Background: Non resorbable membrane exposure has always been considered the main cause for guided bone regeneration (GBR) failure. Although the introduction of dense polytetrafluoroethylene (d-PTFE) membranes have significantly reduced the incidence of infection respect to expanded PTFE membranes, since the pore size does not allow bacteria penetration through their thickness, Nevertheless infection can occur when bacteria contaminate the grafting material passing underneath the edge of the membrane. Soft tissue dehiscence, and the consequent membrane exposure, can be caused by poor flap coronal mobilization and suture with tension, sharp edges of the membrane, sharp food impaction, compressing removable prostheses, or the cusp of an extruded opposing tooth as in the clinical case reported. Removal of the membrane as well as the graft, or the implants or the tenting screws inserted, is recommended to be done as soon as possible. Usually, the resulting clinical situation is worse than the starting one.

Aim: The aim of this report is to describe a protocol to treat the exposure of a d-PTFE membrane when infection has already occurred, without removing all the graft particles and coronally mobilizing the flaps for an unpredictable closure, because of inflammation and epithelialisation of the flaps.

Materials & Methods: A staged approach GBR procedure was performed for the correction of a mandibular vertical ridge deﬁciency in the right premolar and molar region. Two tenting screws 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 (SafeScaper, Meta, Reggio Emilia, Italy) mixed with a synthetic nano-crystalline hydroxyapatite (NanoBone, Artoss, Germany) in a 1:1 ratio. PTFE sutures were removed 2 weeks later, and after 2 more weeks the membrane exposure happened because of the cusp impaction of the opponent upper right second molar. The patient was instructed to clean softly and to rinse with 0.2% chlorhexidine every 8 hours. Nevertheless, the margins of the exposure were close to the distal edge of the membrane and two days later the pus presence suggested the membrane removal, that was performed few days later. The membrane, the distal tenting screw, part of the graft in the distal area with clear signs of infection were removed. The remaining graft was washed with chlorhexidine and covered by a cross-linked collagen membrane (Cytoplast RTM 2010, Osteogenics Biomedical) stabilized with titanium tacks. A collagen ﬂece (Medicisip C, Medichema Germany) ﬁlled the gap of the mucosal dehiscence. No attempt of coronal flap adhesion was done, but sutures just stabilized the collagen ﬂeece that guided the mucosal repair.

Results: Healing was uneventful. Eight months and a half 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 3 Laser-Lok Tapered implants (BioHorizons, Birmingham, AL, USA) in the region of the second premolar and the first and second molar. A biopsy of the regenerated area was harvested during implant site preparation of the first molar. Histologic examination revealed new bone formation, almost totally lamellar mature bone, in direct contact with the graft remnants. No sign of inﬂammation was observed. The patient received a free gingival graft for keratinized tissue band augmentation, before she was restored with fixed crowns. Upper molar intrusion allowed normal dimension of the restorations.

Conclusions & Clinical Application: D-PTFE membrane substitution, with a collagen membrane and a collagen fleece, allowed an almost complete vertical bone regeneration and the mucosal repair, without any coronal flap advancement. The little bone volume removed in the distal area did not jeopardize implant insertion. The staged approach helped the clinical management and has to be suggested: simultaneous approach, with implant insertion during GBR procedure, would have led to the implant surface contamination and the removal of the implant, a bigger bone volume loss, and a diﬃcult soft tissue management.