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CORR Insights

CORR Insights®: Reliability and Validity of a Japanese-language and Culturally Adapted Version of the Musculoskeletal Tumor Society Scoring System for the Lower Extremity

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Where Are We Now?

In the past 30 years, limb-salvage surgery has progressed from a radical notion to the clear standard of care. Now, treatment considerations in orthopaedic oncology are not solely guided by survival and local recurrence, and so reliable outcomes tools, like that of the Musculoskeletal Tumor Society (MSTS) are critically important [1]. The MSTS score, first proposed in 1981 and last modified in 1993, allows for comparisons of different interventions and insight into functional expectations after surgery, and is in wide use around the world.

Iwata and colleagues formally assessed the performance of the MSTS score for the Japanese language and culture, confirmed the overall validity of this instrument, and identified two primary limitations: A ceiling effect for less aggressive tumors and poor representation of the mental state of the patient. These limitations bring into question the role of this historically important outcome measure in contemporary orthopaedic oncology.

When the MSTS scoring system was created, surgeons' and patients' expectations were much different. Limb salvage was relatively new, and reconstructive options were still in their infancy. Now our definition of success goes far beyond the basic functional goals of limb retention, pain minimization, and walking without assistive devices. More patients expect to return to a normal life after cancer treatment, and may be dissatisfied if the restoration of pretreatment level of function and return to recreational activities is not achieved. The ceiling effect alluded to by Iwata and colleagues—that 23% of their cohort received a perfect score—limits the ability of the MSTS score to distinguish between higher, and increasingly relevant, levels of function postoperatively.

The MSTS score is provider-entered, so it is not a "patient-reported outcome," a kind of metric that is increasingly preferred in healthcare

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research. On its inception, the six categories (pain, function, emotional acceptance, supports, walking ability, and gait) were selected based on their perceived importance by the surgeon, and not necessarily by patients. The scale attempts to address two subjects specific to the patient experience (pain and emotional acceptance), which is a difficult task to accomplish given that the provider is expected to accurately assess the thoughts and feelings of the patient. Therefore, it is not a surprise that the MSTS scoring system does not reflect psychosocial results with as much discrimination as it does the physical outcomes of treatment.

Where Do We Need To Go?

We now know that the MSTS scoring system is not perfect. It does a poor job of discriminating among the highest-functioning patients, and it may not accurately reflect the true mental and emotional experience of the patient. In light of this, three conclusions are possible. First, we could abandon this instrument entirely and design a new system that more accurately describes all issues important to physician and patient. Second, we could modify the MSTS score from its current form to better address its shortcomings. Finally, we could accept that there are limitations to the MSTS scoring system, but that these limitations do not make this a useless instrument.

How Do We Get There?

For many reasons, I advocate for keeping the MSTS scoring system in general use. We must not ignore the wealth of data that multiple decades of collection have provided—these historical reports will help in comparisons of current treatments and those yet to be implemented. In addition, this scoring system is already embedded in the lexicon of orthopaedic oncology, and it possesses an inherent meaning to practitioners that is not found in other measures of function and quality-of-life. Finally, the score is not burdensome to collect and it does not preclude the addition of other outcome instruments to measure additional aspects of function and quality-of-life in which the MSTS score is deficient. Modifying the MSTS score from its current form is a plausible compromise, however, a requirement should be that it is done in a manner in which the modified version could be easily and reliably compared to historic data. In addition, while modification of the instrument may address current deficiencies, it is likely that the new version will itself become inadequate when factors not included in the update become important in the future. There is little debate that the MSTS score reflects functional outcomes from the point of view of the surgeon, and does allow for discrimination between patients and procedures in all but the highest performers. Currently, outcome scores are routinely included in medical end result reporting, with novel measures commonly appearing, and in all likelihood there will always be tools to accurately reflect specific results that are important to physicians and patients. There is certainly the concern of additional time, aggravation, and cost as more data are collected, but many reliable measures (such as the Patient-Reported Outcomes Measurement Information System 10 Global Health or EuroQol five dimensions questionnaire for quality-of-life) provide valid and meaningful scores that are possible to gather with minimal burden to the system. Because the relative importance of specific outcomes are not immune to fluctuation over time, perhaps the "perfect" outcome measure is actually a combination of instruments that best reflect various components of each patient's condition.

Reference

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