

Abstract: 67

Does Duration of Symptoms Affect the Outcome of Cervical Disc Replacement (TDA)?

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Introduction: In most surgical studies, 'chronicity' is often defined as duration of symptoms (DOS) exceeding six months. A recent study has demonstrated that the DOS does not correlate with any outcome parameter after fusion within the lumbar spine. However, no data exists regarding the effect of DOS on outcomes with TDA in the cervical spine. We herein present our data in n=130 patients with minimal follow-up of 2 years.

Material and methods: N =130 consecutive patients were prospectively investigated with degenerative disease in the cervical spine. The pre and post-operative Neck Disability Index (NDI), SF-36, Visual Analogue Score (VAS), Hospital Depression Score (HDS) and Hospital Anxiety Score (HAS) were recorded after inserting a Prestige LP cervical TDA. DOS was defined as more or less continuous neck and arm pain throughout most of a 24-hour cycle, experienced for most days of the week over the period of DOS recalled.

Results: Results were obtained in n=130 patients. The mean age at surgery was 51.12±0.84yrs. The mean follow-up was 28±0.35 months, and the mean duration of symptoms was 34.46±3.8 months.

There was a significant improvement in all outcome scores measured: NDI (49.14±1.63 pre-op versus 25.24±1.68 post op: p=0.002), VAS neck pain (6.99±0.190 pre-op versus 2.94±0.243 post-op (p=0.012), VAS arm pain (6.76±0.188 pre op versus 3.04±0.27 post-op (p=0.007), HDS (9.08±.453 pre-op versus 4.54±0.37 post-op (p=0.025), HAS (8.18±0.44 pre-op versus 4.85±0.39 post-op (p=0.009), SF-36 bodily pain score 29.52±1.38 pre op versus 49.77±1.87 post-op (p< 0.001), SF-36 mental health score (50.87±1.630 pre-op versus 62.47±1.79 post-op (p=0.045).

Overall, there was no correlation between DOS and any outcome score:

- Improvement Neck disability index (r=-0.18,p=0.134)
- Improvement in HDS (r=-0.126,p=0.296)
- Improvement in HAS (r=0.00,p=0.99)
- Improvement in SF-36 bodily pain (r=-0.011,p=0.925)
- Improvement in SF-26 mental health (r=0.042,p=0.324)
- Improvement in VAS neck pain (r=-0.0120,p=0.324)
- Improvement in VAS arm pain (r=0.0178,p=0.141)

However, there were significantly better NDI scores in those with DOS less than 12 months (31.85±3.209) compared to those with DOS greater than 12 months DOS (19.71±2.164), (p=0.002). No significant differences, by contrast, were recorded in other outcome scores: SF-36 bodily pain (p=0.085), VAS neck pain (p=0.058), VAS arm pain (p=0.084), HDS (p=0.095), HAS (p=0.356) and SF-36 mental health (p=0.908).

In similar fashion, significantly better NDI, VAS arm pain, HDS and HAS were recorded in those with DOS less than 24 months compared to those with DOS greater than 24 months DOS (NDI:27.35±2.714 versus 19.72±2.435, p=0.04. VAS arm pain:4.60±0.34 versus 2.74±3.72, p=0.001. HDS: 5.37±0.58 versus 3.60±0.47, p=0.023. HAS: 4.28±0.49 versus 2.45±0.48, p=0.009). No significant differences, however, were recorded in other outcome scores: SF-36 bodily pain (p=0.295), VAS neck pain (p=0.21), SF-36 mental health (p=0.766).

No significant differences were recorded in any outcome score for cut-offs at 36 months (NDI:p=0.341, SF-36 bodily pain:p=0.336, VAS neck pain:p=0.435, VAS arm pain: p=0.590, HDS p=0.230, and HAS p=0.746) or 48 months (results not shown).

Conclusion: Our results show that, in contrast to fusion in the lumbar spine, a DOS greater than 24 months may be associated with a less favourable outcome of cervical TDA. The reasons are multi-factorial and probably include effects of pain behaviour as well as facet arthropathy.