Single-tooth replacement in the anterior maxilla by means of immediate implantation and provisionalization: a review

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CRD summary
This inadequately reported and poorly conducted review concluded that clinicians should be cautious when considering immediate implant placement and provisionalisation for replacing single maxillary teeth in the aesthetic zone. These conclusions cannot be considered reliable as the review is likely to have been vulnerable to a number of biases.

Authors' objectives
To assess the effectiveness of immediate implantation and provisionalisation to replace single maxillary teeth in the aesthetic zone.

Searching
MEDLINE and Cochrane Oral Health Group's Trials Register were searched from 1977 to June/October 2006. Search terms were reported. Two journals were handsearched: Clinical Oral Implants Research and The International Journal of Oral and Maxillofacial Implants. Reference lists of articles retrieved during the preliminary selection stages were scanned. Only full-text English-language publications were considered.

Study selection
Clinical studies that reported implant survival rate and/or changes in soft or hard tissues levels following immediate maxillary single-tooth replacement procedures provisionalised within 24 hours were considered. Case reports were excluded.

The following implant types were used: screw-type cylindrical; screw-type tapered; stepped screw-type tapered; and press-fit cylindrical. All studies reported implant survival rate and hard tissue changes; some also reported on soft tissue changes. Patient demographics were mentioned but not detailed. Observation periods ranged from one month to 52 months.

The authors did not report how many reviewers performed the study selection.

Assessment of study quality
The authors stated methodological quality was assessed based on study design, description of patient demographics and outcome variables measured. No further details were reported and it was not clear how many reviewers performed this assessment.

Data extraction
Basic study characteristics, percentage implant survival rates and reported tissue changes were extracted. The authors did not report how many reviewers performed the data extraction.

Methods of synthesis
A narrative synthesis was presented using text and tables grouped by type of outcome.

Results of the review
A total of 11 studies were included in this review (n was unclear). The included studies appeared to be largely either retrospective or prospective case series. Two controlled clinical trials compared immediate with delayed implantation. Not all studies reported whether the reported data came from consecutive patients. The number of implants per study ranged from eight to 92.

Implant survival rate: 11 studies reported implant survival rate and in all but three studies this was given as 100%. The remaining three studies reported survival rates of 78.6%, 93.9% and 93.5%.
Hard tissue changes: 11 studies reported on peri-implant bone loss. The mean bone loss ranged from 0.2mm to 0.5mm after one year according to three studies. One trial reported no bone loss.

Soft tissue changes: four studies reported soft tissues changes, including change in papilla height. One study reported no changes and the other two studies reported a range of tissue loss values. The average mid facial gingival recession after one year of follow-up was between 0.55mm and 0.75mm.

Authors' conclusions
The clinician should be cautious when considering immediate implant placement and provisionalisation for replacing single maxillary teeth in the aesthetic zone.

CRD commentary
This review addressed a broad question with suitable inclusion criteria. The searches were limited and excluded languages other than English and unpublished research. The review processes were not clearly described in terms of how many reviewers carried out the study selection, quality assessment and data extraction; therefore, the review may have been subject to reviewer error or bias. The quality assessment was poorly described and reported. A narrative synthesis was likely to have been appropriate, but few details on the primary studies were provided (particularly in relation to the controlled trials). As most included studies appeared not to have been comparative in design, the authors conclusions did not appear based on the scarce data available. In the light of this, and the review's numerous methodological limitations, the authors' conclusions are unlikely to be reliable.

Implications of the review for practice and research
Practice: The authors stated that the clinician should be cautious when considering immediate implant placement and provisionalisation for replacing single maxillary teeth in the aesthetic zone.

Research: The authors stated that prospective and controlled clinical trials were required to document the aesthetic treatment outcomes and should use a standardised technique to measure changes in gingival levels.

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