|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table S1.** **Characteristics of the included studies** | | | | | | | | | | | | | | |
| **Authors** | **Year** | **Study**  **Design** | **Level of Evidence** | **Group** | **Sample Size** | **Fusion Level** | **Age**  **(years)** | **Sex**  **(M/F)** | **BMI**  **(kg/m2)** | **Active Smoker** | **Previous Surgery** | **Combination of AS** | **Diagnosis** | **FU**  **(month)** |
| Choi | 2018 | RCS | III | Cervical | 29 | 4.1 ± 0.7 | 63.5 ± 10.9 | 13/16 | NA | NA | NA | 29/29 | Myelopathy  Radiculopathy | 43.1 ± 10.0 |
| Thoracic | 21 | 5.3 ± 1.3 | 61.6 ± 9.5 | 5/16 | 21/21 | 35.4 ± 11.3 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Huang | 2019 | RCS | III | Cervical | 65 | 3.5 ± 0.8 | 62.4 ± 10.7 | 23/42 | NA | 9/65 | 7/65 | NA | Myelopathy  Radiculopathy | 24.0 ± 19.7 |
| Thoracic | 64 | 5.8 ± 2.0 | 63.6 ± 12.6 | 43/21 | 8/64 | 15/64 | 29.7 ± 21.2 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Kennamer | 2019 | RCS | III | Cervical | 176 | 3.7 ± 0.7 | 65.2 ± 10.3 | 97/79 | 29.9 ± 5.1 | 17/176 | NA | 29/176 | Stenosis  Myelopathy  Pseudarthrosis  Deformity | 51.8 ± 16.6 |
| Thoracic | 45 | 5.1 ± 1.2 | 66.4 ± 10.7 | 27/18 | 29.7 ± 6.0 | 8/45 | 13/45 | 53.9 ± 20.1 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lee | 2019 | RCS | III | Cervical | 25 | 5.4 ± 0.6 | 61.0 ± 10.9 | 15/10 | NA | NA | NA | NA | Myelopathy | 38.1 ± 15.2 |
| Thoracic | 21 | 7.3 ± 1.7 | 65.3 ± 9.9 | 12/9 | 38.9 ± 22.7 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fayed | 2020 | RCS | III | Cervical | 79 | NA | 64.2 ± 9.4 | 52/27 | 29.0 ± 6.3 | NA | NA | 9/79 | General  degenerative disease | 18.1 ± 13.9 |
| Thoracic | 70 | 64.6 ± 11.6 | 29/41 | 28.3 ± 6.3 | 13/70 | 13.1 ± 9.8 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Truumees | 2020 | RCS | III | Cervical | 168 | 4.5 ± 1.0 | 62.0 ± 11.0 | 102/66 | 28.8 ± 6.7 | 41/168 | NA | 13/168 | General  degenerative disease | ≥ 24.0 |
| Thoracic | 96 | 6.8 ± 1.3 | 65.0 ± 11.0 | 53/43 | 28.9 ± 5.3 | 19/96 | 13/96 | ≥ 24.0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Chan | 2021 | RCS | III | Cervical | 33 | 2.9 ± 0.7 | 59.1 ± 11.4 | 18/15 | 28.3 ± 4.8 | 6/33 | 1/33 | NA | Myelopathy | ≥ 12.0 |
| Thoracic | 46 | 4.5 ± 1.2 | 63.7 ± 10.8 | 26/20 | 28.5 ± 6.3 | 7/46 | 1/46 | ≥ 12.0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hines | 2021 | RCS | III | Cervical | 185 | 4.6 ± 0.5 | 64.3 ± 11.6 | NA | NA | 35/185 | NA | NA | Myelopathy | 24.0 ± 25.9 |
| Thoracic | 184 | 6.0 ± 0.1 | 63.0 ± 9.9 | 85/184 | 27.1 ± 37.1 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Labrum | 2021 | RCS | III | Cervical | 36 | 3.2 ± 1.1 | 59.2 ± 9.3 | 20/16 | 30.7 ± 7.9 | 8/36 | NA | NA | Myelopathy  Radiculopathy  Pseudoarthrosis | 36.3 |
| Thoracic | 70 | 5.1 ± 1.5 | 61.3 ± 11.4 | 40/30 | 29.4 ± 6.2 | 17/70 | 31.7 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Okamoto | 2021 | RCS | III | Cervical | 43 | 5.3 ± 0.5 | 64.8 ± 12.4 | 29/14 | 26.0 ± 5.9 | NA | 7/43 | NA | Myelopathy  Amyotrophy  OPLL | 28.0 ± 14.8 |
