

Long-Term Preservation Transcranial Magnetic Stimulation for Major Depressive Disorder

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Repetitive transcranial magnetic stimulation (rTMS) is effective in the treatment of major depressive disorder (MDD),^{1–5} but benefits are often not durable.^{6,7} MDD is a chronic and recurrent disorder, and phases in its management should include acute, continuation, and maintenance.^{8,9} Preservation TMS is defined as rTMS treatments used to sustain a clinical response after a successful acute course. The optimal strategy for this treatment is not established. Unfortunately, in current practice the usual course of action after achieving remission is to discontinue treatment due to lack of reimbursement.

Research on preservation TMS is limited¹⁰ due to variable protocols, short durations, and lack of controls. Most rTMS research is concentrated on new indications and optimizing the acute course (location, coils, protocols) and not on maintaining benefits. More studies of preservation rTMS are critically needed.

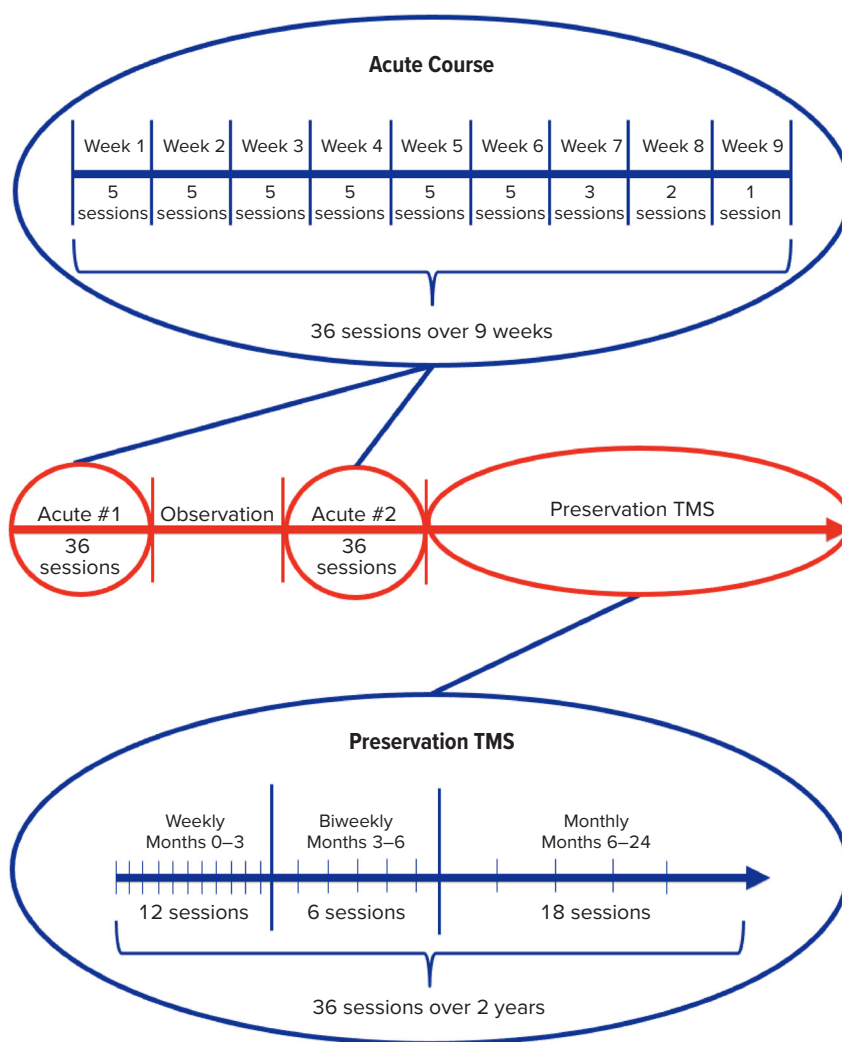
Here, we present 2 cases of treatment-resistant MDD in which remission was achieved with an acute course of rTMS, but symptoms recurred upon discontinuation. Implementing preservation TMS in these patients has led to a significant extension to their remission status. The methods and design of the study are illustrated in Figure 1.

Case 1

A 39-year-old woman with treatment-resistant MDD was prescribed an acute course of rTMS. At the end of the acute course, remission was achieved, rTMS was

Figure 1.

rTMS Was Conducted Using H1-Coil to LDLPFC Using the Following Parameters: 18-Hz Stimulation, 2-Second Trains, 20-Second Intertrain Interval, 55 Trains/Session/1,980 Pulses^a



^aThe Hamilton Depression Rating Scale¹¹ and 9-item Patient Health Questionnaire¹² were used before, during, and after treatment. Remission was defined as score <7 on the HDRS and <5 on the PHQ-9. Abbreviations: LDLPFC=left dorsolateral prefrontal cortex, rTMS=repertitive transcranial magnetic stimulation.

discontinued, and the patient was monitored for recurrence of depression. Three months after stopping rTMS, symptoms of depression returned. Upon recurrence, a second acute course of rTMS using the same parameters was prescribed, again leading to remission after finishing the full course. Following the second acute course, we prescribed preservation rTMS with the following schedule: once a week for 3 months, then every other week for 3 months, and monthly thereafter for 18 months, totaling 36 sessions over 2 years. The patient was still in remission from depressive symptoms at the end of the 2-year period, demonstrating significant prolongation of remission compared to the first treatment when no preservation TMS was done.

