

ORIGINAL ARTICLES

Enhancement of Autologous Fat Transplantation With Platelet Rich Plasma

Patrick Z. Abuzeni, MD, DDS; Robert W. Alexander, MD, DMD

Introduction: Adipose tissue is readily available for autotransplantation. Over many years, the popularity of fat transplantation surgery has waxed and waned as a result of relatively inconsistent and unpredictable survival. Many factors influence the success of autologous fat tissue grafts, some of which can be controlled by the surgeon. Examples include the use of minimally traumatic cannulae, low pressure suction, careful handling of graft tissues, and aseptic techniques. There is emerging evidence that fat grafts may be made more reliable and consistent by careful selection of donor sites and by influencing certain healing mechanisms that control cellular recruitment, migration, and differentiation at the recipient site.

Materials and Methods: This paper presents an innovative technique that provides a means to isolate autologous platelet rich plasma for use with autologous fat for the purposes of enhanced tissue augmentation.

Results: The apparent concentration and greater quantity of cellular grafts observed after utilization of these techniques seem to yield a higher proportion of graft volume retention.

Discussion: This technique is intended to promote or accelerate the healing phase after grafting, enhance the intended augmentation retention volume, potentially reduce secondary calcifications and microcyst formation, and maximize the transplant unit volume by reducing the extracellular fluids transferred with the grafts.

and therefore represents a readily available resource for tissue augmentation. Fat graft survival, although well documented, has been described as being somewhat unpredictable,^{4,5,8-11} perhaps because of the lack of consistent harvest, handling, and transfer protocols. Therefore, evaluation of the results of one study is often difficult to reproduce or assess with other experiences in the grafting of fat tissues unless the exact same protocol is utilized. Standardization of such important aspects of autologous fat grafting is evolving at this time. Consistent techniques will facilitate the comparison of ongoing clinical trials to determine the safety and efficacy of such grafts. Some of the factors that appear to exert substantial influence on the success of autologous fat transplantation are overall patient health, genetic predisposition for fat storage in donor sites, pretransplantation and posttransplantation diet, basic metabolic rate, atraumatic harvest and handling, proper preparation of recipient bed, and graft immobilization in the recipient sites (Figure 2).

This project was designed to establish a simple and reliable protocol to isolate platelet rich plasma (PRP), which is rich in a variety of potentially valuable growth factors. Growth factors are characterized as regulatory peptides with specific tissue site receptors.¹²⁻¹⁵ They serve to regulate and deregulate cellular activity, enzymes, angiogenic factors, antiangiogenic factors, inducers of gene expression, and much