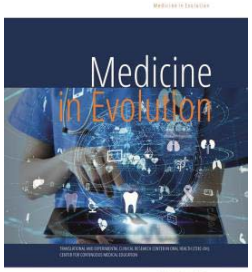
A comparative clinical study of the treatment of hypertrophic scars with intralesional steroid and silicone gel sheeting in different types of incision lines in caesarean sections



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Abstract

Caesarean section is one of the most common interventions in obstetrics and gynecology today. Complications of scar healing and also the aesthetics of the scar is usually very important for patients. 96 patients were selected to participate in this study after giving birth by caesarean section. Each group included 24 patients, who underwent a Pfannenstiel section or a transverse laparotomy incision. The patients were treated with either intralesional steroid or silicone gel sheeting. The aim of this study was to compare and determine the roles of these two commonly used treatment options of hypertrophic scars and to compare the therapeutic options in different incisions in case of caesarean sections. Both methods were significantly efficient, however intralesional steroid therapy had a more rapid and long-lasting effect than silicone gel sheeting in both types of incisions of caesarean sections. These results confirmed the role of these two treatment modalities in the protocols. Our data suggest that silicone gel sheeting could be the first line therapy in both types of incisions of caesarean sections, while intralesional steroid is the second line treatment for primary linear hypertrophy of scars. Also, in recurrent linear hypertrophic scars, intralesional steroid therapy is recommended in first line in both types of incisions, because silicone gel sheeting was largely ineffective. Regarding the type of caesarean sections, in lower transverse laparotomy both types of treatment proved to be more effective, thus this could be an argument for the surgeon to choose this type of incision detrimental to the lower median laparotomy. Prospective randomized clinical trials should be needed to clarify their role further in the treatment protocols.

Keywords: hypertrophic scars, caesarean section, intralesional steroid, silicone gel sheeting, keloid scar

INTRODUCTION

More and more female patients live with hypertrophic scars due to the raising figure of operative interventions altogether over the years in obstetrics and gynecology.

The skin of the abdomen can be penetrated with a lower median incision or a lower transverse incision (Pfannenstiel). Caesarean section is now considered a routine intervention, but it also has its risks, one of them being pathological scar healing. It has been proven by some authors that keloid scars indicate an increased risk for developing skin or visceral tumours; ectopic endometrial tissue implants that may occur during the procedure usually lead to a second surgical intervention, one that could have been avoided; not at the end of all concerns are the aesthetics of the scar which is usually very important for patients. The most common types of pathological scars are hypertrophic scars, including linear (or surgical) hypertrophic scars. The most significant unanswered question in this area is the etiopathology of keloids. Despite the relatively rare occurrence of the disease (4 cases per 10,000 inhabitants in Hungary), the unclear origin, only symptomatic treatments, the high recurrence rates and the effect of serious complaints determine its severity [1, 2].

The cause of the formation of hypertrophic scars, the risk factors and the predisposing factors can be precisely determined – almost without exception – by knowing the detailed and accurate medical history data and the course of the disease. Their clinical significance is due to the continuous growth of the lack of generally accepted and professionally applied therapeutic protocols exacerbated by the number of cases [3].

According to the authors nearly 192 patients were treated with hypertrophic scars in the 7-year period from March 1, 2014 to April 31, 2021. Patients underwent caesarean section with different types of incision – lower median laparotomy and lower transverse laparotomy. Based on their experience in treating patients, it was possible to conclude that the increasing number of surgical sessions of various manual professions alone does not explain the increase in the incidence of linear hypertrophic scars. Other reasons include schematic incision conductions, deficiencies and errors in surgical techniques, ignoring risk and predisposing factors, inadequate treatment of wound healing disorders.

