Transforaminal lumbar interbody fusion case series

2023

A prospective cohort study was performed, comparing 54 patients who underwent O-TLIF and 55 patients who underwent MI-TLIF with a follow-up of 4 years. Clinical evaluation was performed using the Oswestry Disability Index (ODI), 36-item short form survey (SF-36), and a visual analog scale for pain (VAS pain). Radiological evaluation was also performed.

Results: At the final follow-up, compared with O-TLIF, MI-TLIF was associated with significantly better intraoperative results, including similar operative time (p = 0.246), lower estimated blood loss (p = 0.001), and shorter hospital stay (p = 0.001). The final ODI score was significantly better in the MI-TLIF group (p = 0.031). The SF-36-physical (p = 0.023) and VAS pain (p = 0.024) scores were significantly better in the MI-TLIF group. There was no significant difference in the fusion rate (p = 0.747).

Conclusions: The MI-TLIF technique is an effective and safe procedure for degenerative lumbar disc disease. Compared to traditional O-TLIF, MI-TLIF was associated with less disability and higher quality of life, with a low rate of intraoperative and postoperative complications ¹⁾.

2022

Lai et al. retrospectively examined 108 patients with the degenerative lumbar spine disease who underwent TLIF. According to whether the Robotic spine surgery system was used, patients were assigned to either the robot-assisted (Ro TLIF, n = 29) or fluoroscopy-guided TLIF (FG TLIF, n = 79) group. Radiographic parameters and patient-reported outcomes, including leg and back pain visual analog scale (VAS) and Oswestry Disability Index (ODI), were assessed. Loosening signs were noted in 48 out of 552 pedicle screws. The screw loosening rate was higher in the FG TLIF (10.2%) than Ro TLIF group (4.3%). A significant correlation was found between screw loosening and age, the number of levels (s) fused, and the ratio of the average distance from the pedicle screw to the upper endplate to vertebral body height. VAS-leg, VAS-back, and ODI showed significant improvements in both groups postoperatively (all p &It; 0.05). These results indicated that assisted Robotic pedicle screw placement in TLIF had a lower screw loosening rate and similar patient-reported outcomes compared with the fluoroscopy-guided technique ²⁾

2021

Patients ≥50-year-old who underwent MTLIF for degenerative lumbar spine conditions were analyzed. Ninety-day complications and patient-reported outcomes (PRO) (baseline, 90-d, 1-y, 2-y) were queried using the Michigan Spine Surgery Improvement Collaborative database. PROs were measured by back & leg visual analog scale (VAS), Patient-reported Outcomes Measurement Information System (PROMIS), EuroQoI-5D (EQ-5D), and North American Spine Society (NASS) Patient Satisfaction Index. Univariate analyses were used to compare among elderly and complication cohorts. A generalized estimating equation (GEE) was used to identify predictors of complications and PROs.

A total of 3120 patients analyzed with 961 (31%) \geq 70-y-o and 2159 (69%) between 50-69. A higher proportion of elderly experienced postoperative complications (P = .003) including urinary retention (P = <.001) and urinary tract infection (P = .002). Multivariate analysis demonstrated that age was not independently associated with complications. Number of operative levels was associated with any (P = .001) and minor (P = .002) complication. Incurring a complication was independently associated with worse leg VAS and PROMIS scores (P = <.001). Preoperative independent ambulation was independently associated with improved PROMIS, and EQ5D (P = <.001). Within the elderly, preoperative independent ambulation and lower BMI were associated with improved PROMIS (P = <.001). Complications had no significant effect on PROs in the elderly.

Age was not associated with complications nor predictive of functional outcomes in patients who underwent MTLIF. Age alone, therefore, may not be an appropriate surrogate for risk. Furthermore, baseline preoperative independent ambulation was associated with better clinical outcomes and should be considered during preoperative surgical counseling. Level of Evidence: 3³⁾.

2019

Under computed tomography (CT) guided spinal navigation the TLIF procedure was performed. Clinical outcome scores visual analog scale (VAS), Oswestry disability index (ODI) and short form-36 health survey questionnaire (SF-36) were obtained preoperatively, 6 and 12 months after surgery. Radiological data were acquired preoperatively, after 6 weeks, as well as 6 and 12 postoperatively and included measurements for disc height (anterior/posterior), foraminal height, segmental and global lumbar lordosis.

