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Protocols for the Treatment of Stretch Marks of the Skin: A Systematic Review of Intervention

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Abstract: ***Introduction: The splines are dermal parallel linear macroscopically apparent scars associated with the atrophy of the epidermis. A desfigurante and aestética condition of skin; if present as splines rubras, who are recent, and the psychological comimpacto white striations in patients and without therapeutic options for effective reversal. Objective: To assess randomized clinical tests to demonstrate therapeutic effectiveness of protocols used in dermal splines. Method: Searches of major studies in electronic databases (BVS; MEDLINE/PubMed®; EMBASE; LILACS; Cochrane Library), with search strategy through the following descriptors indexed (DeCS and MeSH). Results: Fourteen manuscripts met the eligibility criteria, but without fully effective results. Limitations in the studies are related to the limited number of patients and high-risk or risk of bias uncertain. Conclusion: More detail and clarity in trials are necessary for more consistent decisions.***

Keywords: splines. Splines and distension, The dermis, Treatment and splines

1. Introduction

The dermal splines are linear scars perpendicular to the lines of skin tension associated with atrophy of the epidermis [1,2,3].

Although its molecular pathogenesis is not fully understood, evidence shows that stretch marks are caused by rapid stretching of the skin due to pregnancy, weight gain, rapid growth, also caused by diseases such as Cushing's syndrome and excessive use of steroids [1,4,5,6,7].

Result from the combination of constitutional genetic factors, hormonal and mechanical where the glicocorticoides inhibit the activity and the proliferation of fibroblasts more frequent in younger individuals, in adolescence and pregnancy, although it appears at any stage of life [4,8,9]. Themost commonly affected sites are the breasts, arms, abdomen, buttocks and thighs[4].

In the extracellular matrix (MEC) proteoglycans (PGs) and glycosaminoglycans (GAGs), what are polysaccharides present in mast cells, along with the elastic and collagenous fibers interact with growth factors and other proteins [10.11].

The histopalógico Elastolysis examination shows the dermis and degranulation of mast cells, with the epidermis adelgaçada, attenuation of the crests, orientation of the bundles of collagen in the horizontal plane, and with elastic fibers bonded making the outer surface of the skin more profound differentiating themselves from normal skin, presenting Microstructural changes and decreased elasticity [12.13].

In spite of the splines not cause significant medical problems we must consider the impact on aesthetics and its effect on the psychological status of patients [14,15,16].

The main treatment modalities with the objective of treating or preventing are the therapies with application of laser, light therapy, with application of acids, particles of collagen, lipólises radiofrequency laser and microdermabrasion, but no determined as "gold standard"; and, therefore, the success of the treatment is still a challenge [4.15, 16, 17, 18].

2. Objective

Assess randomized clinical trials (RCTs), to highlight the therapeutic efficacy of protocols used in dermal splines.

3. Method

3.1 Data Collection

A review was made in the literature. The period of access to data bases was between June and July 2017. There were restrictions in relation to the time period of the studies target

of review, being considered the researches of the last five years, and the study design, being considered only RCTs with restriction of speech in humans.

The strategies for the identification and selection of studies used the methodology of review for survey of major studies from electronic databases (BVS; MEDLINE/PubMed®; EMBASE; LILACS; Cochrane Library), with search strategy through the following descriptors indexed (DeCS and MeSH) in Portuguese: *white streaks in the skin, treatment of dermicas splines, treatment protocol;* in the English language: *white skin, STRIAE, STRIAE distensae, STRIAE distensae dermal treatment of stretch marks, protocol of stretches, stretch marks, STRIAE distensae, striae rubra, striae alba, lineae striae;* in the spanish language: *ranuras blanco de la piel.*

For the construction of the research question and elaboration of the search strategy, we used the methodology ***Problem, Intervention, Comparison, Out eats*** (peak) to search for systematic reviews in the literature. Delineated as question: "What are the protocols for the treatment of stretch marks of the skin available with reverse effectiveness?". Combinations between descriptors for specific search in data bases were used (for location of articles indexed) and keywords relating to such descriptors (for recovery of articles in the indexing process), by means of the boolean operator "OR". For the combination of search expressions referring to the problem, interest and context, the boolean operator "AND" was used. English was adopted for all terms, since, for the databases selected, this language retrieves the totality of scientific material recorded, regardless of the language of the original publication.

Criteria for selection of articles: a) primary study and with full text available; (b) the presence of evaluation of therapeutic intervention performed by a researcher or team of researchers, with evaluation of results of operations recorded by assessors and satisfaction of patients; c) publications in English or Spanish. studies were excluded which consisted in: theses, dissertations, government documents, technical reports, newspaper articles, letters to the editor, press releases and articles of revision.

