

Hubungan antara Spinopelvic Alignment dengan terjadinya Spondilolistesis Degeneratif: Sebuah Studi Systematic Review dan Meta-Analisis = Association between Spinopelvic Alignment and the Development of Degenerative Spondylolisthesis: A Systematic Review and Meta-Analysis

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Abstrak

Parameter spinopelvic alignment (sagittal balance) merupakan salah satu etiologi yang dicurigai dalam menyebabkan spondylolisthesis degeneratif. Namun, hasil dari studi-studi sebelumnya menunjukkan hasil yang berlawanan; dimana beberapa studi menemukan hubungan yang signifikan dari beberapa parameter tersebut sedangkan yang lain tidak. Sebelumnya, belum terdapat meta-analisis mengenai hubungan spinopelvic alignment dengan terjadinya spondylolisthesis degeneratif. Meta-analisis ini bertujuan untuk mengetahui hubungan parameter spinopelvic alignment dengan terjadinya spondylolisthesis degeneratif. Systematic review dan meta-analisis yang dikerjakan berdasarkan metode Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA). Pencarian literatur dilakukan melalui PubMed, EMBASE, ScienceDirect, Cochrane, dan Google Scholar. Kualitas metodologis berdasarkan ceklis Agency for Healthcare Research and Quality (AHRQ) cross-sectional study quality methodology checklist dan Newcastle-Ottawa Scale (NOS) untuk studi kohort. Analisis statistik dilakukan menggunakan Rev-Man 5.3. Kekuatan asosiasi diperkirakan menggunakan MD, RR, atau OR dan 95% IK nya. Data disajikan dalam bentuk tabel dan forest plot. Nilai P dibawah 0,05 dianggap sebagai bermakna secara statistik. Efek fixed-effect digunakan ketika tidak terdapat heterogenitas statistik signifikan ($I^2 < 50\%$, $P > 0.10$). Jika tidak, efek random-effects (metode Dersimonian dan Laird) digunakan. Grup disajikan antara lain usia, jenis kelamin, PI, PT, SS, LL, dan TK. Studi subgroup dilakukan berdasarkan area dan desain studi untuk memastikan hubungan area dan heterogenitas. Didapatkan total 3,236 artikel. Sejumlah 281 artikel penelitian didapatkan dari PubMed, 959 artikel dari ScienceDirect, 24 artikel dari Cochrane, 1820 artikel pada Google Scholar. Selain itu, dilakukan juga pencarian artikel secara hand searching dari daftar pustaka masing-masing artikel. Didapatkan sebanyak 10 artikel yang dianggap berhubungan dengan kata kunci penelitian. Ditemukan bahwa pelvic incidence (mean difference [MD] = 11,94 [1,81-22,08], $P = 0,02$), pelvic tilt (MD = 4,47 [0,81-8,14], $P = 0,02$), dan usia (MD = 11,94 [1,81-22,08], $P = 0,02$) berhubungan terjadinya spondylolisthesis degeneratif. Ditemukan pula perempuan memiliki risiko 2,86 kali lipat mengalami spondylolisthesis degeneratif dibandingkan dengan laki-laki (OR = 2,86, $IK_{95\%} = 1,49-5,48$; $p = 0,002$). Meta-analisis ini menunjukkan bahwa pelvic incidence, pelvic tilt, usia, dan jenis kelamin perempuan berhubungan terjadinya spondylolisthesis degeneratif

.....Spinopelvic parameter may result in the development of degenerative spondylolisthesis. However, results from previous studies show conflicting results; some studies found significant relationship of some of these parameters with degenerative spondylolisthesis, while others did not. Previously, there was no meta-analysis regarding the association between spinopelvic alignment and degenerative spondylolisthesis. This meta-analysis aims to determine the association between spinopelvic alignment and degenerative spondylolisthesis. Systematic reviews and meta-analyzes are carried out based on the Selected Item

Reporting method for Systematic Review and Meta Analysis (PRISMA). Literature search was performed using PubMed, EMBASE, ScienceDirect, Cochrane, and Google Scholar. Methodological quality based on the cross-sectional checklist of the Agency for Healthcare Research and Quality (AHRQ) quality check methodology and the Newcastle-Ottawa Scale (NOS) for cohort studies. Statistical analysis was performed using Rev-Man 5.3. The strength of the association is estimated using MD, RR, or OR and 95% of its IK. Data is presented in table and forest plot form. P values below 0.05 are considered as statistically significant. Fixed-effect effects are used when there is no statistically significant heterogeneity ($I^2 < 50\%$, $P > 0.10$). Otherwise, random-effects (the Dersimonian and Laird methods) are used. Groups presented include age, gender, PI, PT, SS, LL, and TK. Subgroup studies are conducted based on ethnic and study design to ascertain racial relations and heterogeneity. A total of 3,236 articles were obtained. Get 281 research articles from PubMed, 959 articles from ScienceDirect, 24 articles from Cochrane, 1820 articles on Google Scholar. In addition, a hand searching article was also conducted from the bibliography of each article. 10 articles related to research keywords were obtained. It was found that pelvic incidence (mean difference [MD] = 11.94 [1.81-22.08], $P = 0.02$), pelvic tilt (MD = 4.47 [0.81-8.14]), $P = 0.02$), and age (MD = 11.94 [1.81-22.08], $P = 0.02$) associated with degenerative spondylolisthesis. Compared with men (OR = 2.86, IK95% = 1.49-5.48; $p = 0.002$). This meta-analysis proves that pelvic incidence, pelvic tilt, age, and female sex are associated with degenerative spondylolisthesis.