Reply to Letter to the Editor

New Equations for Predicting Postoperative Risk in Patients with Hip Fracture

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I appreciate the interest and comments from Drs. Zhou ZhiJie and Fan ShunWu regarding the article, New Equations for Predicting Postoperative Risk in Patients with Hip Fracture [7] and two previous studies [8, 9].

In several studies, the Estimation of Physiologic Ability and Surgical Stress (E-PASS) scoring system correlated with the incidence of postoperative morbidity and mortality and the severity of potential postoperative complications [8, 9]. It also correlated with the length and cost of hospitalization [9]. However, the correlation coefficients in the studies were low. I recognize the correlation coefficient less than 0.2 means weak correlation. Moreover, the E-PASS score is a poor predictor of complications in patients requiring liver resection although the mortality is effectively predicted [1].

Therefore, the predictive ability of the E-PASS scores was confirmed [7]. First, equations were established to predict the morbidity and mortality rates in candidates for hip fracture surgery using the E-PASS system, and then the equations were compared with the Physiological and Operative Severity Score for enUmeration of Mortality and Morbidity (POSSUM) systems. POSSUM systems are the best available for assessing outcomes by risk adjustment analysis in various types of surgery [4, 6, 10], and their usefulness for hip fracture surgery also has been reported [2, 3]. Hirose et al. [7] showed the E-PASS more correctly predicted the actual morbidity and mortality rates than the POSSUM system. The observed to estimated ratios for morbidity and mortality as a risk-adjusted quality measure were 1.06 and 0.71 calculated by the developed equations, respectively. The predicted rates for in-hospital and 30-day

morbidity and mortality calculated by POSSUM systems were overestimated by 2.6-fold to 6.7-fold compared with those by E-PASS. Based on these results, it was concluded that the E-PASS score was effective and reproducible as an audit tool to predict the postoperative course of patients considered for hip fracture surgery.

The E-PASS scoring system is comprised of a preoperative risk score (PRS), a surgical stress score (SSS), and a comprehensive risk score (CRS) that is determined by the PRS and SSS. In hip fracture surgery, the E-PASS scores have some inconsequential parameters such as the extent of the skin incision, which means a laparotomy and/or thoracotomy for calculating the SSS, because this scoring system was developed originally for gastrointestinal surgery [5]. Therefore, additional studies are being done to modify the E-PASS scores to evaluate more accurately the postoperative course for hip fracture. As few scoring systems are still practical to predict postoperative risk in patients with hip fractures, I recommend the E-PASS system and presume their predictive values will be evaluated in many institutions.

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