| Thoracic | 30 | 7.1 ± 0.8 | 62.5 ± 12.9 | 21/9 | 26.1 ± 6.9 | 6/30 | 30.5 ± 14.7 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Scholz | 2021 | RCS | III | Cervical | 20 | 4.8 ± 0.7 | 63.9 ± 9.6 | 17/3 | NA | 7/20 | 5/20 | 4/20 | Myelopathy  OPLL | 124.6 ± 10.6 |
| Thoracic | 38 | 6.3 ± 0.7 | 64.1 ± 10.4 | 26/12 | 14/38 | 10/38 | 10/38 | 58.2 ± 15.7 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Sun | 2021 | RCS | IV | Cervical | 30 | 4.4 ± 0.7 | 60.8 ± 9.7 | 17/13 | NA | NA | NA | NA | OPLL | 15.4 ± 4.9 |
| Thoracic | 6 | 6.8 ± 0.8 | 64.3 ± 8.1 | 4/2 | 17.0 ± 5.9 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cho | 2022 | RCS | III | Cervical | 36 | 3.9 ± 0.9 | 55.8 ± 10.3 | 20/16 | NA | NA | 10/36 | 2/36 | Myelopathy  Radiculopathy | ≥ 24.0 |
| Thoracic | 53 | 7.0 ± 2.7 | 56.6 ± 9.0 | 26/27 | 8/53 | 8/53 | ≥ 24.0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Couch | 2022 | RCS | III | Cervical | 137 | 5.0 ± 0.3 | 60.0 ± 10.2 | 66/71 | 31.2 ± 6.7 | 38/137 | 29/137 | 29/137 | Myelopathy | 33.1 ± 16.9 |
| Thoracic | 67 | 6.4 ± 1.0 | 65.7 ± 10.7 | 26/41 | 30.0 ± 5.7 | 16/67 | 24/67 | 24/67 | 30.6 ± 15.5 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Morin | 2022 | RCS | III | Cervical | 101 | 4.5 ± 0.8 | 62.3 ± 10.3 | 75/26 | 29.4 ± 5.6 | 19/101 | NA | NA | Myelopathy | ≥ 24.0 |
| Thoracic | 97 | 6.2 ± 1.0 | 64.5 ± 9.2 | 51/46 | 28.7 ± 5.9 | 27/97 | ≥ 24.0 |
| BMI indicates body mass index; AS, anterior support; FU, follow-up; RCS, retrospective cohort study; OPLL, posterior longitudinal ligament; NA, not available; | | | | | | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table S2.** **Summary of pooled outcomes** | | | | | | | | | | |
| **Outcomes** | **Included Studies** | **Cervical**  **(n)** | **Thoracic**  **(n)** | **WMD or RR** | **95% CI** | | ***P effect*** |  | **Heterogeneity** | |
|  | ***I2*** | ***P*** |
|  |  |  |  |  |  |  |  |  |  |  |
| **Mechanical Complications** |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| **ASD** | 12 | 1079 | 860 | 1.87 | 1.27 | 2.76 | 0.001 |  | 11.7% | 0.330 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 6 | 463 | 491 | 1.85 | 0.97 | 3.54 | 0.062 |  | 0.0% | 0.477 |
| Combination of AS | 6 | 616 | 369 | 1.88 | 1.16 | 3.06 | 0.010 |  | 37.2% | 0.158 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 6 | 557 | 551 | 1.53 | 0.92 | 2.54 | 0.098 |  | 39.4% | 0.143 |
| General | 6 | 522 | 349 | 2.38 | 1.30 | 4.36 | 0.005 |  | 0.0% | 0.566 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Distal ASD** | 8 | 642 | 555 | 2.18 | 1.36 | 3.51 | 0.001 |  | 21.5% | 0.259 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 3 | 202 | 231 | 1.74 | 0.73 | 4.17 | 0.214 |  | 28.9% | 0.245 |
| Combination of AS | 5 | 440 | 324 | 2.38 | 1.35 | 4.19 | 0.003 |  | 35.4% | 0.185 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 4 | 339 | 281 | 1.47 | 0.81 | 2.69 | 0.206 |  | 56.0% | 0.078 |
| General | 4 | 303 | 274 | 3.50 | 1.59 | 7.68 | 0.002 |  | 0.0% | 0.891 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Proximal ASD** | 4 | 382 | 298 | 1.18 | 0.34 | 4.13 | 0.799 |  | 0.0% | 0.677 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 2 | 216 | 137 | 1.46 | 0.25 | 8.60 | 0.675 |  | 33.0% | 0.222 |
| Combination of AS | 2 | 166 | 161 | 0.94 | 0.15 | 5.68 | 0.944 |  | 0.0% | 0.958 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Hardware failure** | 9 | 614 | 451 | 1.48 | 1.02 | 2.15 | 0.040 |  | 0.0% | 0.779 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 5 | 202 | 231 | 1.53 | 0.97 | 2.42 | 0.066 |  | 0.0% | 0.482 |
| Combination of AS | 4 | 412 | 220 | 1.37 | 0.71 | 2.62 | 0.349 |  | 0.0% | 0.733 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 4 | 260 | 198 | 1.23 | 0.41 | 3.67 | 0.710 |  | 2.5% | 0.380 |
| General | 5 | 354 | 253 | 1.53 | 1.04 | 2.27 | 0.032 |  | 0.0% | 0.849 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Hardware failure of LIV** | 6 | 380 | 339 | 1.89 | 1.21 | 2.95 | 0.005 |  | 0.0% | 0.737 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 3 | 144 | 164 | 2.28 | 1.25 | 4.15 | 0.007 |  | 0.0% | 0.637 |
| Combination of AS | 3 | 236 | 175 | 1.41 | 0.73 | 2.75 | 0.309 |  | 0.0% | 0.569 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 2 | 202 | 131 | 4.37 | 0.56 | 33.89 | 0.159 |  | 0.0% | 0.631 |
| General | 4 | 178 | 208 | 1.75 | 1.11 | 2.76 | 0.016 |  | 0.0% | 0.592 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Pseudarthrosis** | 8 | 839 | 599 | 0.72 | 0.41 | 1.25 | 0.237 |  | 0.0% | 0.466 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 4 | 279 | 321 | 0.75 | 0.33 | 1.71 | 0.496 |  | 0.0% | 0.726 |
| Combination of AS | 4 | 560 | 278 | 0.69 | 0.33 | 1.44 | 0.318 |  | 42.6% | 0.156 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 4 | 380 | 318 | 0.85 | 0.35 | 2.11 | 0.733 |  | 0.0% | 0.611 |
| General | 4 | 459 | 281 | 0.63 | 0.32 | 1.27 | 0.200 |  | 32.2% | 0.219 |
|  |  |  |  |  |  |  |  |  |  |  |
| **DJK** | 6 | 517 | 348 | 1.57 | 0.60 | 4.08 | 0.358 |  | 11.9% | 0.339 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 3 | 94 | 137 | 0.58 | 0.15 | 2.29 | 0.441 |  | 30.9% | 0.235 |
| Combination of AS | 3 | 423 | 211 | 4.15 | 0.79 | 21.69 | 0.092 |  | 0.0% | 0.694 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 2 | 58 | 67 | 0.22 | 0.03 | 1.77 | 0.153 |  | 0.0% | 0.820 |
| General | 4 | 459 | 281 | 4.39 | 1.01 | 19.12 | 0.049 |  | 0.0% | 0.853 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Surgical complications** |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| **Overall** | 8 | 646 | 508 | 0.66 | 0.40 | 1.10 | 0.113 |  | 23.8% | 0.239 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 4 | 242 | 237 | 0.67 | 0.38 | 1.20 | 0.176 |  | 44.8% | 0.143 |
| Combination of AS | 4 | 404 | 271 | 0.64 | 0.22 | 1.83 | 0.406 |  | 20.4% | 0.288 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 4 | 336 | 274 | 1.04 | 0.51 | 2.10 | 0.915 |  | 0.0% | 0.729 |
| General | 4 | 310 | 234 | 0.40 | 0.19 | 0.88 | 0.022 |  | 33.4% | 0.212 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Epidural haematoma** | 5 | 492 | 327 | 1.07 | 0.34 | 3.32 | 0.907 |  | 0.0% | 0.614 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 2 | 108 | 94 | 0.84 | 0.13 | 5.40 | 0.854 |  | 18.2% | 0.269 |
