Letter to the Editor

SPINAL CORD STIMULATION DURING THE COVID-19 PANDEMIC: INSIGHTS FROM ITALY

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To the Editor

The COVID-19 pandemic, which emerged in 2019, had a significant impact on Italy, notably in the Lombardy region. Starting from March 8th, 2020, all non-urgent surgical procedures were suspended across the country. As a result, the implantation of spinal cord stimulators (SCS) was deemed non-essential and postponed during the pandemic to efficiently allocate the limited resources overwhelmed by COVID-19. Thus, the placement of new stimulators was delayed until after the acute phase of the pandemic had passed.

Data collected from three high-volume centers specializing in SCS (Como, Ravenna, and Varese), which typically conduct 40-80 implants annually, provided valuable insights concerning spinal neurostimulation procedures during this crisis. The outcomes of surgical interventions performed pre-pandemic and during the pandemic are summarized in Table I.

Table I. *Case studies of the clinical centers.*

Hospital	Varese	Como	Ravenna
SCS trial before COVID	4	28	6
SCS trial during COVID	0	0	6
SCS definitive	4	17	12
SCS removal for:	0	9	0
Infection		2	
Trail failure		2	
Trail not done		2	
No follow up		3	
No definitive fear of COVID-19		2	

These findings allow us to draw several conclusions. Notably, some researchers classify the elective replacement of an implantable pulse generator (IPG) as an urgent procedure or under priority category three (to be conducted within

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one to four weeks) (1). Therefore, this procedure can be regarded as fitting within these classifications. In the Varese hospital, a designated COVID-free peripheral facility was utilized for definitive implants; however, not all hospitals have such options. In contrast, the Ravenna Hospital conducted surgeries in a dedicated COVID-free surgical area, categorizing them as surgical emergencies.

One concern is that the transition period between the trial and the definitive implant may lead to infections (2), as evidenced by Como's postoperative infection rate, which rose to 7% (typically less than 4%). It is crucial to mitigate this risk to avoid burdening a healthcare system already stretched to its limits.

To reduce the chances of infection from extended trial periods, single-step implantation, where both the electrode and IPG are placed simultaneously, might be a viable option for patients who qualify for SCS (3). This method not only minimizes the need for multiple hospital visits and a second surgical intervention but also lowers the risk of exposure for both patients and healthcare personnel. However, single-step surgery may present challenges related to reimbursement processes.

With the restrictions imposed during the pandemic, follow-up appointments between SCS programmers and patients predominantly shifted to telephone or video consultations. Nevertheless, technological barriers, particularly for elderly patients, hindered their ability to engage effectively with new systems, as highlighted by the Como clinical center, where five patients failed to receive proper guidance during their trial due to inadequate execution.

While telemedicine has emerged as a supportive tool during the pandemic, it is essential to establish clear usage parameters and understand the medicolegal implications of such practices, especially concerning SCS (4). The integration of various programming options with different wave systems in the same IPG could serve as a foundation for reducing the need for in-person hospital follow-ups, as these settings can be adjusted remotely. The latest models of neurostimulators equipped with multiple programming capabilities, as implemented in our centers, can facilitate this goal.

In summary, it is advisable to avoid the complete closure of medical centers. Referring urgent cases to alternative facilities could help prevent the deterioration of health among patients awaiting implantation (5).

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