Loss of bone volume through resorption is a natural consequence after tooth loss or extraction. Preservation or restoration of bone volume may be necessary for successful functional and aesthetic outcomes after implant placement. In recent study and technique, guided bone regeneration (GBR) is used to preserve or augment bone volume around dental implants. Technically, there are 2 main components in GBR materials: Void-filling material (e.g., autogenous bone, natural bone mineral) and Barrier membrane (usually collagen). Collagen membrane acting as a barrier membrane has been accepted but the source and purification is still the concern that might affect the clinical outcomes. Here the highly purified porcine type I collagen, sourced from and manufactured in Australia by Orthocell Ltd was utilised in this study to evaluate the guided bone regeneration capacity.

A prospective case study enrolled patients who required dental implant treatment with GBR. Patients who fulfilled the eligibility criteria (N=20) received dental implant treatment with simultaneous GBR using CelGroTM & void-filling material (natural bone mineral) (Fig. 1). Implant sites were allowed to heal for approximately 6 months before re-entry surgery (two stage) or restoration (single stage). Mucosal tissue conditions and evidence of wound dehiscence or membrane exposure were recorded during the healing period. The quality of newly formed bone was assessed using the QT scale or CBCT scan at the end of the healing period (two stage or single stage implants, respectively). Vertical (defect height) & horizontal (facial bone wall thickness) dimensions of the implant site were measured using CBCT scan immediately after implant placement (baseline) and at the end of the healing period (Fig. 2).

CelGroTM is a native porcine collagen membrane with excellent biocompatibility and handling characteristics. High quality, mature bone was regenerated at all implant sites, resulting in bone regeneration in both vertical and horizontal dimensions. The results of this study indicate that CelGroTM collagen membrane can be used in GBR treatment to preserve or restore bone volume required for successful functional and aesthetic outcomes in dental implant treatment.