Resorbable polyurethane scaffold reduces pain, improves knee function in patients with meniscal tears

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Video Abstract

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Abstract

New research reported in the American Journal of Sports Medicine suggests that a resorbable polyurethane implant could help patients recover from meniscal deficiency. Researchers showed that the implant was able to improve knee function and reduce pain in patients with partial meniscal defects. Meniscal lesions are the most common injury requiring orthopedic surgery today. In Europe, surgeons perform 400,000 such procedures each year—and in the US, more than a million. Removing the damaged tissue used to be the preferred method for treating meniscal tears. But given the risk of developing arthritis in the absence of this vital cushion, surgeons are now opting to repair or even regenerate the injured tissue. To determine how viable regeneration might be, researchers examined 155 patients fitted with a polyurethane scaffold designed to promote tissue regrowth. One hundred forty-one of these patients previously had part of their meniscus removed and suffered from post-surgical pain. In these patients, the scaffold was implanted during subsequent arthroscopic surgery. The remaining 14 patients received the implant after suffering an irreparable meniscal tear. Clinical outcomes were measured before implantation and at 2- and 5-year follow-ups using the visual analog scale for pain, the International Knee Documentation Committee subjective knee evaluation form, the Lysholm knee scale, and the Knee injury and Osteoarthritis Outcome Score. The team also used MRI to evaluate the knee joint, the meniscal implant, and the extent to which the meniscus stretched beyond its normal bounds. On average, pain symptoms improved among the 114 patients for whom clinical outcome data was available. Scores for pain across every scale used improved at a statistically significant rate during the follow-up period. Over that same period, MRI scans revealed the implanted scaffolds remained stable. At final follow-up, about 83% of the implants had survived among patients for whom such data was available. Twenty-three scaffold treatments failed, due either to breakage or conversion to alternative treatments, such as meniscal transplantation or arthroplasty. Some limitations of the study should be noted. Among the original 155 patients, information on clinical outcomes was available for only 114—and MRI data for only 56. Additionally, the follow-up period was limited to 5 years, no control group was used, and associated procedures were performed in 68 patients. Despite these drawbacks, the results likely reflect the daily practice of several expert centers. And the survival rates of the polyurethane scaffolds compare well with those published for meniscal allograft transplantation after total meniscus removal.