

Suppressing scarring of cutaneous wounds by transplanting mesenchymal stem cells
–Results and problems of the clinical application approved by the Ethical Review
Board–

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In 2008, the Tokyo Medical Center tested the ability of transplanting bone marrow derived mesenchymal stem cells (MSC) clinically to achieve scarless wound healing. However, in the two cases of MSC transplantation into human cutaneous wounds, the scars did not vanish. The results suggest instead that the most important factors that promote scar invisibility are: (1) ensuring the condition of wounds remains good (*i.e.* the skin is normal, has good blood circulation, lacks infection, *etc.*); (2) precise suturing of the wound; and (3) the wound should not be allowed to move significantly for more than 3 months. These requirements have a more profound effect on scarless wound healing than transplanting MSC. In addition, we could not continue the clinical application of our MSC-based approach because we could not find patients who met the study conditions. The following issues also hampered the study: (1) the patients found the MSC generation procedure to be too time-consuming and troublesome; (2) the patients were not willing to undergo the treatment because we could not assure better effects than standard treatment; and (3) most patients who applied for the MSC treatment had large scars or severe contractures that lacked tissue.