Reviewer's report

Title: Radiographic correlates of hallux valgus severity in older people

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Reviewer: Trevor D Prior

Reviewer's report:

This is a useful and well written paper which provides further information relating to the potential causes of Hallux Valgus (HV) and the decision making process for surgical correction.

It is suitable for publication although the authors should consider the comments below prior to publication.

Results, correlations

The authors should note the number of subjects / feet in each Manchester scale group.

The authors note that there is an association between the degree of OA changes and the severity of the HV deformity. Although the age of the majority of the subjects falls within a 13 year range, there is a total range of 29 years. Was there an age difference between the 4 groups? This may help to support their subsequent comment in the first paragraph of the discussion section that the progression of the deformity has largely ceased in this age group.

Discussion, second paragraph, last line (P8)

The authors support their findings regarding the Hallux abductus and intermetatarsal angles with two papers, one of which draws from the same subject group. Whilst the authors have acknowledged this is the case, there should be some comment regarding the appropriateness of using this data; does the current paper have a significantly larger subject population, in which case, the larger sample provides stronger evidence? I feel this is important to avoid the potential criticism of duplicating data.

This is particularly important when this previous study is again quoted to support the findings of a negative correlation of the Hallux abductus interphalangeal angle to HV angle (p9, 2nd paragraph). One might expect the two studies to show the same data and the authors need to provide an indication as to why this might not be the case.

Their explanation for this finding at the end of the paragraph is conjecture and should be noted.

The authors note that there was no relationship between metatarsus adductus (MA) and the degree of deformity, contrary to previous papers. This warrants
further discussion:
1. The overall angle has been used to determine the relationship which, by nature will be a combination between those with and without MA. It is possible that the presence of MA may contribute to HV and thus could be considered as a discrete variable.

2. The authors have not provided data as to the number of subjects in each Manchester scale groups - the percentage of subjects with MA in each group might help to clarify the relationship.

3. The Ferrari & Lee paper quoted suggested that the degree of MA deformity was relevant to HV deformity. Furthermore:
   a. They found a difference male to female
   b. In females a MA angle >240 was associated with HV deformity.

4. The authors suggest that the presence of MA may be related to juvenile or early HV but not older onset HV. It is not possible from the data provided to state the date of onset in their subject group and thus whether the subjects had juvenile, early or late onset HV. If their conjecture is correct, this suggests either the number of subjects with MA ‘evens’ out with an older subject group or the younger onset cases were more likely to receive intervention.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests