Decompression alone versus interspinous/interlaminar device placement for degenerative lumbar pathologies: Systematic Review and Meta-Analysis

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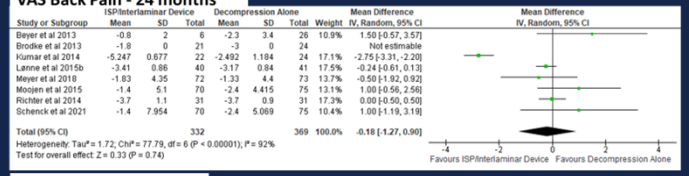
Introduction

Interspinous (ISD) and interlaminar devices (ILD) are marketed as alternatives to decompression for degenerative lumbar pathologies. The present study aimed to analyze the current literature directly comparing cost and effectiveness of ISDs/ILDs to decompression alone.

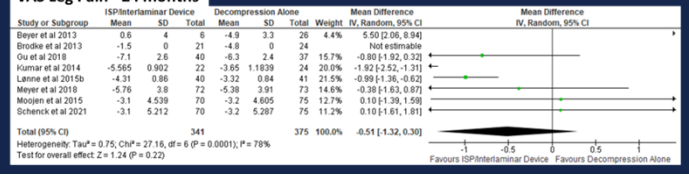
Methods

English language studies comparing the cost and outcomes of patients treated with decompression alone or with an ISD/ILD with or without concurrent decompression. Outcomes of interest included postoperative back and leg pain scores, Oswestry Disability Index (ODI), Short-Form 36 (SF36), Zurich Claudication Questionnaire (ZCQ) scores, EuroQoL-5 dimensions (EQ5D) scores, and perioperative complications, total treatment costs. Outcomes were analyzed at: < 6 weeks, 3-months, 6-months, 1-year, 2-year, and last follow-up (LFU). Analyses were performed using RevMan software with random effects modeling.

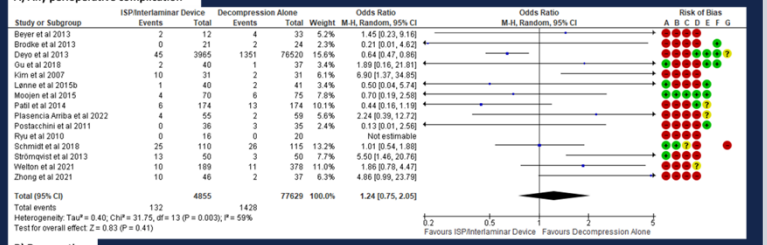
VAS Back Pain - 24 months



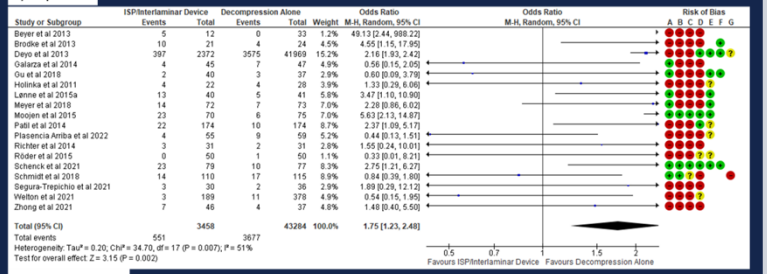
VAS Leg Pain - 24 months



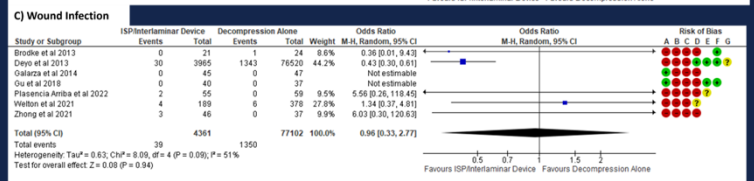
A) Any perioperative complication



B) Reoperation



C) Wound Infection



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Results

1699 unique studies were identified, of which 29 met criteria for inclusion in the final analysis. Comparison of patients treated with decompression alone and ILD/ISD suggested the latter had significantly greater improvement in leg pain at 3mo (-1.43; [-1.78, -1.07]; p< 0.001), 6mo (-0.89; [-1.55, -0.24]; p=0.008), and 12mo(-0.97; [-1.25, -0.68]; p< 0.001), but not 2yr (p=0.22) or LFU (p=0.09). Back pain scores were better in the ISD/ILD group only at 1yr (-0.87; [-1.62, -0.13]; p=0.02). SF-36 physical component scores nor ZCQ symptom severity scores differed significantly at any examined endpoint. ZCQ physical function scores showed greater improvement for decompression alone at 6mo (0.35; [0.07, 0.63]; p=0.01) and 12mo (0.23; [0.00, 0.46];p=0.05), while ODI and EQ-5D scores favored ILD/ISD at all time points, with the exception of 6mo ODI scores(p=0.07), though none reached the minimum clinically important difference (MCID). Perioperative complications were nonsignificantly higher in the ISD/ILD group (p=0.41), while reoperations (OR=1.75; [1.23,2.48]; p=0.002) and total care costs (standardized mean difference 1.19; [0.62, 1.77]; p< 0.001) were significantly higher in the ILD/ISD groups.

Conclusion

Patient reported outcomes are largely similar between patients treated with decompression alone and those treated with ILD/ISD for degenerative lumbar pathologies; none of the observed differences reached accepted MCIDs. Costs and rates of reoperation are significantly higher in the ISD/ILD group though, suggesting current evidence does not support ILD/ISD use as a cost-effective alternative to surgical decompression.