



## S2-P11

# Literature Review: Nanotechnologies and Biomedical Engineering in Dupuytren Disease

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The review explores the potential applications of nanotechnologies and biomedical engineering approaches in the diagnosis and treatment of Dupuytren disease. Several studies have investigated the use of various types of nanoparticles for drug delivery, including paclitaxel, mitomycin C, and verapamil, which have shown promising results in reducing fibrosis and contracture formation in *in vitro* and animal models. Additionally, the use of tissue-engineered constructs, such as cell-seeded collagen matrices and nanofibrous scaffolds, incorporating platelet-rich plasma, has also shown potential in improving hand function and reducing nodule size in Dupuytren disease patients. Magnetic nanoparticles functionalized with specific antibodies have been investigated as a platform for hyperthermia-based therapy, with the ability to induce targeted cell death in nodules. Mechanical devices, such as customized splints, have also been developed to alleviate contractures in Dupuytren disease patients. Further studies are needed to optimize the techniques and confirm the safety and efficacy of these approaches for clinical use in Dupuytren disease patients.