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Research Article

A PROSPECTIVE STUDY TO ASSESS THE CORTICOSTEROID OINTMENT EFFICIENCY IN PREVENTION OF POST- OPERATIVE HYPERTROPHIC SCARS AFTER THE C- SECTION

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Abstract:

Aim of Study: This study was carried out to assess the corticosteroid ointment efficiency in prevention of post-operative hypertrophic scars after the C-section surgical procedure.

Study design: A prospective cohort study.

Place and time duration: The current study was held at Services Hospital Lahore for the duration of one year starting from July, 2017 to June, 2018.

Material and Methodology: A total number of 61 patients were selected in our study. They were divided into two groups as 31 control patients and 30 treatment patients. All patients were having wounds of surgery. Patients were satisfied for the study pattern and well briefed about it. Characteristics of wounds of all patients were analyzed by the means of modified Vancouver Scar Scale (MVSS) score which contains pliability, vascularity, pigmentation and height at the start of this study (10th day of post-operation), after 12 weeks and after 24 weeks. Every other day basis gave the corticosteroid ointment to the treatment group for 12 weeks duration. Evaluated time bound changes and comparative evaluations in each group. Analysis of data was performed via SPSS 20.

Results: There were 61 patients included in this study. Average age of the patients was 31.28±3.95 years. Treated the treatment group with corticosteroid ointment first for 12 weeks and 24 weeks. After the 12th and 24th week analysis found that vascularity and height subsection scores of treatment group were considerably reduced as compared to control group. Whereas, pigmentation and pliability reduced equally in each group. Satisfaction for scar healing was high in treatment group as 06 (20%) patients and on the other hand there were 4 (12.9%) patients found satisfied in the control group. After treatment itching was reported by two patients.

Conclusions: At the end of our study we found that height and vascularity parameters although showed improvement in 12 weeks and after 24 weeks but the other clinical results were same in both groups. This might be because of the reason that we stopped treatment after 12 weeks. More studies on the larger scales are therefor recommended for the future researches.

Keywords: Wound healing Cicatrix, Methyl prednisolone, corticosteroid ointment, keloids, hypertrophic scars (HS).

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INTRODUCTION:

Patients who have abnormal wound healing usually face post-operative scars like hypertrophic scars (HS) and keloids [1]. Occurrence of irregular deposition of extracellular matrix proteins, inflammation and excess fibroblast proliferation are normally characterized as hypertrophic scars (HS) [2]. C-section surgical procedures usually cause development of post-operative scars and as we know that this procedure is one of very common surgical interventions. Scars cause very bad symptoms like pain, itching, increase the infection risks and create problems from an esthetic point of view. Such problems in a woman who just gave birth may cause serious psychological problems that is likely to be predisposed to depression and distress [3,4]. Consequently, postnatal females feel relieve in stress if even minor improvements occur in scar results. Numerous prophylactic modalities and treatment including laser treatment, fluorouracil, interferons, intralesional corticosteroid injections, topical silicone gel, cryotherapy, pressure therapy, radiation, surgical excision and many other medicines have been used for management of keloids and hypertrophic scars (HS) [5,6,7,8,9,10,11,12,13]. The main objective of present study was to assess the corticosteroid ointment efficiency in prevention of post-operative hypertrophic scars (HS) after the C-section surgery.

MATERIAL AND METHODOLOGY:

This prospective cohort study was conducted at Services hospital Lahore for the duration of one year starting from July, 2017 to June, 2018. Study was duly proven by ethical committee of said hospital. Selected a total number of 61 patients who underwent C-section through a primary Pfannenstiel incision. Well informed all selected patients about study procedures and obtained written consent from all of them. Age of all selected patients was from 21 years to 42 years. Same surgeon performed the same procedure for closure of the wounds for all selected patients.

Excluded all those patients from the study who were having a known hypersensitivity/allergy to corticosteroids chronic medical illnesses known to affect wound healing like obesity, hematological disease, chronic renal failure and diabetes mellitus, having a systemic infection, previously undergone surgeries which involved abdominal incisions and having previous history of keloids or hypertrophic scars (HS). Data analysis was performed at SPSS 20. Assigned the random number to the patients by using RV Bernoulli (0.5) method. Patients were divided into two groups as 31 patients in control group and 30 patients in treatment group. Started the use of methylprednisolone cream from 10th day of post operation on wounds of treatment group as a thin layer two times per 24 Hrs for a total duration of 03 months. On the other hand, control group received normal usual treatment. Before the start of treatment, after 03 months and after 06 months a dermatologist made the follow-up checkups of the patients.