Choosing the way to open the abdomen in a caesarean section depends on the pathological changes, the reasons for performing the operation, on the anatomical features of the abdomen, and on any previous abdominal operations. The preferred method is the median laparotomy for operating a tumour or if there is a need to reach the upper regions of the abdomen, or if the patient initially had a longitudinal incision, or if the medical team decides to perform an urgent caesarean section. Transverse incisions are preferred when it ensures the proper window for the operation; also, from a cosmetic point of view, the total concealment of the abdominal scar can be obtained. Of course, the surgeon decides in favour of the transverse incision, when the risk pathological healing of the scar is increased: abdomen, long term treatment with immunosuppression, radiotherapy, vascular diseases, diabetes. If a previous incision was made, after a longitudinal incision the same incision is applied again, and after a transverse incision both types of incisions can be performed.

The large number of patients made it possible to select patients according to the specified criteria, in order to ensure the efficacy of the two most commonly used and accepted scar treatment methods in homogeneous patient groups. Based on more and more recent literature data, it can be concluded that the recommended therapeutic protocols are not definitive and are un even. According to the currently accepted recommendations, polysiloxane patch treatment should be chosen as the first line therapy of hypertrophic scars in both types of caesarean section [4, 5].

Aim and objectives

In the current study, after the detailed analysis of the clinical experiences, we tried to give answers primarily to the questions regarding the therapy and the application of the treatment of scars in the medical practice. We studied the results obtained after treating scars per primam: efficiency of the treatment with polysiloxane compared with intralesional steroid infusions, and also, we compared the groups of patients by the types of the incisions.

MATERIAL AND METHODS

With an overall experience of 192 patients with hypertrophic scars treated, to participate in this study, 96 patients were selected after giving birth by caesarean section; four randomized groups were formed depending on the type of the caesarean section. Each group included 24 patients, who underwent a Pfannenstiel section or a transverse laparotomy incision.

Our study consisted of four groups of 24 female patients, after caesarean section. Each of them was untreated and they were in an active phase of linear hypertrophic scar. The patients were treated 4-4 months with intralesional steroid or polysiloxane patch. The scars showed varied localisation, but all of them were located on a smooth anatomical surface. The scars on a congruent surface were excluded from the study, as the polysiloxane patch would not have been adequate, in failure to be correctly placed and fixed on the skin.

Exclusionary factors were the difficult doctor-patients cooperation, and the following associated diseases: diabetes, immune- and autoimmune diseases, local or systemic steroid and/ or non-steroid treatment.

At the beginning of the treatment all patients were given all necessary information and documentation.

The intralesional steroid treatment protocol: inj. Triamcinolone 1 ml/ cm 2 of a 10% solution of acetate (Krka, Slovenia) transmission, using a linear technique. The ampoule contained 4 mg of active ingredient in 1 ml solution. It was used 2% Lidocaine (Egis, Hungary) for dilution. The local anesthetic reduced the pain caused by the administration. The size of the injection needle varied from12 to 18 G, depending on the hardness of the scars. The treatment protocol with polysiloxane patch: appropriate size, that means the patches with polysiloxane could exceed 2-2 centimetres in all directions of the scar (Epiderm, Biodermis, USA). The patients wore the patches intermittently for 12 hours a day. Patients were trained how to use the patches, and how to replace the worn patches.

The control examinations were carried out every 2 weeks. In addition to digital photos and Vancouver scoring, the subjective complaints were also recorded, using the so- called Likert method. The essence of this method is that a patient, the attending physician and one not participating specialist in the treatment scores the three most important complaints (pain, itching, aesthetic acceptability) on a scale from 1 to 5 [6- 8].

RESULTS

The youngest patient was 17 years old, the oldest was 46 years old. More than half of the patients came from the 30- 50 age group (1. Figure). The average age was 31 years. The location of the scars: lower median laparotomy (48), and transverse laparotomy (48).

