

OP41 SOFT TISSUE CHANGES IN EXTRACTION VERSUS NON-EXTRACTION TREATMENT WITH FIXED ORTHODONTIC APPLIANCES: A SYSTEMATIC REVIEW AND META-ANALYSIS

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**AIM:** To compare the soft tissue response of comprehensive orthodontic treatment with fixed appliances and the systematic extraction of permanent teeth from clinical trials on human patients in an evidence-based manner.

**MATERIALS AND METHOD:** Ten electronic databases were searched from inception to October 2016 without year, language, or publication type limitations for controlled clinical trials comparing extraction and non-extraction comprehensive orthodontic treatment with fixed appliances, followed by manual searches. After duplicate study selection and data extraction, risk of bias within and across studies was assessed in duplicate with the Cochrane risk of bias tool and the GRADE approach, respectively. Random-effects meta-analyses of mean differences (MDs) with the 95 per cent confidence intervals (CIs) were conducted, followed by mixed-effects subgroup and sensitivity analyses.

**RESULTS:** A total of 62 clinical studies were included in the systematic review. Extraction treatment was associated with a statistically significant increase of nasolabial angle (17 studies; 787 patients; MD = 2.60°; 95% CI = 1.56 to 3.64°;  $P < 0.001$ ; I<sup>2</sup> = 8%), a statistically significant increase in N'-Sn-Pg' angle (5 studies; 237 patients; MD = 1.21°; 95% CI = 0 to 2.45°;  $P = 0.05$ ; I<sup>2</sup>=57%), and a statistically non-significant decrease in Gl'-Sn-Pg' angle (3 studies; 183 patients; MD = -1.56°; 95% CI = -3.30 to 0.18°;  $P = 0.80$ ; I<sup>2</sup>=68%). No significant overall differences in the soft tissue response according to extraction pattern, but underlying tooth movements, anchorage management, and appliances used had a considerable effect. Finally, significant signs of bias were linked to the methodological quality of the included studies.

**CONCLUSIONS:** Different extraction patterns do not seem to have an impact on soft tissue changes while extractions in general led to an increase of the nasolabial angle and to contradictory results with regard to the angle of facial convexity. Future research investigations should focus on the elimination of a series of methodological biases to enable robust prediction of effects of extraction treatment on the facial soft tissues.

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