases had cardiovascular involvement detectable by cardiovascular magnetic resonance (CMR) imaging. However, it is unknown if there is a cardiac involvement in otherwise healthy young patients after their recovery from COVID-19, especially in elite athletes who gradually return to vigorous exercise after the infection. Our aim was to describe the CMR results of elite athletes recently recovered from COVID-19 with mild to moderate symptoms to provide further insight into this currently very relevant topic (**Figure 1**).

A total of 12 professional, elite (>10 training h/week, participating in mixed sports) athletes (10 females and 2 males; median age: 23 years; interquartile range [IQR]: 20 to 23 years) after recovering from severe acute respiratory syndrome coronavirus 2 infection diagnosed by polymerase chain reaction on swab test, were referred to our center for CMR examination before returning to high levels of athletic performance. Patients underwent laboratory testing on the day of the CMR examination (n = 11). CMR examinations were performed on a 1.5-T MR scanner (Magnetom Aera Siemens, Malvern, Pennsylvania). The protocol contained the following sequences: balanced steady-state free precession cine movie, T2-weighted spectral presaturation with inversion recovery, late gadolinium enhancement images, T1 mapping using long-T1 5(3)3 modified look

FIGURE 1 Example of an Athlete Recovered From Coronavirus Disease 2019



Cardiac magnetic resonance imaging showed normal T2 mapping (43 ms) **(A)** and T1 mapping (938 ms) **(B)** values and there was no pathological late gadolinium enhancement **(C)**.

locker inversion recovery, and T2 mapping using T2-prepared balanced steady-state free precession T2 mapping. Myocardial T1 and T2 relaxation times were measured conservatively in the septal midventricular myocardium using motion-corrected images. The study was approved by the Medical Research Council of Hungary. All participants gave their written informed consent for data collection and research purposes.

The median time from positive polymerase chain reaction to CMR was 17 (IQR: 17 to 19) days in 10 female athletes, and 67 and 90 days in 2 male athletes, respectively. Two athletes were asymptomatic during infection, 10 athletes had mild/moderate symptoms (e.g., taste and/or smell disturbance) (n = 7), weakness (n = 5), fever (n = 4), and sore throat and/or coughing (n = 4). Only 1 athlete had palpitation, and none had chest pain during infection. Nobody had significantly elevated C-reactive protein, N-terminal pro-B-type natriuretic protein, or high-sensitivity troponin T levels. None of the athletes showed myocardial or pericardial edema or pathological late gadolinium enhancement. We compared CMR parameters of the female athletes with age- and sex-matched healthy elite athletes (n = 15) and healthy controls (n = 15) using Kruskal-Wallis tests. There was no difference among the 3 groups (athletes recovered from COVID-19 vs. healthy athletes vs. healthy controls) regarding their left ventricular ejection fraction (58% [IQR: 55% to 61%] vs. 57% [IQR: 54% to 60%] vs. 60% [IQR: 58% to 63%]), and T2 mapping parameters (44 ms [IQR: 44 to 45 ms] vs. 44 ms [IQR: 44 to 45 ms] vs. 46 ms [IQR: 44 to 47 ms]). Left ventricular volumes (left ventricular end-diastolic volume index: 100 ml/m^2 [IQR: 95 to 110 ml/m^2] vs. 102 ml/m^2 [IQR: 98 to 109 ml/m^2] vs. 85 ml/m^2 [IQR: 80 to 89 ml/m^2]; $p < 0.001$) were elevated and T1 mapping (957 ms [IQR: 943 to 972 ms] vs. 957 ms [IQR: 951 to 976 ms] vs. 981 ms [IQR: 966 to 990 ms]; p = 0.002) values were lower in both groups of athletes compared to healthy controls, showing signs of cardiac remodeling in athletes, as described previously (2).

Our initial findings in a small group of elite athletes without comorbidities who recently recovered from COVID-19 showed no signs of cardiac involvement on CMR. Puntmann et al. (1) reported that CMR performed with median 71 days after COVID-19 diagnosis revealed cardiac involvement in 78% of the cases, with ongoing myocardial inflammation in 60% of patients. In their study, T1 mapping showed excellent discriminative value between COVID-19 patients and risk factor-matched controls, and a significant difference between home- and hospital-recovered patients. However, the publication by Huang et al. (3) found in a smaller sample of 26 COVID-19 patients with cardiac symptoms that patients with conventional CMR findings had higher T1 mapping compared to patients without conventional CMR findings and healthy controls, whereas there was no difference between the latter 2 groups.

As there are uncertainties regarding the cardiovascular consequences of COVID-19, our results do not support the use of routine CMR in troponin-

negative, asymptomatic, or mildly symptomatic athletes who recover from this illness.

Our study is limited by the following factors: this small group of patients was younger compared to groups in previous studies and had mild symptoms. Additionally, for 2 male athletes the time from illness to CMR imaging was longer.

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First Results of the Distal Radial Access Doppler Study

Transradial access (TRA) in the wrist reduces complications among patients undergoing percutaneous coronary procedures but is limited by a variable rate of radial artery occlusion (RAO) that precludes using the radial artery for future needs (1). Distal radial access (DRA) in the anatomical snuffbox or the dorsal hand is gaining interest as a safe alternative to conventional TRA (2) and has a sound rationale for reducing RAO (3).

We devised an ultrasound study to assess upstream and downstream effects of simulated RAO as the most adverse scenario of radial artery catheterization at the wrist and anatomical snuffbox level bilaterally. The study was approved by the institutional review board. Healthy volunteers were screened among nonmedical staff and patients' relatives for study participation. Overall, 100 subjects in apparent good health with no history of disease were included in the study upon expressing consent to freely participate. Baseline blood flow was imaged from pulse-wave Doppler sampling in the forearm radial artery and the radio-dorsal digital artery of the thumb (**Figure 1A**). Assessments were repeated after simulated RAO was effectively achieved with a typical radial hemostasis device maximally inflated for 5 min at the same positions used to obtain hemostasis after transradial catheterization at wrist level or at the anatomical snuffbox level. After a 15-min interval, measurements were repeated a third time after switching to the alternative simulated RAO configuration (**Figure 1A**). Flow measurements during simulated occlusions were expressed as a percentage (mean ± SD) of their respective baseline values and compared by repeated measure analysis of variance with Bonferroni correction for within-subject multiple comparisons in case of overall significance (2-sided $p < 0.05$). In the forearm radial artery, peak systolic velocity (PSV) showed a significant reduction during simulated RAO at wrist level (24 ± 13% of baseline; $p = 0.001$). However, PSV remained substantially unchanged during simulated RAO at the anatomical snuffbox level (93 ± 2% of baseline; $p = 0.65$) (**Figure 1B**). Similarly, PSV in the radio-dorsal digital artery of the thumb showed a significant reduction during simulated RAO at the wrist level (68 ± 8% of baseline; $p = 0.001$) and, in contrast, remained substantially unchanged during simulated RAO at the anatomical snuffbox level (95 ± 2% of baseline; $p = 0.71$) (**Figure 1B**).

The Distal Radial Access Doppler Study is the first experimental assessment of the physiological impact of RAO at the site of classic radial artery puncture and at the site of distal radial artery puncture in the anatomical snuffbox. Simulated occlusion of the distal radial artery does not appreciably affect blood flow in the forearm radial artery in contrast to the marked flow impairment observed during simulated occlusion at the wrist level. This worst case scenario suggests that DRA may be regarded as the single maximally effective intervention to preserve forearm radial artery patency. Intrinsic limitations of our model should