Poster 22

Improved Efficacy of Tlif Procedures Due to a New Device: Preliminary Cadaver Study and a 209-Patient Retrospective Study in a Single Center

Peloza John, MD[1], Millgram Michael, MD[2], Rand Nahshon, MD[2], Guyer Richard, MD[3], Le Huec Jean-Charles, MD, PhD[4], Ashkenazi Ely, MD[2]

[1]Center For Spine Care, Dallas, Texas, United States, [2]Israel Spine Center, Assuta Hospital, Tel Aviv, Israel, Israel, [3]Texas Back Institute, Plano, Texas, United States, [4]Bordeaux University Hospital, Bordeaux, , France

Background/Introduction: Transforaminal Lumbar Interbody Fusion (TLIF) procedures are commonly performed in the US, increasing in number as the population ages. A new powered FDA-approved device, designed to clean the end-plates for improved cartilage removal and shorten the time required for disc removal, can benefit this procedure's outcome and reduce the time it requires. This study aims to assess the effect of device use in a preliminary cadaver study and a retrospective single center study.

Materials/Methods: The records of 209 single-level TLIF procedures conducted in a single hospital were reviewed. Overall the study included 143 procedures conducted using the device during 2014-2019 and 66 control procedures, conducted without the device during 2012-2019. Surgery duration, length-of stay and complication rates were extracted from the records and compared between both groups. In addition, a preliminary cadaver study was conducted on five lumbar levels by two surgeons. The number of instrument passes required for each surgeon with and without the device was measured and compared. After the conclusion of the procedures, the cadaver disc-spaces were cut open and the end-plates were observed for any perforations.

Results: The analysis revealed statistically significant reductions of 10 minutes in surgery duration and 0.5 days in the length-of-stay. In addition, the device group had less complications (2.8% vs. 6.1%), including fewer surgical-site infections (0.7% vs. 1.5%) and less readmissions (2.1% vs. 3%). Fewer patients in the device group (2.8% vs. 9.1%) complained on post-operative pain or weakness in the leg, possibly due to the longer surgery time. The number of instrument passes required to clean the cadaver disc-spaces was reduced by 18.5 on average when the device was used. As the figure shows, end-plate preparation was improved with the use of device compared with control. End-plate perforation occurred in 1 out of 6 end-plates in the device levels (16.7%) and in 1 out of 4 end-plates in the control group (25%).

Discussion/Conclusion: The study suggests that the device use can lead to a shorter procedure and hospitalization and potentially also reduced the complication rate, without deteriorating the clinical outcome.