HTA177

The Safety and Effectiveness of Root Membrane Technique (Socket Shield Technique)

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INTRODUCTION

Several conditions are necessary for successful implant treatment, but in particular, sufficient amount and bone quality of alveolar bone to withstand chewing forces are very important considerations. There has recently been an increase in interest in dental fixture installation using the root membrane technique (RMT, Socket Shield Technique), which can maintain the buccal bone by inserting an implant around the surviving tooth root, as a means of preventing alveolar bone abnormalities. In comparison to other procedures, it has been claimed that this technique has the advantages of less bone loss at the top of the implant and higher implant esthetics. This method was originally launched in 2007 It is reported that it can maintain a natural appearance and is minimally invasive. Through a thorough literature analysis, we assess the technology's efficacy and safety.

METHODS

This study aimed to assess the safety and effectiveness of the RMT in patients who require implant as part of the nHTA. A literature search of five domestic databases, and three international databases was conducted. The search generated 334 results, and after excluding duplicate articles, 135 studies were assessed based on the inclusion and exclusion criteria of the safety and effectiveness assessments. Nine articles were included in the safety and effectiveness assessments, including one study that compared the technique to implantation conducted after bone grafting and eight studies that compared the technique to implantation conducted without the use of residual root.

RESULTS

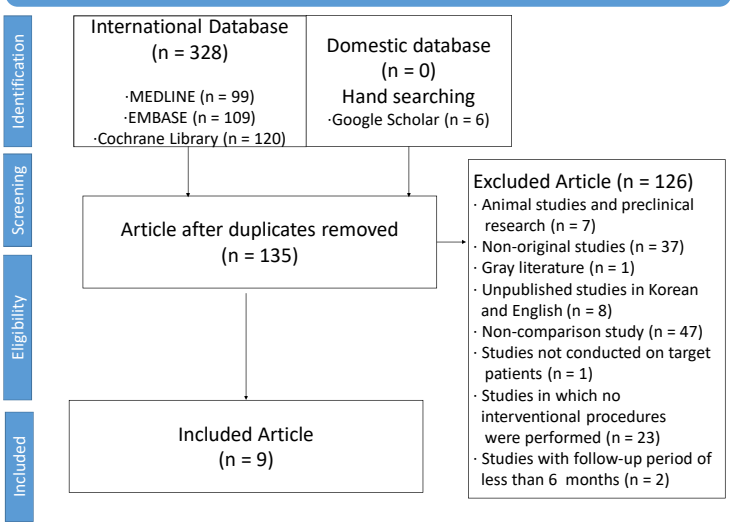

Figure 1. Flow chart of the screening and selection process.

Safety

1.Side effect

- No side effects and adverse reactions(5 studies)
- Internal shield exposure (n=2) and internal and external shield exposure (n=1) of the intervention group (2 studies)
- Procedure-related side effects and adverse reactions: 5.88% in the intervention group, 19.61% in the comparator group (1 study)

Side effect	Intervention	Comperator	*p*
Periimplant inflammation	0 (0.00%)	2 (3.92%)	-
Crown fracture	0 (0.00%)	1 (1.96%)	-
Gingival swelling	2 (3.92%)	5 (9.80%)	-
Neuropathic pain	1 (1.96%)	1 (1.96%)	-
Malocclusion	0 (0.00%)	1 (1.96%)	-
Total incidence rate	3 (5.88%)	10 (19.61%)	0.038

2. Implant failures

- No implant failures (4 studies), and only one study reported one failure in both groups.

Efficacy

1. Clinical change

1) Bone plate thickness (2 studies, final follow-up period)
   - Intervention group < Comparator group ($p < 0.001$)
2) Bone plate Height (1 study, final follow-up period)
   - Intervention group > Comparator group ($p < 0.001$)
3) Bone plate Width
   - Loss value: Intervention group < Comparator group (3 studies, $p < 0.001$)
   - Intervention group had a thicker labial aspect (1 studies, $p = 0.001$)

2. Pink Esthetic (7 studies)

- Intervention group > Comparator group (4 studies, $p < 0.001$)
- NS (3 studies)

CONCLUSION

- The nHTA committee concluded that the technology is effective, but for safety, more well-designed studies with long-term follow-up (1–5 years) are needed as potential long-term physiological adverse events and complications that occur due to root resorption must be examined (level of evidence A, technology category II-a).

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