71% of the included patients have undergone previous lumbar surgery. In total, 80 SYNCHRO® cages have been implanted. The clinical results revealed a highly significant improvement of VAS, ODI and SF-36 after 6 and 12 months, compared to baseline levels (p < 0.05). Radiological analysis revealed a significant increase in anterior and posterior disc height, foraminal height, segmental and global lumbar lordosis postoperatively (p < 0.05). 47 out 49 patients (96%) showed evidence for fusion at the 12 months follow-up. Cage dislocation was found in 1 of 80 implanted cages (1%), which required revision surgery. Two dural tears occurred intraoperatively, which have been fixed. Another two patients needed surgical revision due to infection. The overall complication rate was 10% (n = 5/49).

The current study delineates satisfactory clinical and radiological results by using a novel articulating TLIF-cage. The implant-related complication rate was acceptable with low revision rate ⁴⁾.

2015

A retrospective review was performed on 125 consecutive patients who underwent minimally invasive transforaminal lumbar interbody fusion and transpedicular screws placement between the levels of T-12 and S-1. Screw accuracy was evaluated using a postoperative computed tomography by three independent observers. Pedicle breach was documented when there was a violation in any direction of the pedicle. Inter-observer agreement was assessed with the Kappa coefficient.

A total of 470 transpedicular screws were evaluated between the levels of T-12 and S-1. In 57 patients the instrumentation was bilateral and in 68 unilateral. A substantial degree of agreement was found between the observers AB (κ =0.769) and A-C (κ =0.784) and almost perfect agreement between observers B-C (κ=0.928). There were a total of 427.33 (90.92%) screws without breach, 39.33 (8.37%) minor breach pedicles and 3.33 (0.71%) major breach pedicles. The pedicle breach rate was 9.08% Trajectory pedicle breach percentages were as follows: minor medial pedicle breach 4.68%, minor lateral pedicle breach 3.47%, minor inferior pedicle breach 0.22%, and major medial breach 0.70%. No intraoperative instrumentation-related or postoperative clinical complications were encountered and no surgical revision was needed.

The study demonstrated a high accuracy (90.2%) for 2-D fluoroscopy-guided pedicle screw using electromonitoring. Only 0.71% of the 470 screws had a major breach. Knowing the radiological spine pedicle anatomy and the correct interpretation of EMG are the key factors for this technique ⁵.

1)

Jover-Mendiola AD, Lopez-Prats FA, Lizaur-Utrilla A, Vizcaya-Moreno MF. Patient-Reported Outcomes of Minimally Invasive versus Open Transforaminal Lumbar Interbody Fusion for Degenerative Lumbar Disc Disease: A Prospective Comparative Cohort Study. Clin Orthop Surg. 2023 Apr;15(2):257-264. doi: 10.4055/cios22250. Epub 2023 Jan 30. PMID: 37008969; PMCID: PMC10060772.

Lai YP, Lin YH, Wu YC, Shih CM, Chen KH, Lee CH, Pan CC. Robot-Assisted Pedicle Screw Placement Led to Lower Screw Loosening Rate than Fluoroscopy-Guided Technique in Transforaminal Lumbar Interbody Fusion for Lumbar Degenerative Disease: A Single-Center Retrospective Study. J Clin Med. 2022 Aug 25;11(17):4989. doi: 10.3390/jcm11174989. PMID: 36078918; PMCID: PMC9456711. 3)

Claus CF, Tong D, Lytle E, Bahoura M, Garmo L, Li C, Park P, Carr DA, Easton R, Abdulhak M, Chang V, Houseman C, Bono P, Richards B, Soo TM. Age as a Predictor for Complications and Patient-reported Outcomes in Multilevel Transforaminal Lumbar Interbody Fusions: Analyses From the Michigan Spine Surgery Improvement Collaborative (MSSIC). Spine (Phila Pa 1976). 2021 Mar 15;46(6):356-365. doi: 10.1097/BRS.000000000003792. PMID: 33620179. 4)

Ishak B, Steil M, Arroteia IF, Unterberg AW, Kiening KL. Safety and performance of a novel articulating cage for transforaminal lumbar interbody fusion in the setting of intraoperative spinal navigation. Clin Neurol Neurosurg. 2019 Jun 20;183:105391. doi: 10.1016/j.clineuro.2019.105391. [Epub ahead of print] PubMed PMID: 31254909. 5)

Soriano-Sánchez JA, Ortega-Porcayo LA, Gutiérrez-Partida CF, Ramírez-Barrios LR, Ortíz-Leyva RU, Rodríguez-García M, Sánchez-Escandón O. Fluoroscopy-guided pedicle screw accuracy with a miniopen approach: a tomographic evaluation of 470 screws in 125 patients. Int | Spine Surg. 2015 Oct 23;9:54. eCollection 2015. PubMed PMID: 26609509.



From: https://neurosurgerywiki.com/wiki/ - Neurosurgery Wiki

Last update: 2024/06/07 02:58

Permanent link: