

Effectiveness of platelet-rich plasma treatment in perineal trauma: a case report

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Background: Approximately 85% of women will experience perineal trauma during vaginal birth. Pain is one of the most important long-term complications of perineal trauma. The quality of life is negatively affected, the pain experienced is a cause of negative prejudice against future vaginal birth. Platelet rich plasma treatment is a new approach to treating the pain and healing perineal trauma. **Case presentation:** A 31-year-old female patient presented to the Gynaecology department with pain during urination, defecation, in coitus, during menstruation, while walking and while sitting. The pain continued to increase 10 years after the first birth and analgesic medications were ineffective. After gynecological examination, a diagnosis was made of perineal trauma (second degree) due to deep episiotomy in the first vaginal birth. The patient received three platelet rich plasma treatments at three-week intervals. Repeated assessments showed noticeable reduction in pain and improvements in scar healing. **Conclusions:** Perineal trauma was treated with platelet rich plasma containing high platelet concentrations and various growth factors. The patient's intense pain complaints ended.

Keywords

Episiotomy; Pain; Perineal trauma; Platelet rich plasma

1. Introduction

Perineal trauma is defined as damage that occurs spontaneously or is due to episiotomy in the genital area during vaginal birth [1]. Short-term complications of perineal trauma are bleeding, infection and laceration. Long-term complications of perineal trauma are dyspareunia, perineal pain, urinary and faecal incontinence, pelvic organ prolapse, sexual dysfunction, body image deterioration and postpartum depression [2].

There are four degrees of perineal trauma that occur during vaginal birth [3]; the first degree involves torn vaginal and perineal skin, but with muscles intact, while the second degree involves the vaginal mucosa, connective tissue and underlying muscles. The third degree involves the fourchette and superficial perineal muscles and anal sphincter, while the fourth degree involves the rectal mucosa.

One of the most commonly reported maternal health problems after birth is perineal pain, a symptom highly associated with sustaining perineal trauma during a vaginal birth [4]. In general, non-steroidal anti-inflammatory drugs, top-

ical anaesthetic antiseptic drugs, oral narcotic analgesics, applications of cold or heat, hot water sitz baths, acupuncture, some herbal treatments and traditional methods examples of treatment of the pain caused by perineal trauma. But all these methods were ineffective in our reported case. In fact, the subject even preferred her second birth to be caesarean due to the pain she experienced from the perineal trauma resulting from her first vaginal birth. Therefore, in this case, we aimed to prove the benefit of platelet rich plasma (PRP) on perineal trauma caused by deep episiotomy during vaginal birth and bring an end to the pain, which is a long-term complication of perineal trauma. PRP is used in many areas such as cosmetics, wound healing, urologic, and orthopedic applications [5]. In the field of gynaecology, the use of PRP in lichen sclerosis, stress urinary incontinence, episiotomy scar healing, vaginal atrophy, lubrication disorders, endometrial expansion, and sexual dysfunction are noted [6–9]. In this study, the hypothesis is that PRP, an autologous serum containing high concentrations of platelets and growth factors reduces pain by increasing vascularization, normalizing pigmentation, and smoothing scar and tissue repair. Persistent pain commonly associated with perineal trauma that has potential to deter women from a future vaginal birth would be reduced by PRP and so. Prejudice and fear against vaginal birth can be diminished. We believe that this case study will demonstrate for the first time that perineal traumas caused by scarring on the vaginal wall can be treated with PRP.

2. Case report

A 31-year-old female patient presented to the Gynaecology department with complaints of perineal region pain and dyspareunia that increased during menstruation. Her menstrual cycles were regular with average flow, and not associated with dysmenorrhea. She had 1 vaginal and 1 caesarean birth 6 years apart. She had difficulties during her first birth at the age of 21; there was a lot of bleeding stitch to the episiotomy line was hurried and poorly controlled the bleeding. The postoperative recovery of the perineal wound was slow. Several months after the vaginal birth, she experienced cyclic perineal pain and swelling of the deep episiotomy scar in the right lateral vaginal wall. There were no pathological find-

Table 1. Results of assessments using the Vancouver Scar Scale and Visual Analog Scale.

	First evaluation	Second evaluation	Third evaluation	Fourth evaluation
Vascularity	3 (100%)	2	1	1
Pigmentation	2	2	0	0
Pliability	5	3	3	2
Height (mm)	2	2	1	1
Total score	12 (100%)	9 (75%)	5 (41.67%)	4 (33.33%)
Visual analog scale point	10 (100%)	7 (70%)	3 (30%)	2 (20%)
General score	22 (100%)	16 (72.72%)	8 (36.36%)	6 (27.27%)

