



Psychological stress impairs early wound repair following surgery.

Broadbent E, Petrie KJ, Alley PG, Booth RJ.

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Department of Health Psychology, Faculty of Medical and Health Sciences, University of Auckland, New Zealand.

Abstract

OBJECTIVE: Laboratory studies have demonstrated that psychological stress is associated with slower healing of small superficial wounds. The application of this finding to the clinical environment has not yet been undertaken. In order to do this, we investigated the relationship between psychological stress and wound repair in patients following routine surgery.

METHODS: Forty-seven adults with an inguinal hernia were given a standardized questionnaire assessing psychological stress and worry about the operation before undergoing open incision repair. Wound fluid was collected from 36 participants over the first 20-hour postoperative period. Wound healing was assessed by levels of interleukin-1, interleukin-6, and matrix metalloproteinase-9 in the fluid. Other outcome measures included patient self-reports of recovery, as well as cytokine response to lipopolysaccharide stimulation of peripheral blood.

RESULTS: Greater preoperative perceived stress significantly predicted lower levels of interleukin-1 in the wound fluid ($\beta = -0.44$, $p = 0.03$). Greater worry about the operation predicted lower levels of matrix metalloproteinase-9 in the wound fluid ($\beta = -0.38$, $p = 0.03$) as well as a more painful ($\beta = 0.51$, $p = 0.002$), poorer ($\beta = -0.36$, $p = 0.04$), and slower recovery ($\beta = 0.43$, $p = 0.01$).

CONCLUSIONS: Psychological stress impairs the inflammatory response and matrix degradation processes in the wound immediately following surgery. This finding generalizes previous laboratory research to surgical patients and expands the known influence of stress to connective tissue matrix remodelling processes. These results suggest that in clinical practice, interventions to reduce the patient's psychological stress level may improve wound repair and recovery following surgery.

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