Case 2

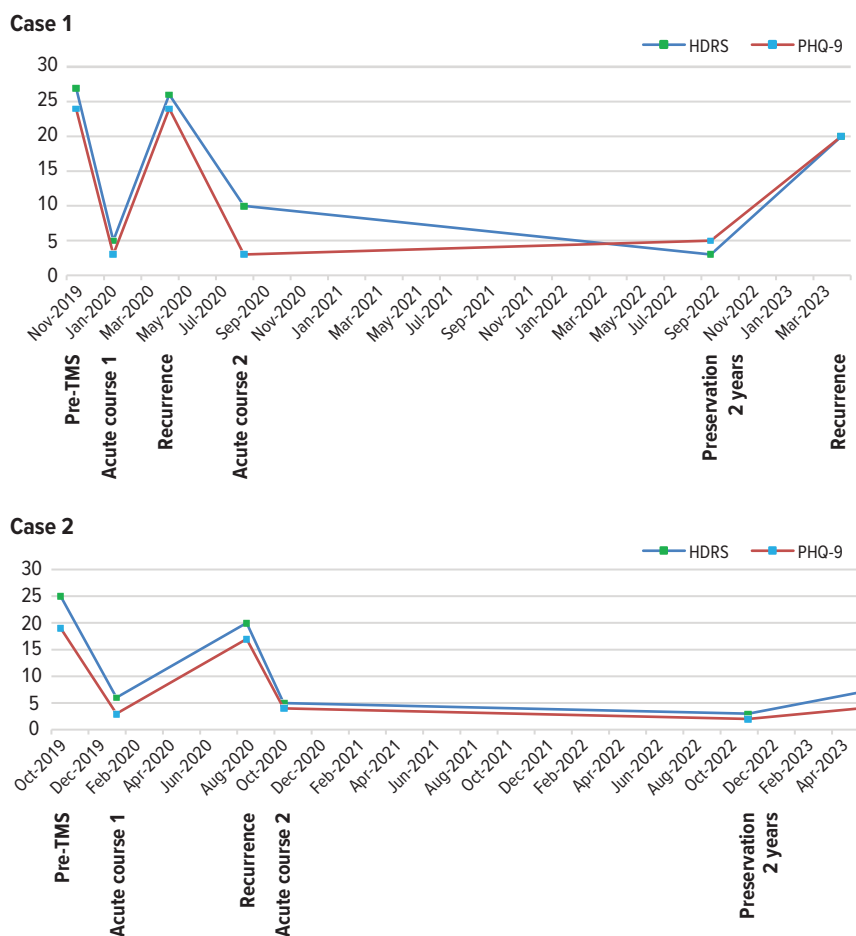
A 61-year-old man with treatment-resistant MDD was prescribed an acute course of rTMS using the same parameters as in case 1. Just like in case 1, at the end of the acute course, remission was achieved based on depression scale scores. rTMS was discontinued, and the patient was monitored. Depression recurred 6 months after the last rTMS session. He was treated with a second acute course of rTMS using the same parameters, which again led to remission. Similar to case 1, preservation TMS was initiated with the same protocol. At the end of the 2-year period, the patient remained in remission, again demonstrating sustained rTMS effect with preservation TMS.

Discussion

At the end of 2 years, patient 1 opted to discontinue rTMS, while patient 2 chose to continue. There was a recurrence of depression in case 1 in 6 months, whereas the patient from case 2 continued to maintain well-being with scores in the remission range (Figure 2).

Figure 2.

Course of Treatment With rTMS and Preservation TMS in 2 Patients With Treatment-Resistant Major Depressive Disorder and Their Respective Depression Scores



Abbreviations: HDRS = Hamilton Depression Rating Scale, PHQ-9 = 9-item Patient Health Questionnaire, rTMS = repetitive transcranial magnetic stimulation.

There were no medication changes throughout the treatment. Neither of the patients required rescue treatments during the 2-year maintenance. No safety issues were identified throughout the treatment.

These cases clearly demonstrate utility of preservation TMS in patients who achieve remission from an acute rTMS course. We provide a unique look at how remission can be preserved over a very long duration using scheduled treatments with progressively increasing intervals. Preservation TMS is cost-effective, as the number of sessions needed for 2 years is the same as that needed for every acute course.

Our cases illustrate the benefit of continuing treatment beyond 2 years to preserve clinical response.

More studies on preservation TMS are needed. Comparing rTMS discontinuation to preservation TMS within the same patient is advantageous, thus minimizing variables while analyzing the outcomes.

Article Information

Published Online: December 14, 2023.
<https://doi.org/10.4088/PCC.23cr03575>

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Prim Care Companion CNS Disord 2023;25(6):23cr03575

Submitted: June 6, 2023; accepted September 7, 2023.

To Cite: Faruqui Z, Mania I, Gigilashvili M, et al. Long-term preservation transcranial magnetic stimulation for major depressive disorder. *Prim Care Companion CNS Disord.* 2023;25(6):23cr03575.

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Relevant Financial Relationships: None.

Funding/Support: None.

Patient Consent: Consent was received from the patients to publish the cases, and information has been de-identified to protect anonymity.

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