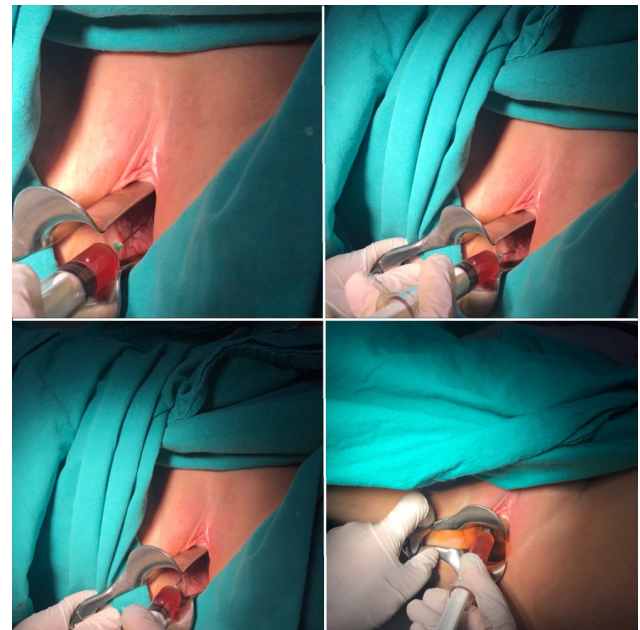
ings in the patient's history but her pain continued to increase 10 years after her first birth. The patient's complaints were reduced by using pain medication and Vagi-Norm Gel. However, recent aggravation of pain during urination and defecation and also while walking or sitting had a very negative impact on her quality of life. The patient revealed that the pain was focused around the scar and reflected in the perineum. Based on the characteristic history and the findings of a gynaecological examination, a diagnosis of perineal trauma (second degree) due to deep episiotomy during vaginal birth was made. The intense pain experienced by this case is one of the long-term complications of perineal trauma.

3. Treatment and experimental protocol

PRP (VACUSERA PRP Tube Set-237101) treatment was applied three times at three weeks intervals. In the experimental protocol, firstly, 10 mL of the patient's blood was drawn from the superficial saphenous vein. Next, the blood sample was centrifuged at 5000 rpm for five minutes to separate the blood into layers of red blood cells, buffy-coat of leucocytes, and plasma and lastly PRP was collected. The patient was brought to the operating room and anaesthetized by sedation. The vagina was opened with a speculum and the vaginal wall was clearly seen. Then we injected the PRP into the right lateral vaginal wall; we repeated this process three times, three weeks apart. Pain assessments (using the Visual Analog Scale 1 to 10 points) by the patient and scar assessments (using the Vancouver Scar Scale) were made every time the patient came for evaluation by a professional gynecologist and anatomist [10]. The first evaluation was made before the patient started the procedures. The second evaluation was done 3 weeks after the first PRP treatment. The third evaluation was done 3 weeks after the second PRP treatment. The fourth evaluation was done 3 weeks after the third PRP treatment (Table 1). The subject gave her informed consent for inclusion before she participated in the study. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Clinic Ethical Committee of the Medical Faculty at Cukurova University (approval number: 108/28).

4. Clinical outcome

As a result of the treatment, it was observed that vascularity increased, the pigmentation became normal and the pa-

**Fig. 1. PRP treatment on vaginal wall.**

tients' scar flattened (Fig. 1). There was a reduction in pain complaints. The patient only had pain during the menstrual period after the first treatment. In addition, the patient only used painkillers during her menstrual period and did not use any painkillers on other days after the first treatment. After the second and third treatments, she did not have pain during coitus and she could cope with the reduced pain during the menstrual period without painkillers. According to the Visual Analog Scale, her pain was reduced by 80% at the end of the treatment process (Table 1). According to the Vancouver Scar Scale, scar healing in the vagina wall was observed at the end of the first treatment (25%), the second treatment (58.33%) and the third treatment (66.67%) (Table 1) (Fig. 2). Moreover according to the total scores of the Vancouver Scar Scale and the Visual Analog Scale, patient complaints decreased from 22 points (100%) to 6 points (27.27%) (Table 1).

5. Discussion and conclusions

Perineal trauma is a common condition affecting over 85% of all vaginal births [11]. Perineal trauma, which can occur with episiotomy; is an extremely common and expected complication of vaginal delivery affecting the perineum, cervix,

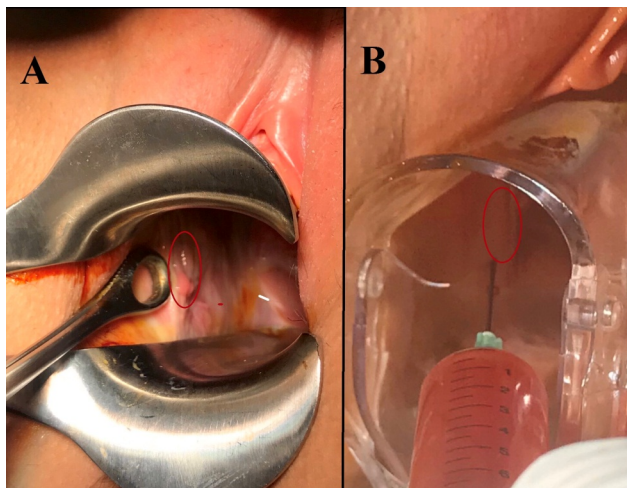


Fig. 2. Before (A), After (B) of PRP treatment on the vagina wall.

