Reply To: Comments on "Transabdominal Preperitoneal (TAPP) Versus Totally Extraperitoneal (TEP) for Laparoscopic Hernia Repair: A Meta-Analysis"

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Short Communication

To the Editor,

We would like to thank Dr Qu and Dr Ma for their interests in our article, and also thank editor for a opportunity to improve our work. For current less-invasive hernia repair study, operation method and repair material were the most important issues [1]. Our study reviewed the current evidence and concluded an advantage of TAPP in clinical feasibility with comparable efficacy compared with TEP. In their correspondence they raised 2 questions in trial quality assessment and combined model, to which we would reply as follows.

First, we assess the methodological quality based on the methods recommended by Cochrane Handbook, and we also summarized a overall level. As low risks existed in other items, the overall level was mainly judged by randomization, allocation concealment and blinding, which reflected potential bias in the process of selection, performance and detection [2]. Thus, a study with unclear risk of bias in all the 3 major process would be naturally judged as poor-quality with level C when compared with the others. Besides, the sample size was also one of the considerations. And sensitivity analysis omitting poor-quality was necessary to test the stability of the results especially in random-effects (RE) model, in which the weight of small sample size and poor-quality study was increased than in fix-effects model [3]. After that, they also mentioned that PRISMA statement advice authors to describe how the information on risk of bias was used in data synthesis. Actually, we ensured that both subgroup analysis and sensitivity analysis in our study were related to this issue. Both of them were tried to clarify the influence of potential bias in the mentioned 3 major process as well as other possible bias such as hernia location, surgeon's experience and state.

Second, we thank them to introduce a constructive and very new method of combined model in meta-analysis. It was called quality effects (QE) model or quality adjusted model, and it was developed to improve the conventional RE model, which underestimated the statistical error due to significantly increased heterogeneity [4]. Study applying QE model is subsequently published [5]. As known, the difference model had absolutely different weight distribution for each individual study because of different assumption, and thus led to different combined results. Compared with RE model, QE model complementally took into account the quality assess results and converted them to quantative data to adjust the weight distribution [6]. In this reply, we adopted the new method and reported the results in Table 1 for comparison purpose. And the results did not significantly alter, therefore it demonstrated our study results were reliable and stable (Table 1).

Table 1: Comparison of meta-analysis results in QE model and RE model.

	Pain Score	Operation Time	Return To Usual Activities Time	Total Complications
Heterogeneity (I2)	94.55%	57.60%	34.20%	41.14%
QE model Effect size (95%CI)	SMD 0.45 (-0.57,1.47)	SMD0.15 (-0.10,0.39)	SMD -0.08 (-0.32,0.16)	RR 0.84 (0.67, 1.06)
RE model Effect size (95% CI)	SMD 0.63 (-0.20,1.46)	SMD 0.12 (-0.11,0.35)	SMD -0.12 (-0.37,0.13)	RR 0.90 (0.71, 1.15)

QE model was an improved method based on RE, thus only results of four outcomes in RE model were compared.

MetaXL Software (version 4.01, Queensland, Australia) was used, which was available at: www.epigear.com. SMD, standard mean difference. RR, risk ratio. QE, quality effect. RE, random effect.

I hope the comments and our responses help our readers to understand quality assessment and combined model in meta-analysis, and to further enhance current evidence of operation method choice for laparoscopic hernia repair in practice.

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