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Surgical Stress Response and Enhanced Recovery after Laparoscopic Surgery - A systematic review

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Abstract

Background: Enhanced Recovery Program (ERP) is a multimodal perioperative protocol. Its feasibility and benefits on short term outcomes have been widely reported. These well described improvements, like shorter length of stay and early resumption of body's functions, represent the consequence of an attenuated surgical stress response (SSR). When this response is uncontrolled, it leads to postoperative complications and poor long-term outcomes. SSR can be easily monitored through the analyses of mediators in the bloodstream. Available evidences do not achieve to tell if ERP allows a measurable surgical stress reduction. In this review, we searched for papers investigating the surgical stress response and ERP applied to elective mini-invasive procedures, in order to better understand the level of evidence regarding the effectiveness of ERP in minimizing the surgical stress response.

Materials and Methods: A systematic review of published literature was performed using PubMed, Cochrane, EMBASE and Google Scholar database, following the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA) guidelines. Included studies concerned SSR analysis in ERP patients undergoing laparoscopic surgery through different surgical specialties. Eight studies with a total of 632 patients were included.

Results: The three steps of SSR, endocrine, inflammatory and nutritional were all reported in the papers included in this review. Results showed no powerful evidence of difference in endocrine phase while an attenuated inflammatory response was reported for ERP patients when Interleukin-6 (IL-6) and C Reactive Protein (CRP) were dosed. Nutritional status was also preserved as albumin, pre-albumin and transferrin had better values in these patients.

Conclusions: ERP applied to different types of laparoscopic surgery has a role in reducing SSR. This can be shown by the analysis of mediators such as IL-6, CRP and nutritional markers.

Key words: enhanced recovery after surgery, laparoscopic surgery, stress response, fast-track