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Case Report

Rejuvenation Using Platelet-rich Plasma and Lipofilling for Vaginal Atrophy and Lichen Sclerosus

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Vaginal atrophy is a common condition among peri- and post-menopausal women. Symptoms of vaginal dryness, pruritus, irritation, loss of subcutaneous fat, sparse pubic hair and dyspareunia occur due to decreased estrogen level. Estrogen-based treatments are effective. But many patients are reluctant to be treated due to health concerns. As alternatives, we explored the efficacy of platelet-rich plasma (PRP) and lipofilling. A 67-year-old female patient with vaginal atrophy was referred to our department. Treatment using estrogen cream had failed to improve patient's symptoms. Diminished volume and aged look of genitalia were also major concerns. We treated her using lipofilling mixed with PRP. A total of 40 cc of autologous fat mixed with PRP was transferred to labia majora. Lipofilling with PRP relieved the clinical symptoms. Missing fullness and tone was corrected and the augmented volume was well maintained. White patchy lesions of lichen sclerosus on labia minora also improved. Lipofilling with PRP relieved symptoms, restored contour of the labia majora and achieved remission of lichen sclerosus on labia minora. As vulvar lesions were repaired and the aged appearance of genitalia was rejuvenated, both functional and cosmetic outcomes were satisfactory. Lipofilling with PRP can be effective for vaginal atrophy and lichen sclerosus. **(J Menopausal Med 2017;23:63-68)**

Key Words: Platelet-rich plasma · Rejuvenation · Vaginal diseases · Vulvar lichen sclerosus

Introduction

Vaginal atrophy is a common condition among peri- and post-menopausal women. Up to 45% of postmenopausal women will develop these symptoms.[1] However, recognition of their etiology is poorly understood by women and their partners.[2] The diagnosis of vaginal atrophy is typically based on the patient's history of certain symptoms and specific physical findings. Recognized symptoms include vaginal dryness, burning, pruritus, abnormal vaginal discharge, and dyspareunia. External genitalia signs include atrophy of the labia majora and minora, loss of subcutaneous fat, dry labia, vulvar dermatoses, vulvar lesions, and sparse pubic hair.[3]

All of these annoying symptoms greatly affect woman's sexuality and quality of life. Symptoms occur due to decreased estrogen level. Vaginal tissue and urethral mucosa are altered as a result of the diminished amount of circulating estrogen. Estrogen-based treatments have been shown to be effective. However, many patients are reluctant to be treated with such formulations due to health concerns, so we need to assess the efficacy of acceptable alternatives.[4]

Lipofilling is an efficient treatment modality to restore soft tissue volume. Autologous lipofilling has become a popular procedure for soft tissue rejuvenation and body contouring

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in aesthetic and reconstructive surgery. Autologous fat can be harvested by relatively simple procedure, and it is completely biocompatible and available in large quantities. Lipofilling is now widely accepted in expectation of both for the filling and rejuvenating effect. While surgical manipulation and harvest of fatty tissue are generally simple procedures, the tissue itself is complex. Fatty tissue has been found to contain adipocytes and subpopulations of cells including adipose-derived stem cells (ADSCs), mesenchymal stem cells (MSCs), and numerous other stem cell types that have the potential to aid in tissue regeneration. But, the level of fat graft survival is still uncertain and suboptimal.[5] The unpredictability of long-term graft survival rate still remains yet to be solved.

Platelet-rich plasma (PRP) is a portion of the plasma fraction of autologous blood, which has a platelet concentration above the baseline. Recent studies investigated the effects of PRP on lipofilling.[6,7] Animal studies have demonstrated PRP-mediated improvement of graft take. PRP can be used to promote fat viability and longevity to overcome an unpredictable fat survival rate. PRP is also an inexpensive and immunologically safe source of growth factors. Being rich in growth factors, PRP promotes tissue repair and influences in angiogenesis and inflammation reduction.[8] PRP can enhance healing and regeneration of various tissues. Based on these volumetric and regenerative properties of fat grafting and PRP, as therapeutic alternatives, we explored the efficacy of lipofilling and PRP for vaginal atrophy.

Case Report

Our patient was a 67-year-old female who had suffered from vaginal itching sensation and irritation after menopause. She had suffered from these symptoms over the past 5 years and had been treated with vaginal estrogen cream over a year in the department of Obstetrics and Gynecology in our clinic. Despite the extended period of estrogen treatment, no considerable clinical improvement of symptoms was obtained. In addition to symptoms of vaginal pruritus, her major concerns were diminished volume of the labia majora and loss of tone (Fig. 1). A gynecologist colleague observed

Fig. 1. Initial photographic finding of labia majora demonstrating diminished volume and loss of tone.

