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Title: Effects of abdominal surgery through a midline incision on postoperative trunk flexion strength in patients with colorectal cancer

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Body: Abdominal surgery through a midline incision affects abdominal wall function and may lead to differences in postop clinical outcomes. Although postop isometric trunk flexion strength (ITFS) has previously been investigated, the results were based on measurement tools distinguished by poor reproducibility and validity. Moreover, no data has been reported regarding long-term follow up. The objective of this study was to evaluate the reproducibility of and variations in ITFS following abdominal surgery and explore the correlation between ITFS and the scar length. The study group consisted of 22 consecutive patients (15 m and 7 w) referred for surgery. The outcome parameters, taken 1 and 6 weeks postop, included: ITFS (measured by a fixed dynamometer and a manometer), scar length, elbow extensor strength, weight and pain. Excellent test-retest correlations (ICC >0.85) and low SEM indicated clinically acceptable reproducibility. A clinically significant difference occurred in 8 patients for ITFS measured with dynamometer 6 weeks postop, and in 18 patients for ITFS measured with a manometer 1 week postop. Significant pre-postop differences in ITFS were noted using both techniques. 6 weeks postop, fair and significant correlations were noted between the dynamometry-based ITFS and both the scar length (r =0.452) and age (r=0.498). Scar length and preop dynamometric ITFS predicted ITFS 6 weeks postop. Abdominal surgery through vertical midline incision causes a selective weakness of abdominal muscles. Measurements of ITFS using dynamometry are reproducible, sensitive to clinical changes and allow prediction of postop ITFS scores based on their preop counterparts.