vagina, vulva, anal canal and rectum [12]. Episiotomy is associated with the need for suture and healing complications in the postpartum period, such as blood loss, oedema, haematoma, infection wound dehiscence and perineal pain [13]. Perineal pain is an important long-term complication of perineal trauma. As treatments for pain caused by perineal trauma, the literature indicates that; narcotic analgesics (codeine, propoxyphene, morphine, meperidine, methadone, which are opioid analgesics) can be safely used in the treatment of perineal trauma during the lactation period or later. However, narcotic analgesics are not beneficial on their own for episiotomy healing [14–17]. Moreover, topical anaesthetics, vaginal non-steroidal anti-inflammatory or cooling foams together with topical anaesthetics and betadine do not completely eliminate pain and are not sufficient on their own in the treatment of episiotomy [18–20]. In addition, there are studies in the literature stating that taking high fibre foods, drinking 1.5–2 litres of water per day, the use of laxatives, Kegel exercises, sitting baths, cold compresses and herbal treatments (virginiana hammelis, lavender oil, chamomile, cinnamon, olive oil) can prevent perineal trauma [20–32]. Another published treatment for perineal pain is acupuncture. Kindberg *et al.* [33] and Skilnand *et al.* [34] indicated in their studies that acupuncture can be used to reduce perineal pain, but local analgesics are more effective than acupuncture. Moreover, Kwon *et al.* [35] found that hyaluronidase can significantly reduce perineal edema and prevent perineal trauma. Ducarme *et al.* [36] asserted the effectiveness of perineal support in reducing the risk of perineal injury in the first or second stage of vaginal birth. All these treatment and application recommendations in the literature are made during or just after birth. Moreover, these recommendations alone are not sufficient in the treatment of pain, which is a long-term complication of perineal trauma. Analgesic drugs and vaginal pomade lose their effectiveness after a while, as experienced by the case in this study. The episiotomy scar or postoperative scars have received special at-

tention in the literature in the last few years and a limited number of studies have investigated the role of PRP in episiotomy scar care. There are currently few reports in the literature appraising the evidence behind the use of PRP in scar management [37]. Tehranian *et al.* [38] conducted a study involving 140 patients with 31 elective caesarean births. They were randomly divided into two groups; the intervention group received PRP applied to the subcutaneous tissues of the wound prior to closure, while the control group received the usual care (i.e., washing the wound with saline prior to closure). Patients used a visual analog scale for postoperative pain, the Redness, Edema, Ecchymosis, Discharge, Approach (REEDA) scale to assess wound healing, and the Vancouver Scar Scale, to rate the quality of scar formation. They found that patients treated with topical PRP had a significant decrease in REEDA score (85.5% for PRP and 72% for the control group, $P < 0.0001$) indicating a better healing process. Also, according to the VAS score for pain, PRP contributed to a statistically significant reduction in pain experienced at the end of the followup period (93% versus 79%, $P < 0.001$). In another study indicating that PRP reduces pain due to postoperative scarring, Azzena *et al.* [39] reported a case of a painful adherent postoperative scar following a shoulder replacement surgery in which they injected a gel mixture of autologous adipose tissue combined with PRP into a subcutaneous pocket using a novel *in vivo* adipocyte delivery system. The patient reported complete remission of pain. Looking at all these studies, our study revealed that in addition to other methods, PRP can also be used in perineal trauma. Similar to the studies in the literature, this study was found to be effective in reducing perineal pain.

The conclusion of the this study, show that PRP reduces pain by increasing vascularization, normalizing pigmentation, flattening the scar and tissue repair. We recommend that vaginal wall scars can be treated with PRP. PRP due to its ease of preparation, ease of application, reliability and absence of side effects is an important treatment option for perineal trauma. We think that our study will guide in the field of gynaecology. We recommend conducting similar studies in which there are more participants, PRP is applied at the first appearance of perineal trauma, and additional substances (collagen, hyaluronic acid, etc.) are used in addition to PRP to prevent pain.

Abbreviations

PRP, Platelet Rich Plasma; REEDA, Redness, Edema, Ecchymosis, Discharge, Approach Scale.

Author contributions

Idea, design, collection of resources by: AGK, analysis and interpretation of results and literature by: AGK, MGK, written and reviewed by: AGK and MGB.

Ethics approval and consent to participate

A voluntary consent form was obtained from the case to share her data and photos. Clinic Ethical Committee of the Medical Faculty at Cukurova University (approval number: 108/28).

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Conflict of interest

The authors declare no conflict of interest.

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