Fig. 2. (A) A centrifuge and (B) SmartPreP® APC-30 kit (Harvest Technologies, Plymouth, MA, USA) used to prepare autologous platelet-rich plasma.

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white patchy lesions of lichen sclerosus around the labia minora. Besides the gynecologic problems, the patient was very unhappy with the aged appearance of her external genitalia to the point being unable to go to a public bath. To seek alternative therapeutic options for symptom relief and rejuvenating aged appearance of genitalia, she was referred to our department.

To restore volume and contour of her labia majora, we treated her using lipofilling mixed with autologous PRP. Autologous fat was harvested from the abdomen by lipoaspiration after local infiltration. Her whole blood was collected in the operating room to generate PRP. PRP was prepared by double-spin centrifugation using a SmartPreP® APC-30 (Harvest Technologies, Plymouth, MA, USA) (Fig. 2).

A total of 36 cc of autologous fat was harvested from the abdomen using a 10 cc Luer-Lok syringe and two-hole cannula with a blunt tip. A total of 4 cc of autologous PRP was prepared using SmartPreP® APC-30 kit from 30 cc of whole blood. A total 40 cc of autologous fat mixed with PRP was transferred into 1 cc syringes and injected into the subcutaneous layer of the labia majora aseptically via four ports (Fig. 3).

The patient underwent lipofilling mixed with autologous PRP into her external genitalia. Follow-up was possible for a year postoperatively. The patient was evaluated by the authors (including plastic surgeons and a gynecologist) and postoperative photographs (such as Fig. 4) were taken at every follow-up visits. Negative outcomes were minimal, short-term complications like hematoma, lump or irregularity, infection were not observed. Lipofilling mixed with autologous PRP achieved the relief of clinical symptoms. One month after injection, she had no symptoms of vaginal pruritus and irritation which had been present for over 5 years before treatment. Immediate postoperative volume augmentation of the labia majora was evident. Missing fullness and tone of labia majora were corrected. The restoration of contour was maintained well after 1 year. White patchy lesions of lichen sclerosus around labia minora also improved and did not recur.

Besides the relief of symptom, she was very satisfied

Fig. 3. Transfer of autologous fat mixed with platelet-rich plasma into the subcutaneous layer of labia majora.

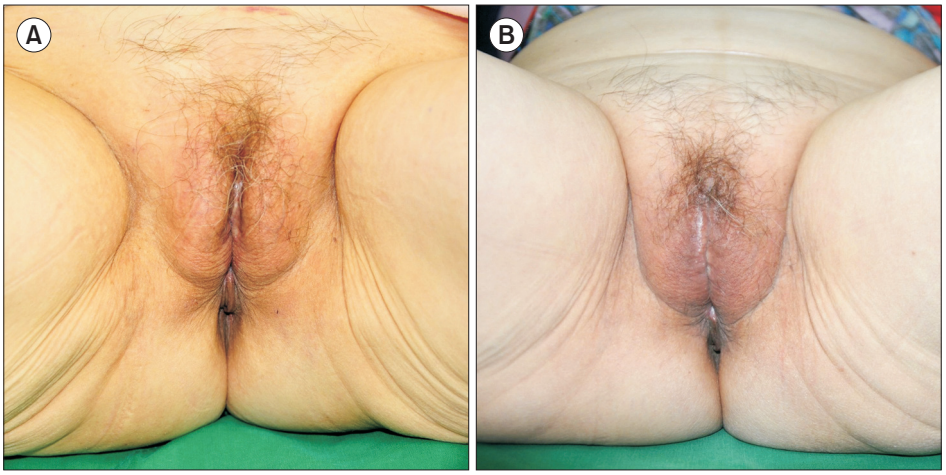

Fig. 4. (A) Photographic finding 1 week and (B) 1 year post-operatively. Note that augmented missing fullness and persistent volume restoration of labia majora.

with the resulting contour and final youthful appearance of her external genitalia. Both clinical improvement of symptoms and cosmetic results were pleasing to the patient. Improved cosmesis improved her sexual self-esteem and overall quality of life. Both aesthetically and functionally satisfactory outcomes were achieved by simple, safe, and immunologically biocompatible procedure using autologous fat and PRP.

Discussion

Vaginal atrophy is a common condition among peri- and post-menopausal women. It is one of the primary features of perimenopause. But, it is poorly recognized and only a small portion of patients seeks or receives treatment. Vaginal inflammation develops due to estrogen-deficient atrophy of the soft tissues. The most common etiology of estrogen deficiency is the natural process of menopause.