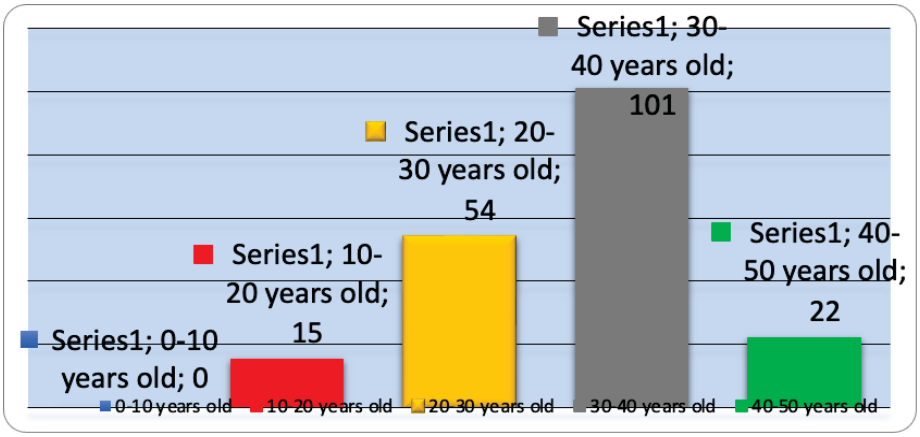

Figure 1. Distribution of patients by age

The patients participating in this study, by the end of the 16th week of the treatment period, could give an adequate therapeutic response in all patient groups. Side effects and complications were not detected in any cases, and it was not required to interrupt the treatment. The majority of the patients (74) underwent a second caesarean section, where the previous scars were removed, which were further investigated with other methods (histopathological, immunohistochemical and electron microscopic).

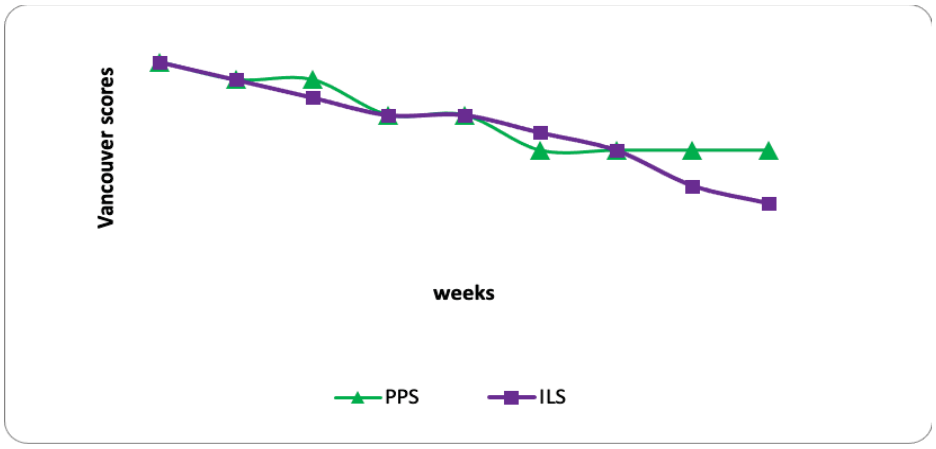

Figure 2. Comparison results of the Vancouver scores

In twelve cases the subjective complaints completely disappeared and the scars went into remission. Based on the Vancouver score, it was possible to determine that the groups treated with intralesional steroid by weeks 6 to 8 of the treatment, developed significant regression accompanied by a rapid decrease of subjective complaints. For the polysiloxane patches, the expected therapeutic response in the treated group developed later and at a slower pace, after 8-12 weeks. The results of the treatments are significant in all groups [pILS> 0,05 and pPST> 0,05] (Figure 2). 85 percent of the patients` subjective complaints have also disappeared.

