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### RADIOGRAPHIC ASSESSMENT OF EXTERNAL ROOT RESORPTION ASSOCIATED WITH JACKSCREW-BASED MAXILLARY EXPANSION THERAPIES: A SYSTEMATIC REVIEW

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**Objective:** To evaluate in adolescents and young adults if jackscrew-based maxillary expansion therapies result in external root resorption as measured *in vivo* via any radiological method.

**Methods:** The authors conducted a systematic search of several electronic databases (MEDLINE, EMBASE, PubMed, Scopus, CINAHL, Evidence based Medicine Reviews, LILACS) with the assistance of a senior librarian specialized in Health Sciences database searches through 25 August 2013, as well as a limited grey-literature search (Google Scholar). Human, *in vivo* studies of adolescents or young adults with transverse maxillary deficiency undergoing non-surgical maxillary expansion therapy through the use of a jackscrew-based maxillary expander with a radiographical assessment of root resorption were selected for full article review. Additionally, manual searches of reference lists of relevant articles were completed to identify additional publications not identified by electronic searches. The lowest levels of evidence accepted for inclusion were case-control studies or consecutively treated series of cases. Two authors independently reviewed and extracted data from selected studies.

**Results:** A total of 83 original articles were identified from the electronic database and limited grey-literature searches. Once selection criteria were applied, only three articles satisfied all inclusion criteria, and individual analysis of the selected articles was undertaken.

**Conclusions:** Two-dimensional periapical radiographs do not fully reveal the amount of external root resorption associated with maxillary expansion therapy, except for frank apical root resorption. Three-dimensional cone-beam computed tomography radiography displays statistically significant root volume loss associated with maxillary expansion therapy. However, when considering volume-loss percentages, no statistical significance was found.