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Letter to the Editor

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From oysters to orthopedics: Bone-02 as a novel injectable fixation material

Sir,

Fractures represent a major global health burden, with an estimated 178 million new cases in 2019 — a 33% increase since 1990 — and annual costs exceeding $100 billion worldwide.[1,2] Conventional fixation methods, while effective, carry limitations including stress shielding, delayed remodeling, and the need for hardware removal.[3] Against this backdrop, bio-inspired adhesives have emerged as a long-sought alternative. In September 2025, researchers at Wenzhou Medical University reported Bone-02, a novel oyster-inspired injectable adhesive. Designed to cure in wet physiological conditions, Bone-02 is reported to achieve stable fixation within minutes, degrade over six months, and has reportedly been applied in over 150 clinical cases in China.[4,5] This new methodology can improve functional and psychological patient outcomes, save healthcare resources, and improve patient quality of life. This paper will detail the development, pattern of use, and expected future use of this gluing technique for repair of a fracture of a bone and how it may influence future care for fracture. previously considered unattainable in clinical practice has come to real life as a team of researchers at Sir Run Run Shaw Hospital, in Hangzhou have developed a glue named 'Bone-02'. Dr. Lin Xianfeng, an associate chief orthopedic surgeon at the hospital has claimed that this product is the next big step in orthopedic fracture fixation and promises to completely revolutionise how fracture repairs are dealt with.[4] Inspired from something so unique yet simple, oysters. Oysters, namely the molluscs' ability to stick underwater to surfaces that are traditionally difficult for adhesives to manage. Early reports suggest the injectable Bone-02's material enables fracture stabilization within minutes, biodegrades as bone heals, and has already been applied clinically in over 150 patients.[5] Institutional reports describe Bone-02 as a composite biomaterial composed of natural inorganic and organic bone-derived components in a proprietary ratio. Its design mimics oyster cement, enabling curing in wet physiological environments. Key reported properties include rapid setting, mechanical strength (over 181 kg), biodegradability, and preclinical safety as the developers report that preclinical safety testing has been performed, though details were not disclosed publicly.[5] One illustrative case highlighted its rapid application and favorable recovery timeline, a wrist fracture for which normally a procedure traditionally associated with extended operative time and recovery was cut down to just a 3 minute process, as a 2-3 cm incision was made after which the glue was administered leading to a total recovery within 3-6 months.[5] Although Bone-02 itself has not yet been described in peer-reviewed journals, analogous technologies provide supportive precedent. Despite compelling preliminary reports, several limitations must be addressed before Bone-02 can be considered for routine clinical practice, mechanistic clarity no published data describe its polymerization chemistry, degradation by-products, or osteoconductive potential. Independent validation, evidence is currently limited to institutional communications; peer-reviewed clinical outcomes are lacking. For long-term safety, questions remain regarding union rates, risk of non-union, inflammatory response and performance under load-bearing conditions. Regulatory pathway, multicenter controlled trials and international regulatory review will be essential for adoption.[5] Bone-02 represents one of the most compelling advances in fracture fixation to emerge in recent decades: a rapid-setting, biodegradable, bio-inspired adhesive that directly addresses the long-standing limitations of metallic hardware. If validated, it has the potential to redefine fracture care worldwide, offering surgeons a minimally invasive tool capable of stabilizing even comminuted fractures within minutes and eliminating the morbidity of secondary implant removal. At the same time, its current evidence base rests almost entirely on institutional reports and early, unpublished clinical experience. The true test will lie in transparent mechanistic disclosure, independent replication, and peer-reviewed clinical trials. Until then, Bone-02 should be regarded not as a finished solution, but as a pivotal signal that the era of clinically viable bone adhesives may finally be within reach.

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