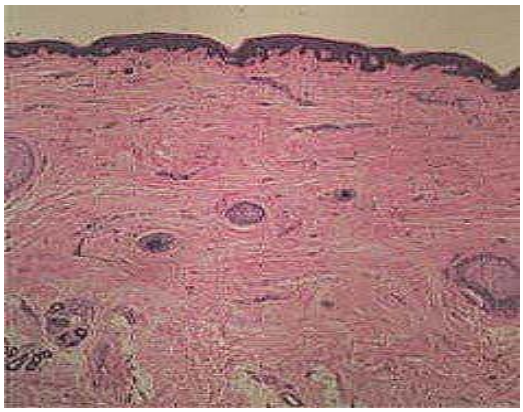

Figure 3. Hypertrophic scar treated with polysiloxane patches (hematoxilin- eozin, 200x)

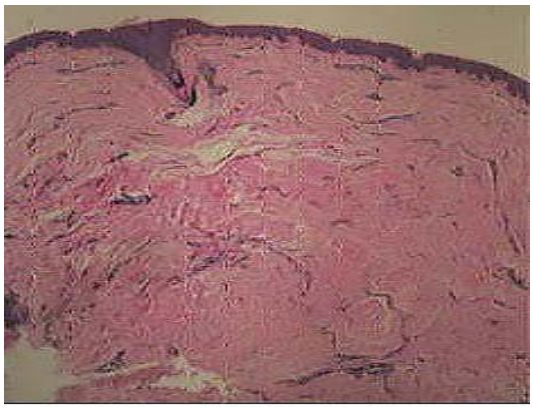

Figure 4. Hypertrophic scar treated with intralesional steroids (hematoxilin- eozin, 200x)

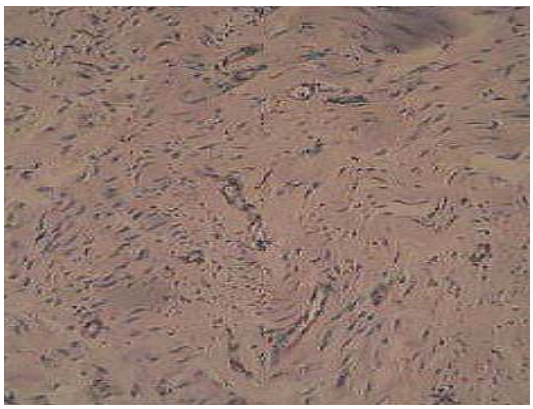

Figure 5. Hypertrophic scar treated with polysiloxane patches (actin immunohistocehmistry, 400x)

DISCUSSIONS

In the treatment of abnormal scar formations, in addition to keloids, diverse hypertrophic scars are tasks to be avoided, if possible, for the surgeon. Despite significant and effective interdisciplinary cooperation, it cannot be argued that the problem area is of interest to surgical specialities: gynecology and obstetrics center, the general surgery center, plastic and reconstructive surgery center.

The principles of prevention are also not applied in many cases, as the number of patients with the most varied scar complaints, show an upward trend from year to year. Treatment should be determined on the basis of individual criteria and should be continued

according to the objective response to treatment, changing where necessary, or combining with other methods [9- 11].

The experience-based treatment approach, ongoing controlled and randomized investigations of newer scar treatment procedures, and recent research (genetic, endocrinological and pharmacological) may result in the expansion of therapeutic protocols [10] and, perhaps in the not distant future, in the knowledge of the etiopathology of keloids and the solutions of its problem. Undergraduate and postgraduate courses are the greatest importance in the widespread dissemination and mastery of the principles of multi- level prevention.

CONCLUSIONS

Hypertrophic scars are seen in approximately 82% of women who have had a caesarean section recently. Evidence from current studies shows that polysiloxane patches should be the first-line therapy for both types of caesarean section in hypertrophic scars, while intralesional steroid is the second line of treatment for primary linear hypertrophic scars.

In recurrent linear hypertrophic scars, intralesional steroid therapy is recommended in first line in both types of incisions, because silicone gel sheeting was largely ineffective.

Regarding the type of caesarean sections, in lower transverse laparotomy both types of treatment proved to be more effective, thus this could be an argument for the surgeon to choose this type of incision detrimental to the lower median laparotomy.

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