Reduction versus In-situ fusion for Adult High-Grade Spondylolisthesis: A Systematic Review and Meta-analysis.

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Disclosure

• None
Introduction

• Surgical management of high-grade spondylolisthesis remains controversial.

• Reduction helps restore the spinal alignment but is associated with an increased incidence of neurological deficits.

• In-situ fusion, on the other hand, does not correct the alignment but is less likely to lead to neurological injury.
Methods

• PubMed, Embase, Web of Science, and Cochrane databases were last searched on June 24th, 2019.

• A total of 1236 studies were identified excluding duplicates. After screening, 15 studies were identified and included in the meta-analysis.

• Random Effects model were used to calculate the pooled effects estimates.
Results

• In-situ fusion had statistically non-significant higher estimated blood loss, as well as the incidence of neurological, instrumental, pseudarthrosis and infectious complications.

• Reduction of underlying deformity was associated with a statistically non-significant higher incidence of overall complications, dural tears, better pain relief and greater change in pelvic tilt.
Reduction however, was associated with a statistically significant better relief from disability.

- Forest plot for mean change in ODI scores. Forest plot shows difference in means in in-situ fusion (n = 08 patients), reduction (n = 42 patients) and overall in Random Effects (RE) Model. Solid squares represent the point estimate of each study and the diamond represents the pooled estimate of the relative risk (RR). The $I^2$ and p-values for heterogeneity were: In-situ fusion: $I^2=0\%$; p-heterogeneity=1.0. Reduction: $I^2=94.6\%$; p-heterogeneity=0.000. $p$-interaction $<0.01$.
Reduction was also associated with a statistically significant greater change in slip angle

- Forest plot for mean change in slip angle. Forest plot shows difference in means in in-situ fusion (n = 55 patients), reduction (n = 33 patients) and overall in Random Effects (RE) Model. Solid squares represent the point estimate of each study and the diamond represents the pooled estimate of the relative risk (RR). The $I^2$ and p-values for heterogeneity are: In-situ fusion: $I^2=45.3\%$; p-heterogeneity=0.10. Reduction: $I^2=96.2\%$; p-heterogeneity=0.000. p-interaction = 0.01
Conclusion

• In the management of adult high-grade spondylolisthesis, both approaches appear to be safe and effective.

• However, reduction appeared to offer better disability relief and spinopelvic parameter correction than in-situ fusion.