Carried out scar valuation by means of modified Vancouver Scar Scale (MVSS) by calculating scar height (0: normal/flat, 1: <2 mm, 2: 2–5 mm, 3: >5 mm), pliability (0: normal, 1: supple, 2: yielding, 3: firm, 4: banding-rope tissue, 5: contracture), vascularity (0: normal color, 1: pink, 2: pink to red, 3: red, 4: red to purple, 5: purple) and pigmentation (0: normal color, 1: hypo-pigmentation, 2: hyper-pigmentation) [14]. Measured the thickness of scar by using linear probe ultrasound. On every two months assessed the side effects faced by the patients. Using a 4-point grading scale as 1=unsatisfied, 2=slightly satisfied, 3=satisfied, 4=very satisfied patients of each group were asked to grade their satisfaction level after the follow-up period of 06 months. Used Shapiro-Wilk test to check the normal distribution of numerical variables. Variables that matched to standard distribution were measured and stated as mean±SD, whereas, reported and calculated the remaining variables as average from minimum to maximum. Frequency of occurrence and percentage was used for categorical variables. Cross-group evaluations of non-

repeating quantities of continuous numerical data were calculated via student T-test. Assessment of repeating measurements for the MVSS variable was done through Friedman's two-way variance analysis and by gaining the sum of variation over time these were compared with Mann Whitney U test. Used Chi-square analysis, repeatedly and Generalized Estimating Equations (GEE) for assessment of categorical data. Considered the P-value ≤ 0.05 as statistically sufficient.

RESULTS:

Included a total number of 61 patients in our study which were divided into two groups as 31 patients in

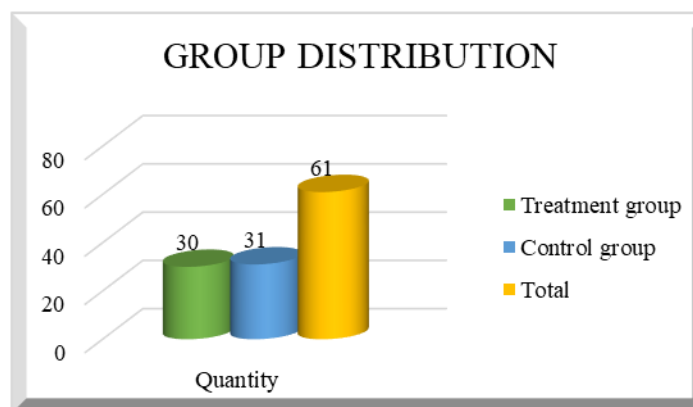
control group and 30 patients in treatment group. Average age of the patients was 31.28 ± 3.95 years. With P-value equal to 0.816 there was no considerable difference among each group. After the 12th week analysis found that vascularity and height subsection scores of treatment group were considerably reduced as compared to control group with P-value equal to 0.001 in regard to baseline data. With the P-value equal to 0.163 found no considerable difference amongst both groups after the treatment of 06 months. Whereas, found no significant difference for pigmentation and pliability which reduced equally in each group.

Table No 01: Mean age \pm Standard Deviation and BMI

Statistics	Treatment group	Control group	Total	P-value
Age	31.4 ± 4.23	31.16 ± 3.72	31.28 ± 3.95	0.816
BMI	24.7 ± 2.67	26.57 ± 2.16	25.65 ± 2.58	0.004

Table No 02: Group distribution of patients

Group	Quantity	Percentage
Treatment group	30	49.18%
Control group	31	50.82%
Total	61	100%

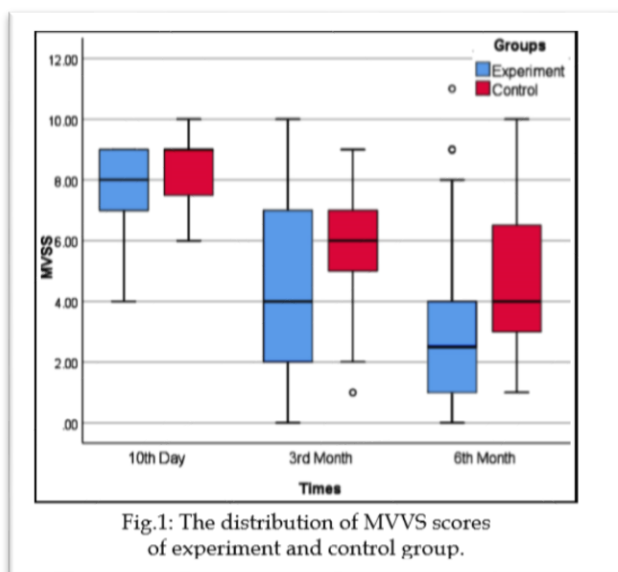


Observed considerable tendency of reduction over time for scar vascularity in each group. With P value equal to 0.015 after three months of treatment found more decrease in vascularity in treatment group as compared to control group. But on the other hand, with P value equal to 0.097 after the six months treatment found no considerable difference in each group. No significant differences were found in evaluation of pigmentation scores in each group. MVSS scores exposed that all scoring variables like pliability,

vascularity, pigmentation, height and MVSS scores were considerably reduced in each group after 3 months and 6 months treatment as compared to baseline assessment and in the scoring values of 3rd month and 6th month found no considerable differences. With P-value equal to 0.411 found no considerable difference in relationships of amount of decrease in scores between both groups. Graphical and tabular form is shown below.

