RESULTS:
Two level fusion produced more motions at the adjacent segments as compared to the increase in motion with a single level fusion, in all loading modes. In two level fusions adjacent level motions increased by 40% to 50% was observed with C4-6 fusion while a smaller increase of 40% to 50% was observed with C5-7 fusion at C5-7 levels in all loading modes. This increase in adjacent segment motion was observed with fusion at C4-6 levels than with fusion at C5-7 levels (30% to 60%) in all loading modes.

DISCUSSION & CONCLUSIONS:
Given the above findings, the likelihood of adjacent segment degeneration is higher in a two level fusion than a one level fusion, and of the two level fusions tested C4-6 is more likely to degenerate above and below than C5-7 fusion. The fact that a two level fusion is more likely to show degeneration at adjacent segments, more so than a one level fusion, is what is seen clinically. This new finding may help us in surgical planning with the advent of disc replacement. Disc replacement as it stands today is best suited for one level disease and two level disc replacement is generally not recommended. The above findings may help us treat two level disease without fusing both levels. Given that the adjacent segment degeneration is significantly greater for two levels than one level it would be advantageous not to have to fuse both levels. Using the findings it is feasible that two level disease could be most effectively treated with a disc replacement at one of the two diseased levels and a fusion at the other level. This construct, according to our model, would theoretically have the best outcome in regards to adjacent segment degeneration.

CITED LITERATURE: