A systematic review of marginal soft tissue at implants subjected to immediate loading or immediate restoration
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CRD summary
The authors cautiously conclude that, following the successful integration of immediately loaded or restored implants, soft tissue reaction is comparable to that of conventionally loaded implants in terms of periodontal and morphological aspects. Given the small numbers of patients and the unclear quality of the included studies, it is difficult to determine the reliability of the authors’ conclusions.

Authors’ objectives
To critically evaluate marginal soft-tissue aspects at implants subject to immediate loading or immediate restoration.

Searching
MEDLINE was searched from 1966 to August 2005 for English language articles; the search terms were reported. Handsearches of bibliographies of previous reviews and all selected articles, in addition to 17 relevant journals, were also carried out. Only peer-reviewed articles were eligible.

Study selection
It appears that studies of any patients undergoing endosseus, solid titanium implants placed the same day or within 24 hours were eligible for inclusion. Studies of temporary implants and of retrieved implants for histological evaluations were excluded. The included studies were of a range of different procedures: single tooth, partial-arch or full arch restorations, fixed or removable restorations, implants placed into both immediate extraction sites and healed sites. The implant systems used in the included studies were Ankylos system, Spline, Branemark, Astra, ITI, Replace and Steri-Oss. The time to loading ranged from immediately to within 24 hours for the intervention group, and from within 24 hours to 8 months after submerged healing for the control group. Studies of clinical examinations of implant-borne reconstruction and related marginal soft tissues were eligible for inclusion. Studies with outcomes based on patient records, questionnaires or interviews were excluded. The outcomes reported in the review were cumulative survival rate, plaque accumulation, bleeding indices, gingivitis, peri-implant mucositis, probing depth measurements, bleeding upon probing, metrical measurements of marginal or interproximal tissue levels, aesthetic satisfaction as determined by visual analogue scales or patient self-report, and papilla evaluation as measured using Jemt's index or qualitative evaluation. Reports of immediate post-operative adverse events were excluded. Studies with a follow-up of less than 12 months were excluded. The mean follow up period in the included studies ranged from 12 to 49 months. Randomised controlled trials (RCTs), controlled trials, prospective and retrospective cohort studies, and prospective and retrospective case series of at least five consecutive cases were eligible for inclusion. A variety of study designs were included in the review.

Two reviewers independently selected studies for review at the title, abstract and full-text stages. Any disagreements were resolved by discussion.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Two reviewers independently extracted the data.

Methods of synthesis
The results were combined in a narrative, and were discussed separately for soft tissue evaluations conducted at bar-retained over dentures and soft tissue evaluations conducted at partial-fixed reconstructions.

Results of the review
Seventeen studies (n=434; number of implants: 708 reported in the tables and 706 in the text) were included in the review: 2 RCTs (n=30; 120 implants), 4 controlled clinical trials (n=111; 195 implants) and 11 prospective case series (n=293; 393 implants).

Bar-retained over dentures (5 studies).

There were no significant differences between patients with immediate loading of implants and those with delayed loading on bleeding indices, plaque accumulation and probing depth. Implant survival rates were comparable for both groups (1 RCT, 1 controlled trial; range: 97.5 to 100%). There were no significant differences between one- and two-piece implants subject to immediate loading on measures of bleeding, plaque, probing depth or survival rate (1 RCT, n=10; 40 implants).

Partial-fixed reconstructions (12 studies).

The average mean facial recession of the mucosal margins was between 0.5 and 1 mm (4 studies). The outcome for papillae using Jemt's index varied considerably between the 5 studies that evaluated it: the scores ranged from 1 to 2 (representing an unsatisfactory outcome) to 3 (ideal aesthetics). One case series study found a mean Jemt's index of 3 at 24 months' post implantation, while another reported a score of 3 in 89% of implants. The 2 controlled studies showed no significant differences between experimental and delayed loading groups on plaque accumulation, mucositis or probing depth.

Authors' conclusions
The authors cautiously conclude that, following successful integration of immediately loaded or restored implants, soft tissue reaction is comparable to that of conventionally loaded implants in terms of periodontal and morphological aspects.

CRD commentary
The inclusion criteria were stated clearly in terms of the intervention, participants, outcome and study design. Only one database was searched, therefore relevant studies might have been missed. The search was restricted to articles published in English, therefore language and publication bias might have been introduced. Appropriate steps were taken to minimise the possibility of error and bias in the study selection and data extraction processes. The authors do not appear to have formally assessed validity, thus it is difficult to ascertain the quality of the included studies. However, they did note that the level of evidence for the review is weak as a result of the designs of the included studies and small sample sizes. The authors' decision to combine the studies in a narrative analysis was appropriate. However, the results of the studies were described individually and the review might have benefited from greater synthesis of the results. Given the small numbers of patients and the unclear quality of the included studies, it is difficult to determine the reliability of the authors' conclusions.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that further well-designed studies such as RCTs are needed, with greater detail of surgical and prosthetic treatment and follow-up protocols. The outcomes used in future studies should rely on metrical measurements of aesthetic outcome rather than Jemt's indexing.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.