| Combination of AS | 3 | 384 | 233 | 1.22 | 0.29 | 5.09 | 0.789 |  | 0.0% | 0.492 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 2 | 202 | 131 | 1.52 | 0.24 | 9.60 | 0.658 |  | 0.0% | 0.585 |
| General | 3 | 290 | 196 | 0.86 | 0.20 | 3.70 | 0.842 |  | 5.9% | 0.346 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Dual tears** | 5 | 329 | 274 | 0.80 | 0.31 | 2.07 | 0.647 |  | 0.0% | 0.461 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 3 | 141 | 140 | 0.72 | 0.24 | 2.16 | 0.554 |  | 25.7% | 0.260 |
| Combination of AS | 2 | 188 | 134 | 1.04 | 0.16 | 6.77 | 0.970 |  | 0.0% | 0.346 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 2 | 98 | 110 | 1.25 | 0.31 | 5.12 | 0.753 |  | 1.6% | 0.313 |
| General | 3 | 231 | 164 | 0.56 | 0.15 | 2.13 | 0.392 |  | 0.0% | 0.406 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Neurologic deficits** | 6 | 408 | 344 | 0.46 | 0.21 | 1.01 | 0.052 |  | 0.0% | 0.714 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 3 | 141 | 140 | 0.58 | 0.24 | 1.43 | 0.239 |  | 0.0% | 0.376 |
| Combination of AS | 3 | 267 | 204 | 0.24 | 0.04 | 1.35 | 0.105 |  | 0.0% | 0.933 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 2 | 98 | 110 | 0.99 | 0.26 | 3.75 | 0.992 |  | 0.0% | 0.419 |
| General | 4 | 310 | 234 | 0.30 | 0.10 | 0.84 | 0.023 |  | 0.0% | 0.714 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Wound-related complications** | 9 | 831 | 692 | 0.58 | 0.36 | 0.92 | 0.022 |  | 7.3% | 0.374 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 5 | 427 | 421 | 0.52 | 0.29 | 0.93 | 0.028 |  | 37.6% | 0.171 |
| Combination of AS | 4 | 404 | 271 | 0.71 | 0.31 | 1.62 | 0.416 |  | 0.0% | 0.589 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 5 | 521 | 458 | 0.55 | 0.31 | 1.00 | 0.049 |  | 30.2% | 0.220 |
| General | 4 | 310 | 234 | 0.62 | 0.28 | 1.37 | 0.240 |  | 0.0% | 0.421 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Systemic complications** | 4 | 161 | 178 | 0.24 | 0.05 | 1.10 | 0.066 |  | 0.0% | 0.999 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 2 | 98 | 110 | 0.23 | 0.03 | 1.94 | 0.178 |  | 0.0% | 0.876 |
| General | 2 | 63 | 68 | 0.25 | 0.03 | 2.18 | 0.211 |  | 0.0% | 0.955 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Reoperation** | 11 | 1059 | 822 | 0.98 | 0.75 | 1.29 | 0.898 |  | 33.0% | 0.135 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 6 | 463 | 491 | 1.02 | 0.70 | 1.50 | 0.914 |  | 48.1% | 0.086 |
| Combination of AS | 5 | 596 | 331 | 0.94 | 0.64 | 1.39 | 0.762 |  | 21.3% | 0.279 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 6 | 557 | 511 | 0.90 | 0.62 | 1.31 | 0.595 |  | 38.6% | 0.148 |
| General | 5 | 502 | 311 | 1.09 | 0.73 | 1.62 | 0.678 |  | 40.3% | 0.152 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Reoperation-Mechanical** | 11 | 1059 | 822 | 1.38 | 0.98 | 1.95 | 0.063 |  | 29.8% | 0.162 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 6 | 463 | 491 | 1.75 | 1.03 | 2.97 | 0.004 |  | 16.7% | 0.306 |
| Combination of AS | 5 | 596 | 331 | 1.16 | 0.74 | 1.81 | 0.526 |  | 39.8% | 0.156 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 6 | 557 | 511 | 1.51 | 0.88 | 2.58 | 0.136 |  | 16.0% | 0.311 |
