Titanium-Reinforced High-Density PTFE membranes in guided bone regeneration: A Case series

Abstract

Guided bone regeneration (GBR) has become a well-established technique to augment alveolar ridges. In larger defects conventional collagen membranes often lack the dimensional stability to maintain the space required for bone regeneration and will often collapse resulting in inadequate bone volume. The development of techniques and materials, including titanium-reinforced polytetrafluoroethylene (PTFE) membranes, has increased the range of defects that are suitable for GBR. This poster presents successful GBR and simultaneous implant placement in 3 cases with titanium-reinforced high-density PTFE membranes and particulate deproteinised bovine bone mineral (DBBM).

Introduction

Implant placement is often complicated by alveolar ridge defects resulting from a variety of causes including trauma, infection, post extraction bone resorption, tumour resection and skeletal abnormalities. Ridge augmentation techniques are utilised to facilitate implant placement in optimal positions in order to achieve functional and aesthetic restorations. Guided bone regeneration (GBR) is a well-established technique to increase alveolar bone volume. GBR involves placement of a biocompatible barrier to protect an underlying space or graft material for bone regeneration, whilst preventing unwanted inward migration of soft tissue cells from connective tissue or epithelium. A variety of membranes have been developed for GBR and are broadly categorised as non-resorbable and resorbable membranes. Barrier membranes should provide suitable biocompatibility, space maintenance, collagen occlusion, suitable clinical handling and allow tissue integration. Other desirable features include membrane stability and sufficient duration of function as a barrier to prevent soft tissue ingrowth, clinical safety and long-term effectiveness.

Case 1

A 33 year old male (Figure a) was referred to Mr James Chesterman* for the management of defects following trauma. He had fractured UR1 and UR2 and had undergone various attempts at prosthetic and aesthetic restorations. Guided bone regeneration (GBR) was discussed with the patient and he consented to proceed. The consideration of the limitations of the technique in terms of defect size, and careful handling of the soft tissues is essential to prevent soft tissue dehiscence and failure of the GBR procedure. This poster discusses the successful management of 3 cases with titanium-reinforced d-PTFE membranes in GBR.

Case 3

Conclusions

A variety of techniques have evolved to allow more challenging bone defects to be augmented with GBR, negating the need for invasive autogenous block grafting. In larger horizontal bone defects as described within this poster and illustrated by the cases, titanium-reinforced d-PTFE membranes can be utilised predictably to augment the alveolar ridge with simultaneous implant placement. The consideration of the limitations of the technique in terms of defect size, and careful handling of the soft tissues is essential to prevent soft tissue dehiscence and failure of the GBR procedure. This poster discusses the successful management of 3 cases with titanium-reinforced d-PTFE membranes in GBR.

References