The primary goal of treating genitourinary syndrome of menopause is to relieve symptoms. For women with vulvovaginal symptoms unrelated to sexual activity, first-line therapies include long-acting vaginal moisturizers and a short course of low-dose vaginal estrogen[9] and hormonal replacement therapies. The type of available hormonal replacement therapy is widely available. The route of delivery can be systemic via the mouth, through the skin, via a nasal spray, and by injection. Local treatment includes vaginal ring, creams, tablets, and vaginal pessaries.[10] Although estrogen-based treatments can be effective, according to the Women's Health Initiative and other clinical trials, hormone replacement therapy can increase the risk of various health issues in postmenopausal women.[11] As a result, a large number of menopausal women have discontinued taking hormones, and have turned to herbs, phytoestrogens, and dietary supplements instead because they worry about their reactions to hormones.[12] Since many patients are reluctant to use estrogen-based treatments due to health concerns, physicians are eager to find acceptable alternatives.

In addition to diminished production of estrogen, vaginal changes are affected also by the aging process like elsewhere in the body. Due to loss of tone and volume of the tissues by aging, decent and sagging of the skin may follow. These kinds of changes can cause an unattractive aged look of external genitalia. But there is no established treatment for contour correction of vagina.

Lipofilling is an effective and minimally invasive modality to restore tissue volume in both aesthetic and reconstructive surgery. In addition to the permanent volumetric effect of adipose tissue, certain dynamic phenomena of tissue regeneration occur at the recipient site after adipose tissue transfer.[13] It has been noted by many authors to also improve the quality of the overlying skin. But, the disadvantages of lipofilling are its unpredictability and variable reabsorption rate. Recently, PRP has emerged as a new matrix that can enhance fat graft survival.[5] In animal studies, PRP has augmented graft take. In this case, we used PRP and lipofilling to treat vaginal atrophy and lichen sclerosus. Lipofilling mixed with PRP did correct the missing fullness of the labia majora and the augmented volume persisted. The addition of PRP to fat grafts improves graft survival in a simple and safe procedure. Since vaginal changes occur following the aging process, we assumed that the regenerative features of lipograft and PRP might play a significant role.

Besides the volume correction, the patient experienced the relief of symptoms and resolution of white patchy lesions of lichen sclerosus (Fig. 5). Lichen sclerosus is a chronic

Fig. 5. Photographic finding 1 year post-operatively. Note that resolution of white patchy lesions on labia minora examined by a gynecologist colleague.

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inflammatory dermatoses that predominantly affects the anogenital region. Although lichen sclerosus may occur in men and prepubertal girls and boys, it usually affects women in the fifth or sixth decade of life. The exact etiology of lichen sclerosus is unknown and probably multifactorial.[14] Lichen sclerosus is characterized by the presence of well-defined white papules and plaques. The skin affected by lichen sclerosus becomes atrophic or thickened. Genital lichen sclerosus causes both dryness and severe, persistent pruritus, and it often leads to functional impairment.

A vulvar biopsy is recommended when malignancy cannot be excluded or in those who have failed to respond to first-line treatment. But the diagnosis of lichen sclerosus is usually clinical. The goal of treatment is to reduce symptoms such as pruritus and dryness, improve the patient's quality of life, and to detect any malignant transformation. Lichen sclerosus is generally steroid-responsive, the treatment of choice in adults and children and in both sexes is an ultrapotent topical steroid. In this case, lichen sclerosus was steroid-resistant so that the resolution could be achieved after transfer of autologous fat mixed with PRP. As mentioned earlier, ADSCs-containing lipograft has the regenerative properties and capabilities to produce anti-inflammatory and immunomodulatory effect. Besides the presence of ADSCs in the lipograft, PRP seemed to be an essential factor influencing the healing and regeneration process in this case. PRP has shown to enhance wound healing and has rejuvenation effects through the release of significant amounts of growth factors.

There are several limitations to this study. These benefits are limited to this single case. Histologic evaluation and an immunoassay were not carried out. So, the exact mechanisms of autologous lipofilling with PRP were not clearly demonstrated. Use of the technique in more women and further studies to establish their reliable efficacy are needed before the technique can become a reliable option in the management of the vaginal atrophy and lichen sclerosus.

Application of autologous lipofilling mixed with PRP in this case produced the relief of symptoms, contour restoration on labia majora, and remission of lichen sclerosus on the labia minora. The relief of the long-standing, annoying symptoms provided pleasing outcome to the patient. And the rejuvenated appearance of external genitalia provided pleasing cosmetic outcome to the patient. We propose autologous lipofilling with PRP as an effective modality for the treatment of vaginal atrophy and lichen sclerosus.

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Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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