



Original Article

Evaluation of the discal height gain and lumbar lordosis variation obtained by the techniques of transforaminal and posterior lumbar intersomatic fusion[☆]



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ABSTRACT

Objective: Evaluate the discal height and lumbar lordosis gains, comparatively, according to the two lumbar arthrodesis techniques, transforaminal lumbar interbody fusion (TLIF) and posterior lumbar interbody fusion (PLIF), used in the treatment of spinal degenerative diseases.

Methods: The present study, retrospective, was done with 60 patients who underwent decompression and 1 level lumbar arthrodesis in the Hospital Santa Casa de Misericórdia de Vitória (HSCMV), between January 2010 and December 2015. The patients were divided in two groups of 30 each, according to the utilized intersomatic arthrodesis technique: TLIF or PLIF. All patients presented pathologies at the L4-L5 level. In this study, the discal height gain and lumbar lordosis variation were evaluated by analyzing spinal radiographies of the pre and post-operative periods from patients of the two groups, measured by the software Surgimap®. In addition, the pain intensity in the post-operative period was estimated by the Visual Analog Scale for Pain (VAS Pain).

Results: Both techniques presented a gain in the discal height in the post-operative. There was no statistically significant difference between the discal height variation obtained with the PLIF technique when compared to the TLIF technique ($p=0.139$). In the same way, there was no statistically significant difference in the lumbar lordosis variation between the two studied groups ($p=0.184$). By the EVA Pain analysis, there was no significant difference in the pain intensity in the post-operative period between both arthrodesis surgeries.

[☆] Study conducted at Hospital Santa Casa de Misericórdia de Vitória, Vitória, ES, Brazil.

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Conclusion: There is no difference in the discal height gain and lumbar lordosis variation, as well as in the pain intensity in the post-operative periods, in patients who underwent 1 level intersomatic arthrodesis when comparing the PLIF and TLIF techniques.

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Avaliação do ganho de altura discal e lordose lombar obtido pelas técnicas de fusão intersomática transforaminal e posterior

R E S U M O

Palavras-chave:

Artrodese

Disco intervertebral

Lordose

Objetivo: Avaliar o ganho de altura discal e lordose lombar, comparativamente, conforme as duas técnicas de artrodese lombar, fusão intervertebral lombar transforaminal (TLIF) e fusão intervertebral lombar posterior (PLIF), usadas para o tratamento de doenças degenerativas da coluna vertebral.

Métodos: O presente estudo, retrospectivo, foi feito com 60 pacientes submetidos a descompressão e artrodese lombar de um nível em nossa instituição de janeiro de 2010 a dezembro de 2015. Os pacientes foram divididos em dois grupos de 30 cada, conforme a técnica de artrodese intersomática TLIF ou PLIF. Todos apresentavam patologias no nível de L4-L5. Neste estudo, avaliaram-se o ganho de altura discal e a variação na lordose lombar por meio da análise das radiografias de coluna vertebral do período pré e pós-operatório dos pacientes dos dois grupos, mensurados por meio do programa de computador Surgimap®. Além disso, estimou-se a intensidade de dor no período pós-operatório por meio da Escala Visual Analógica (EVA).

Resultados: Ambas as técnicas apresentaram ganho de altura discal no pós-operatório. Não existiu diferença estatisticamente significativa entre a variação da altura discal obtida com a técnica PLIF quando comparada com técnica TLIF ($p=0,139$). Da mesma forma, não houve diferença estatisticamente significativa entre a variação de lordose lombar observada entre os dois grupos ($p=0,184$). Por meio da análise da EVA, não houve diferença significativa na dor no período pós-operatório entre ambas as cirurgias de artrodese.

Conclusão: Não houve diferença no ganho de altura discal e lordose lombar, assim como na intensidade de dor no período pós-operatório, em pacientes submetidos a artrodese intersomática de um nível quando comparadas as técnicas PLIF e TLIF.

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Introduction

Many aspects of the clinical and surgical treatments of the lumbar spine degenerative diseases still need more detailed studies.¹ Regarding the surgical treatment of these conditions, techniques involving lumbar intersomatic fusion were introduced as treatment options²; among these techniques are the transforaminal lumbar intervertebral fusion (TLIF) and the posterior lumbar intervertebral fusion (PLIF).³ TLIF consists of an intervertebral fusion technique in which the approach to the intervertebral space is made through the intervertebral foramen. In the PLIF technique, the approach is made by the posterior way with retraction of the dural sac and nerve roots.^{2,4} In both, the discectomy is succeeded by the positioning of the intervertebral fusion component (cage), which contains bone graft.^{4,5}

Lumbar spine degenerative diseases usually induce reduction of the intervertebral disc height corresponding to the

compromised level.⁶ Studies indicate that the reestablishment and the increase of the discal height obtained by the aforementioned surgical techniques provide an increase in the lumbar lordosis, an indirect decompression of the neural foramen, as well as improved clinical post-operative results.⁷ Indications for the use of PLIF or TLIF techniques include: discal degenerative diseases, low-grade spondylolisthesis, lumbar spinal stenosis, and recurring disc herniation.^{2,8}

There are evidences that after the realization of the lumbar fusion techniques, the reduction in lumbar lordosis may cause degenerative processes of adjacent segments and anterior body inclination, resulting in chronic pain. Therefore, the lumbar lordosis analysis in patients who underwent lumbar fusion procedures is relevant.⁹

It is noticeable that there is still scarce literary focus in the comparison of the analyzed techniques regarding the intervertebral disc height increment. Therefore, the present study intends to compare the discal height gain and lumbar lordosis variation obtained in the post-operative period of patients

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