Reviewer’s report

Title: What is the Difference in Morphologic Features of the Lumbar Vertebrae Between Caucasian and Taiwanese Subjects? A CT-based Study: Implication of Pedicle Screws Placement via Roy-Camille or Weinstein Methods

Version: 4 Date: 25 Oct 2018

Reviewer: Harvinder Singh Chhabra

Reviewer’s report:

General Comments

1. The authors should describe the method of estimating the sample size. An epidemiological study with 52 males and 38 females seems less convincing without detailed statistical data. It will be helpful to know the detailed statistics of the study and adding it to the manuscript before coming to the conclusion.

   1. Thanks for your comments. The method for estimate sample size and power analysis was described in the Page 9 lines 4 to lines 10. We used the G*Power software (Heinrich-Heine Universitat D’usseldorf, D’usseldorf, Germany) to conduct the power analysis and effective sample sizes. The G*Power is a free online website. We might make use of the website to input several parameters ($\alpha = 0.05$, equal sample sizes ($N_2/N_1 = 1$), power = $0.8$ and two tails in the formula) to calculate the sample sizes.

   We took the parameter of L3 TITA as an example. G*Power for TITA at L3 (power = 0.7) was insufficient to reach a conclusion. After reanalyzing the sample sizes, the effective sample size should be at least 95 for a valid conclusion to be drawn.

   The following sentences were added in the lines 3 to 7 in the page 11 the manuscript based on reviewer's recommendation: "Based on the G*power software, the parameters were set up as follows: $\alpha = 0.05$, equal sample sizes ($N_2/N_1 = 1$), power = $0.8$ and two tails in the formula. With the given results between Taiwanese (mean: -10.1, SD: 8.1) and Caucasian populations (mean: -14.3, SD: 12), the effective sample size for TITA at L3 was 95."

   The following figure was the process we calculated based on G*power software:

   Thank you for the detailed reply. As per the calculations by the authors, atleast 95 subjects must be recruited in each group. However, study does not have (95*2=190) 190 subjects. The authors have mentioned that they have included 78 patients for L1, 81 for L2, 77 for L3, 78 for L4 and 73 for L5 measurements. Authors may provide sample distribution for both the groups.
2. The authors have not made it clear about the place where the study has been conducted. If the study has been carried out at a single centre in Taiwan, unless the patients had came from all over Taiwan, is difficult to understand that how a single centre could represent the entire Taiwanese population.

We agree with the authors' belief that since their centre is a referral medical centre, some patients from middle and Southern Taiwan may be transferred to them. However, this does not justify that the sample size represents the complete Taiwanese population. Also authors may provide the sampling frame and sampling method to chose the representative population.

3. An epidemiological study with 52 males and 38 females seems less convincing without detailed statistical data. We understand that the authors have mentioned this as a weakness of their study, however this is an important aspect which needs to be justified before making a conclusion about the Taiwanese population and their comparison with Caucasians.

3. Thanks for your comments. The raw statistic data regarding mean, standard deviation (SD) and sample sizes in all radiographic parameters were revealed in the table 1 and 2 and in the results section. With the mean, SD and sample sizes, we might conduct the comparison between two groups (Taiwanese and Caucasians populations).

Moreover, the references (reference 1, 2) for the Caucasian population were also revealed the mean, standard deviation (SD) and sample sizes in the table 1 and 2 in our manuscript based on the original papers.

For similar manuscripts mentioned in the below, the authors also conducted the measurements in the authors' hospital or institute and make some comparison between different races. The authors revealed mean, standard deviation (SD) and sample sizes in each radiographic parameters in these manuscript (References 3 and 4).

Mitra SR et als investigated the lumbar pedicle morphology in the 20 Indian cadavers and compared their results to westerners (Reference 3). Kim NH et als investigated thoracic and lumbar pedicles morphology in the Korean population with 73 dried columns and compared their results to westerners (Reference 4).

In these two references, the authors provided statistical data regarding mean, SD and sample sizes to compare their results to western populations. We also provided statistical data regarding mean, SD and sample sizes in the table 1 and 2, which might be enough for comparison with the Caucasian population.

It is difficult to understand the analysis as group wise data has not been provided. Also author must  provide p-value for each calculation.
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