Table No 03: MVSS scores of both groups

Interval	Treatment group	Control group	Total	P-value
Baseline	8 (4-9)	9 (6-10)	8 (4-10)	0.411
3 rd Month	4 (0-10)	6 (1-9)	6 (0-10)	
6 th Month	2.5 (0-11)	4 (1-10)	4 (0-11)	
Intragroup P-value	<0.001	<0.001		

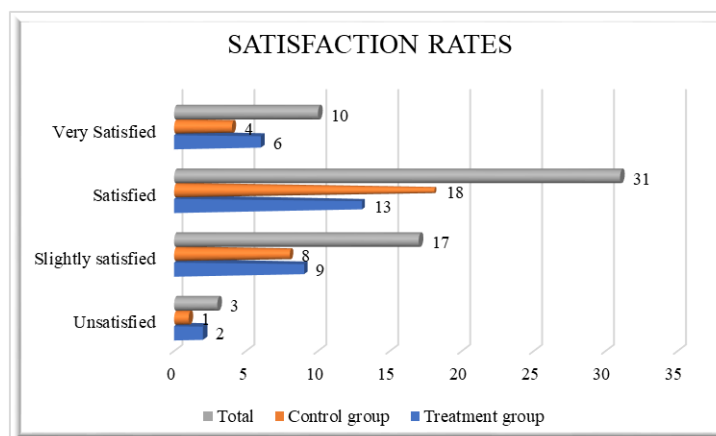


Found no considerable difference among the groups with P-value equal to 0.663 in terms of patient's satisfaction whereas, the rate of satisfied scores was considerably high in each group at the end of 6 months treatment. High satisfaction for scar healing was reported in treatment group by 20% (6) patients after

3 months of treatment with methylprednisolone ointment whereas, in control group it was by 12.9% (4) patients. Two patients of treatment group reported the itching while using the ointment and no else side effects were reported by the group.

Table No 04: Satisfaction rates of both groups

Satisfaction	Treatment group		Control group		Total		P-value
	n=	%	n=	%	n=	%	
Unsatisfied	2	6.7	1	3.2	3	4.9	0.663
Slightly satisfied	9	30	8	25.8	17	27.9	
Satisfied	13	43.3	18	58.1	31	50.8	
Very Satisfied	6	20	4	12.9	10	16.4	



DISCUSSION:

Inflammatory stage, tissue formation and remodeling are a few main steps of wound healing [15]. The accurate pathophysiological procedures defining the scar formation still remnants mysterious, though, existing data recommends that with addition of other mechanisms cytokines, growth factors, extracellular matrix components and fibroblast activity probably support in scar formation [16]. With the common method, to reduce the side effects, the specific processing of the corticosteroid in the shape of cream was selected [17]. Furthermore, we prophesied higher compliance by the patients with easily applied, non-invasive and painless treatment. With increasing collagen and fibroblast itemization, corticosteroids act to reduce glycosaminoglycan synthesis and collagen as well as on immune system it has anti-inflammatory effects [18]. For the treatment of keloids and hypertrophic scars (HS) intralesional injection of corticosteroid is widely used [19]. It was observed in various studies that compared to silicon-based controls use of corticosteroid ointment for treatment of hypertrophic scars (HS) gained higher rate of satisfaction [20,21]. In the patients who have repeated hypertrophic scars (HS) or patients with postoperative linear scars which may not be controlled with prophylactic treatment like taping, moisturizing, pressure treatment and silicone gel are recommended for treatment with intralesional corticosteroid injections [22,23,24]

In our study it was found that with no considerable difference in both groups all MVSS parameters like total MVSS, pliability, vascularity, pigmentation and height were having lower score after 6 months of treatment. After the three months of treatment we observed considerable changes in the vascularity and height in the treatment group as compared to control group. We also observed that in the treatment group patient's satisfaction rate was high. Even though, in

another study intralesional injection of corticosteroid was preferred for treatment [25]. But these injections have many side effects like formation of white bead-like skin deposits, changes in pigmentation, skin atrophy and pain. Side effect after application of ointment observed in our study was only itching which was reported by only two patients.

CONCLUSION:

In this study we concluded that height and vascularity parameters although showed improvement after 12th week but clinical results were same in both groups at the end of the study. This might be because of the reason that we stopped treatment after 12 weeks because of the limitation of use of ointment to avoid side effects. More studies on the larger scales are therefore recommended for the future researches.

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