| General | 5 | 502 | 311 | 1.30 | 0.83 | 2.01 | 0.249 |  | 49.9% | 0.092 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Reoperation-Surgical** | 4 | 449 | 297 | 0.68 | 0.22 | 2.10 | 0.499 |  | 0.0% | 0.560 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 2 | 202 | 131 | 0.98 | 0.16 | 5.94 | 0.983 |  | 0.0% | 0.997 |
| General | 2 | 247 | 166 | 0.53 | 0.12 | 2.35 | 0.406 |  | 48.7% | 0.163 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Reoperation-Wound** | 7 | 768 | 624 | 0.55 | 0.32 | 0.96 | 0.034 |  | 0.0% | 0.455 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 4 | 384 | 391 | 0.62 | 0.34 | 1.13 | 0.120 |  | 36.7% | 0.192 |
| Combination of AS | 3 | 384 | 233 | 0.32 | 0.08 | 1.24 | 0.098 |  | 0.0% | 0.938 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 5 | 521 | 458 | 0.59 | 0.33 | 1.04 | 0.070 |  | 24.9% | 0.255 |
| General | 2 | 247 | 166 | 0.36 | 0.07 | 1.91 | 0.228 |  | 0.0% | 0.799 |
|  |  |  |  |  |  |  |  |  |  |  |
| **ORT** | 10 | 611 | 570 | -43.47 | -59.42 | -27.52 | < 0.001 |  | 75.3% | < 0.001 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 6 | 308 | 313 | -38.29 | -57.84 | -18.75 | < 0.001 |  | 76.9% | 0.001 |
| Combination of AS | 4 | 303 | 257 | -51.92 | -80.47 | -23.36 | < 0.001 |  | 73.3% | 0.010 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 4 | 235 | 260 | -43.03 | -60.43 | -25.62 | < 0.001 |  | 63.9% | 0.040 |
| General | 6 | 376 | 310 | -44.68 | -72.89 | -16.46 | 0.002 |  | 82.1% | < 0.001 |
|  |  |  |  |  |  |  |  |  |  |  |
| **EBL** | 11 | 721 | 740 | -143.77 | -185.90 | -101.63 | < 0.001 |  | 59.4% | 0.006 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 7 | 418 | 483 | -130.25 | -186.65 | -73.85 | < 0.001 |  | 54.7% | 0.039 |
| Combination of AS | 4 | 303 | 257 | -165.19 | -225.69 | -104.70 | < 0.001 |  | 49.9% | 0.112 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 5 | 345 | 430 | -140.80 | -194.11 | -87.48 | < 0.001 |  | 62.5% | 0.030 |
| General | 6 | 376 | 310 | -141.11 | -216.70 | -65.53 | < 0.001 |  | 55.0% | 0.049 |
|  |  |  |  |  |  |  |  |  |  |  |
| **LOS** | 7 | 621 | 596 | -0.40 | -1.28 | 0.48 | 0.375 |  | 81.0% | < 0.001 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 4 | 354 | 392 | -0.18 | -1.19 | 0.83 | 0.730 |  | 83.3% | < 0.001 |
| Combination of AS | 3 | 267 | 204 | -0.86 | -3.50 | 1.78 | 0.523 |  | 85.3% | 0.001 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 3 | 318 | 322 | -0.37 | -1.61 | 0.87 | 0.556 |  | 78.8% | 0.009 |
| General | 4 | 303 | 274 | -0.49 | -2.16 | 1.19 | 0.569 |  | 81.8% | 0.001 |
|  |  |  |  |  |  |  |  |  |  |  |
| **PROs** |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| **NDI at finial Follow-up** | 8 | 413 | 278 | -1.63 | -4.50 | 1.23 | 0.264 |  | 77.5% | < 0.001 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 5 | 194 | 159 | -3.60 | -6.35 | -0.85 | 0.010 |  | 72.0% | 0.006 |
| Combination of AS | 3 | 219 | 119 | 3.44 | -1.95 | 8.83 | 0.211 |  | 37.6% | 0.202 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 4 | 170 | 185 | -2.06 | -7.01 | 2.89 | 0.415 |  | 84.8% | < 0.001 |
| General | 4 | 243 | 93 | -0.85 | -3.20 | 1.51 | 0.482 |  | 31.5% | 0.223 |
