Objectives: Exposure of polytetrafluoroethylene (PTFE) membranes has always been considered to be the major problem that can negatively affect the result of the guided bone regeneration (GBR), causing the infection of the regenerated site. Dense polytetrafluoroethylene (d-PTFE) membranes allow to solve this problem, since the dimension of the their pores doesn’t allow the bacteria penetration, until the extension of the exposure doesn’t reach the margins of the membrane. A case report describes a protocol to treat the membrane exposure.

Case presentation: A staged approach GBR procedure was performed for the correction of a mandibular horizontal ridge deficiency in the premolars and first molar region. A tenting screw helped the titanium reinforced d-PTFE membrane (Cytoplast Ti-250 PL, Osteogenics Biomedical, Lubbock, TX, USA) not to collapse over a graft composed by autogenous cortical bone, collected locally with a disposable bone collector (Safescraper, Meta, Reggio Emilia, Italy) mixed to an allograft composed by 70% mineralized bone and 30% demineralized bone (Encore™, Osteogenics Biomedical, Lubbock, TX, USA), in a 1:1 ratio. PTFE sutures were removed 2 weeks later, and after 3 more weeks the membrane exposure happened. The margins of the membrane were completely covered by the flap and no sign of infection was present. The patient was instructed to clean softly and to rinse with 0.2% chlorhexidine every 8 hours. The patient was controlled every week, while the membrane exposure became larger at every follow-up but, since its margins were completely covered by the mucosa, it was not removed until the 10th post-operative week, when the extension of the exposure was large. After membrane removal, the regenerated area appeared to be covered by a thin layer of connective tissue. No sign of infection was detected. The graft was covered by a cross-linked collagen membrane (Cytoplast RTM 2030, Osteogenics Biomedical, Lubbock, TX, USA) stabilized with titanium tacks and by a collagen fleece (Medicipio®, Medischema GmbH, Chemnitz, Germany). No attempt of coronal flap advancement was done, but sutures just stabilized the collagen fleece that guided the mucosal repair.

Results: Eight months after d-PTFE membrane removal the site was re-opened. The bulk of regenerated bone, as shown by the post-operative computed tomography allowed the insertion of 2 Laser Lok Tapered implants (BioHorizons, Birmingham, AL, USA) in the region of the first premolar and the first molar. A biopsy of the regenerated area was taken in a bucco-lingual direction in the area between the 2 implants. Histologic examination revealed new bone formation, almost totally lamellar mature bone, in direct contact with the graft remnants. No sign of inflammation was observed.

Conclusion: In case of membrane exposure, d-PTFE membrane could be safely left in site until its margins remained covered by the flap. Its substitution, after 10 weeks, with a collagen membrane and a collagen fleece, allowed a complete bone regeneration underneath the membrane and the mucosal repair, with the formation of keratinized tissue without any coronal flap advancement.