Does Intraoperative Fluoroscopy Improve Component Positioning in Total Hip Arthroplasty?

To the Editor:

The article by Tischler et al1 is pertinent to surgeons who are contemplating whether to use fluoroscopy for evaluation of component positioning during total hip arthroplasty. Interestingly, the authors found that the number of outliers for acetabular inclination was higher, although not statistically significantly so, with the use of fluoroscopy. We have a few comments regarding this article.

The authors mention that they used fluoroscopy to assess acetabular anteversion, but do not report any data on this variable. What was the percentage of cup position outliers with respect to anteversion? The authors’ assessment of the benefit of fluoroscopy is incomplete without this variable. What was the target anteversion with this particular approach? It would be helpful if the authors could comment about cup position (anteversion) in the one case of psoas impingement that they report.

The authors did not comment as to how they used the fluoroscopic images to assess anteversion and inclination during surgery. As with other techniques, interpretation of fluoroscopic images is likely to have a learning curve. In a previous study, it was demonstrated that the variability in component positioning with the use of fluoroscopy improved with the number of cases.2 Similarly, the use of techniques such as a fluoroscopic grid or overlapping the opposite hip template also improves the accuracy of component positioning.3,4 These studies emphasized the fact that a surgeon’s judgment in interpreting the fluoroscopic images and executing it to achieve the desired result is critical. Rightly so, the authors excluded the first 50 cases to eliminate the influence of the learning curve. However, it would be interesting if the authors could present data on cup position in the first 50 cases so as to see if there was any difference in variability in the cases done during and after the presumed learning curve. If there were no improvement in variability, then it would imply that the interpretation of fluoroscopic images did not improve, which may be a factor as to why the authors did not find any advantage to the use of fluoroscopy for cup positioning in their study.

In this study, because the number of outliers was low with the freehand technique, we agree with the authors’ conclusion that fluoroscopy may not have any added benefit for uncomplicated primary cases at high-volume institutions. However, it would be worthwhile to add data on cup anteversion (and the percentage of outliers) and data on inclination and anteversion of cases excluded as part of the learning curve. If these data are not available, we believe this should be acknowledged as a limitation of this study.

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Drs Rathod and Deshmukh have no relevant financial relationships to disclose. Dr Rodriguez is a paid consultant for Conformis, Exactech, Inc, Medacta, and Smith & Nephew and receives research support from DePuy, Johnson & Johnson, and Smith & Nephew.

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Door Opening Affects Operating Room Pressure During Joint Arthroplasty

To the Editor:

We read with great interest the article by Mears et al1 about door opening affecting operating room pressure during joint arthroplasty. The authors performed a retrospective study of 191 cases to investigate the number and duration of operating room door openings during hip and knee arthroplasty procedures and the effect of these door openings on operating room pressure. They found that the longer the duration of door opening, the greater the decrease in room pressure, reaching the conclusion that there is a significant relationship between operating room door openings and room pressure. Nevertheless, we have several queries related to this article.

It is basic knowledge that air temperature has an impact on air pressure and that the movement of air is in the direction from high to low pressure. Because the temperature of the operating room varies from that of the adjacent corridor, the direction of air flow may change once the difference in temperature between them reverses. Therefore, we think that patients should be divided into 2 subgroups: one group in the operating room where the temperature is higher than the adjacent corridor and the other in the operating room with lower temperature.

Detailed records of cut-to-close time, door openings, operating room pressure, and number of surgeons present in the operating room were obtained.1 We would like to know if the volume and pattern of room traffic influences room pressure. We raise this issue.


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based on the knowledge that high room traffic disrupts the laminar air flow, and this may lead to a change in air pressure and the level of airborne bacterial contamination. Did more operating room traffic and more sophisticated traffic patterns exist in cases with decreasing positive room pressure? Could the volume and pattern of room traffic be the cause of decreasing positive room pressure?

In this study, each change in room pressure of 0.01 inch H$_2$O was recorded as a pressure change. This is not the common recording mode. We think a mercury barometer would more accurately record the pressure change. We would like to know why the authors chose this recording pattern. Additionally, we think that the humidity of the operating room should be noted, as it has much impact on air pressure.

We agree with the authors’ declaration that the study has some limitations. For example, air quality was not monitored. Air quality should be taken into account, as different constituent parts of air affect air pressure. A larger sample must be evaluated before a definitive conclusion can be reached. Multicenter, controlled clinical studies would lead to more scientific and persuasive results and would reduce possible bias due to research sites’ geographical differences.

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