Managing membrane complications. A technique description

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INTRODUCTION

Soft tissue complications is a relatively common event during guided bone regeneration (GBR). A recent systematic review has identified complication rates between 0 and 45% with a mean complication rate of 16.8%.¹

The most common complications are membrane exposure and acute infection. If not treated in a timely and correct manner, they can cause infection of the regeneration site and negatively affect the GBR procedure.

As reported by Lim et al.,¹ the complication rate is highly procedure related. Soft tissue management, such as achieving a stress-free wound closure, may still be the main component to avoid soft tissue complications.

If soft tissue complications occur, different membrane materials have different degree of resistance to infection. The traditional non-resorbable expanded polytetrafluoroethylene (e-PTFE) membranes required almost immediate removal upon exposure, whereas dense PTFE has been shown to withstand infection better. The membranes used in this case series (NeoGen Ti-Reinforced Membrane, Neoss Ltd, Harrogate, UK) have been shown to be totally bacterial resistant after 48 hours in vitro.²³

Soft tissue complications do not automatically result in failed GBR treatments. Lim et al. reported that the majority of sites experiencing complications healed without significant impact on the GBR procedure.¹

A clinical follow-up on implants placed with simultaneous GBR using NeoGen membranes reported similar findings. The study showed that soft tissue complications occurred in 13 out of 107 membrane sites (12.1%). All thirteen complications were successfully treated and the implant survival in the study was 100%.⁴

This article presents four of these thirteen complication cases.

Case 1: 73 years old male patient receiving two implants in lower first premolar and first molar area with simultaneous placement of NeoGen membrane.

A partial crestal membrane exposure occurred one week after membrane placement in the premolar area.
The patient was instructed to rinse with chlorhexidine.

After another 3 weeks, the membrane was removed and the site closed allowing continued submerged healing.

Six months after implant placement, at time of re-entry, good bone regeneration was observed (A) indicating that the membrane had provided crucial stability during the first month of healing.

Implants successful 1 year after loading.

A: Bone regeneration 6 months after surgery in the premolar area.
Case 2: 26 years old female patient receiving one implant in the upper lateral incisor area with simultaneous placement of NeoGen membrane.

Implant placement and GBR procedure (A-E). Infection occurred 2.5 months after membrane placement in the premolar area (F). The membrane was removed (G) and the patient was treated with antibiotics.

After another month, soft tissue was removed from the site (H) and reaugmentation was performed (I).

Upon re-entry (J-K), seven months after implant placement and 3.5 months after reaugmentation, bone regeneration around the implant was sufficient (L). A PEEK healing abutment was connected for transmucosal healing (M).

The implant was restored one month later and has been successfully in function for more than 2 years.
The presented cases show that soft tissue complications such as membrane exposures and local infections can be successfully treated without substantially affecting the GBR procedure outcome. The cases also show that the NeoGen membrane in certain cases can be left in place for a limited time after a complication occurs to allow for bone regeneration to continue, as long as the site is closely monitored.

REFERENCES