

Economic Performance of Oblique Lateral Lumbar Interbody Fusion (OLLIF) with a Focus on Hospital Throughput Efficiency Hamid Reza Abbasi MD PhD

Introduction

Oblique posterior lateral lumbar fusion (OLLIF) is a surgical procedure designed for a minimally invasive spinal fusion. The OLLIF procedure allows for fusion of the lumbar spine through a single 10-15 mm incision, with faster surgery times and easier approach than any previous technique. In recent years, the rate of disability due to low back pain has increased dramatically, and consequently, costs have skyrocketed. Advancements in the surgical treatment of lower back pain could benefit numerous patients annually and contribute to lower health care costs.

Methods

All procedures were completed by the same surgeon as single surgeon procedures. To eliminate selection bias, the TLIF control group was selected from patients who underwent surgery before the surgeon started performing OLLIF. All 124 procedures were performed in two Minnesota hospitals: Douglas County Hospital, 111 17th Ave E, Alexandria, MN and Riverview Health, 323 Minnesota St, Crookston, MN. Surgeries were performed between March 2012 and December 2013. The study size derives from the number of surgeries accomplished in this time frame.

Results

In all groups, OLLIF significantly reduced surgery times, blood loss, and hospital stay compared to TLIF. In the one level group, mean blood loss was reduced almost 11-fold (p<0.001). In general, blood loss per patient was less in OLLIF when compared with TLIF.

Conclusions

The cost reductions and faster recovery times associated with the OLLIF procedure make it an appealing alternative to the traditional open fusions available for patient and insurance providers. The reduction in the use of these key hospital resources suggests that hospitals that are constrained by OR or hospital bed availability may be able to achieve greater throughput efficiency by increasing the overall percentage of patients receiving the OLLIF surgery.

Learning Objectives

MI surgical techniques are available for treating a wide range of clinical indications in the lumbar spine. In general, clinical outcomes following MIS procedures compare favorably to traditional open surgery [14-16]. OLLIF has been described as the first MI fusion that is faster than open surgery and has been found by the authors to overcome difficulties characteristic of traditional open fusions, thereby, making it a safe and reliable alternative to open or MI TLIF [9-11] While these and other data suggest that minimally invasive spine surgery reduces morbidity, hospital stay, and accelerates a patient's rehabilitation time. This study monetized quantifiable differences in resource utilization between two MI procedures, OLLIF and TLIF.

[Default Poster]

References

Andersson GB: Epidemiological features of chronic lowback pain. Lancet. 1999, 354:581–585. 10.1016/S0140-6736(99)01312-4

Frymoyer JW, Cats-Baril WL: An overview of the incidences and costs of low back pain. Clin North Am. 1991, 22:263–271.

Harms J, Rolinger H: A one-stage procedure in operative treatment of spondylolisthesis: Dorsal tractionreposition and anterior fusion (author's translation) (article in German). Z Orthop Ihre Grenzgeb. 1982, 120:343–347.

Sihvonen T, Herno A, Paljärvi L, Airaksinen O, Partanen J, Tapaninaho A: Local denervation atrophy of paraspinal muscles in postoperative failed back syndrome. Spine. 1993, 18:575–581.

Ozgur BM , Yoo K , Rodriguez G , Taylor WR: Minimally invasive technique for transforaminal lumbar interbody fusion (TLIF). Eur Spine J. 2005, 14:887–894. 10.1007/s00586-005-0941-3

Parker SL, Lerner J, McGirt MJ: Effect of minimally invasive technique on return to work and narcotic use following transforaminal lumbar inter-body fusion: a review. Prof Case Manag. 2012, 17:229–235. 10.1097/NCM.0b013e3182529c05

Shunwu F, Xing Z, Fengdong Z, et al: Minimally invasive transforaminal lumbar interbody fusion for the treatment of degenerative lumbar diseases. Spine. 2010, 35:1615–1620. 10.1097/BRS.0b013e3181c70fe3

Goldstein CL, Macwan K, Sundararajan K, Rampersaud YR: Comparative outcomes of minimally invasive surgery for posterior lumbar fusion: A systematic review. Clin Orthop Relat Res. 2014, 472:1727–1737. 10.1007/s11999-014-3465-5

Kambin P, Sampson S: Posterolateral percutaneous suction excision of herniated lumbar intervertebral discs. Report of interim results. Clin Orthop Relat Res. 1986, 207:37–43.

Kambin P, Zhou L: Arthroscopic discectomy of the lumbar spine. Clin Orthop Relat Res. 1997, 337:49–57.

Park JW, Nam HS, Cho SK, Jung HJ, Lee BJ, Park Y: Kambin's triangle approach of lumbar transforaminal epidural injection with spinal stenosis. Ann Rehabil Med. 2011, 35:833–843. 10.5535/arm.2011.35.6.833

Luo X, Pietrobon R, Sun SX, Liu GG, Hey L: Estimates