|  |  |  |  |  |  |  |  |  |  |  |
| **NRS-NP at finial Follow-up** | 6 | 327 | 268 | -0.58 | -0.93 | -0.23 | 0.001 |  | 0.0% | 0.470 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 4 | 151 | 151 | -0.45 | -0.97 | 0.08 | 0.093 |  | 26.2% | 0.255 |
| Combination of AS | 2 | 176 | 117 | -0.69 | -1.17 | -0.21 | 0.005 |  | 0.0% | 0.780 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 3 | 121 | 130 | -0.53 | -1.09 | 0.03 | 0.064 |  | 42.0% | 0.178 |
| General | 3 | 206 | 138 | -0.61 | -1.07 | -0.16 | 0.008 |  | 0.0% | 0.584 |
|  |  |  |  |  |  |  |  |  |  |  |
| **NRS-AP at finial Follow-up** | 4 | 128 | 151 | -0.39 | -0.86 | 0.08 | 0.106 |  | 0.1% | 0.391 |
|  |  |  |  |  |  |  |  |  |  |  |
| **JOA score at finial Follow-up** | 5 | 139 | 151 | 0.05 | -0.50 | 0.59 | 0.864 |  | 0.0% | 0.636 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 3 | 101 | 108 | 0.28 | -0.39 | 0.95 | 0.406 |  | 0.0% | 0.849 |
| General | 2 | 38 | 43 | -0.41 | -1.35 | 0.52 | 0.386 |  | 0.0% | 0.369 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Radiographic outcome** |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| **C2-7 CL at finial Follow-up** | 6 | 301 | 160 | 0.36 | -1.46 | 2.18 | 0.699 |  | 26.0% | 0.239 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 4 | 131 | 103 | 0.51 | -1.75 | 2.78 | 0.657 |  | 0.0% | 0.432 |
| Combination of AS | 2 | 170 | 57 | 0.08 | -3.00 | 3.15 | 0.962 |  | 74.7% | 0.047 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 3 | 87 | 88 | -1.20 | -3.65 | 1.26 | 0.339 |  | 38.5% | 0.197 |
| General | 3 | 214 | 72 | 2.28 | -0.45 | 5.00 | 0.101 |  | 0.0% | 0.972 |
|  |  |  |  |  |  |  |  |  |  |  |
| **C2-7 cSVA** **at finial Follow-up** | 6 | 301 | 160 | -0.56 | -3.75 | 2.63 | 0.731 |  | 0.0% | 0.543 |
| ***Surgical technique subgroup*** |  |  |  |  |  |  |  |  |  |  |
| No Combination of AS | 4 | 131 | 103 | -2.16 | -6.20 | 1.89 | 0.296 |  | 0.0% | 0.874 |
| Combination of AS | 2 | 170 | 57 | 2.05 | -3.12 | 7.22 | 0.437 |  | 43.6% | 0.183 |
| ***Surgical indication subgroup*** |  |  |  |  |  |  |  |  |  |  |
| Specific | 3 | 87 | 88 | -0.21 | -4.61 | 4.18 | 0.925 |  | 47.9% | 0.147 |
| General | 3 | 214 | 72 | -0.94 | -5.57 | 3.68 | 0.689 |  | 0.0% | 0.925 |
|  |  |  |  |  |  |  |  |  |  |  |
| **T1 Slope at finial Follow-up** | 3 | 101 | 97 | -1.94 | -4.72 | 0.83 | 0.170 |  | 0.0% | 0.912 |
| ASD indicates adjacent segment disease; LIV, lower instrumented vertebra; DJK, distal junctional kyphosis; Reoperation-Mechanical, reoperation rate following mechanical complications; Reoperation-Surgical, reoperation rate following surgical complications; Reoperation-Wound, reoperation rate following wound-related complications; ORT, operating time; EBL, estimated blood loss; LOS, length of hospital stay; PROs, patient-reported outcomes; NDI, Neck Disability Index; NRS-NP, numeric rating scale for neck pain; NRS-AP, numeric rating scale for arm pain; JOA, Japanese Orthopaedic Association; CL, cervical lordosis; cSVA, cervical sagittal vertical axis; AS, anterior support; WMD, weighted mean difference; RR, risk ratio; CI, confidence interval | | | | | | | | | | |