A novel mouse abdominal-wall scar model: effects of a collagen-derived peptide on scarring and muscle regeneration

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Poor wound healing can lead to scarring and inadequate tissue regeneration. This is a serious clinical problem but the lack of suitable animal scar models has significantly slowed research in this area. We recently developed the abdominal muscle wall injury mouse model. The injury in these mice leads to fibrous nodular lesions in the granulation tissues, which associate with excessive fibroblast proliferation, and poor muscle regeneration. Since the skin overlying the abdominal muscles are subject to frequent stretching tension due to bodily movements, it is possible that the fibroblast hyperproliferation and poor tissue regeneration are due to mechanical stress on the cutaneous wound. These features are highly reminiscent of hypertrophic scars in humans. Notably, treating the mice with Pro-Hyp, a degradation dipeptide of collagen in wound lesions, reduced the scar lesions and increased muscle regeneration. Thus, this mouse model may be useful for preclinical scar studies.