The relevant articles were selected by review of the title and summary and by exclusion of duplicates. The next stage was the reading and reviewing of the full text of articles by three authors to ensure the eligibility criteria. The information collected included: authors, study design, population and sample size, treatment protocol and results assessed for each procedure, the period of the study and evaluation of the methodological weaknesses of the studies selected.

Searches were carried out also in periodicals of CAPEs and through the Program of bibliographic commutation (Comut) through the Central Library of the Federal University of Piauí (UFPI), and were applied as an inclusion criteria: articles randomized clinical trials of treatment in white striations and/or rubras in humans in the past 5 years, with or without blinding. And as a criterion for exclusion: by being out of context, such as the Protocols of prevention; to have publication for more than 5 years; by duality; by not opening the full text and not confirmed if it was an RCT.

The exploitation of data from each study was performed descriptively, allowing a better characterization of protocols and evaluation of the practical applicability of methodological designs found. The results of the substantial analysis of each selected article for characterization and extraction of information addressed were summarized in tables and figures.

Detailed information of the selected studies regarding the study design were collected, the population of patients involved, the treatment protocol and the results found.

The evaluation of the methodological quality was followed by the Cochrane Manual tool for the development of systematic reviews of intervention, version 5.1.0 (Cochrane Handbook).

3.2 Statistical Methodology

The Hierarchical groupings for most similar sequences of the rcts selected and the results of the respective protocols used in these studies were obtained by methods of UPGMA (Unweighted Pair-Group Method Using an Arithmetic Average) from distances of dissimilarity obtained by the algorithm of Gower, expressed by:

$$S_{ij} = \frac{\sum_{k=1}^{p} Wijk.Sijk}{\sum_{k=1}^{p} Wijk}$$

Where K is the number of variables (k = 1, 2,…; p=total number of evaluated characteristics); i and j, two works any; wijk is a weight given in comparison ijk, assigning value 1 for valid comparisons and value 0 for invalid comparisons (when the value of the variable is missing); Sijk is the contribution of the variable k in the similarity between the jobs i and j, having values between 0 and 1. For a nominal variable, if the value of the variable k is the same for both work, i and j, then Sijk = 1, otherwise it is equal to 0.

The assessment of the existence of possible distortions caused in the grouping was performed with the interpretation of the coefficient of correlation between the distance matrix (dissimilarity) between jobs (X) and the Cophenetic matrix obtained from the analysis of grouping (T), called the cophenetic correlation coefficient (. c)

The coefficient is described as the following expression:

$$c = \frac{\sum_{i<j}(x_{(i,j)} - x)(t_{(i,j)} - t)}{\sqrt{[\sum_{i<j}(x_{(i,j)} - x)^2][\sum_{i<j}(t_{(i,j)} - t)^2]}}$$

In that x (i, j) = | Xi - Xj |, the normal euclidean distance between the observations i and j and t (i, j) = dendrogramática distance between points of the model Ti and TJ.

4. Result

In each survey ECRs of treatment protocols for white striations and rubras in humans in the past 5 years were selected .A total of 122 articles were selected by 69 have no duality, and these articles found in the study were excluded 42 per deal protocols for prevention of stretch marks; and excluded 11 articles for being out of context. 16 articles

Were evaluated for eligibility , and these 2 have not opened the full text and we cannot confirm whether they were true rcts; resulting then in 14 selected rcts published in the period from 2013 to 2017 with a total of 354 patients (Figure 1).

Evaluated the combinations of protocols highlighting: were Dermabrasion and Tretinoina; CO2 Laser fractionated and Tretinoina + Glycolic Acid; Platelet-rich plasma (PRP) and Microdermabrasion; Microagulhamento and CO2; CO2 fractional fractioned and Intense Pulsed Light and other combinations. Emphasis will be made to the studies of Khater et al (2016), where it was applied CO2 fractional versus Microagulhamento with the same number and range of sessions. Nine of the 10 patients treated with a needle (90%) showed improvement and only two patients (20%) did not respond in the same intensity; however, one patient (10%) presented no improvement after treatment. In comparison, patients treated with CO2 laser, five of 10 patients (50%) showed clinical improvement; and five patients (50%) showed no improvement. The author concludes the overlap of the use of Microneedles on CO2 lasers for the treatment of stretch marks (Table 1).

For each study included in the analysis was performed data extraction by researchers and the risks of trends were evaluated in 5 areas - generation of random sequence; allocation concealment, blinding of participants and staff; evaluation of results; data from incomplete results. Based on the risk of bias according to the Cochrane Manual the studies were classified into 3 categories: (1) low risk of bias / low risk of bias for all key areas; (2) an uncertain risk of bias / obscure risk of bias for 1 or more key areas; and (3) high risk of bias / high risk of 1 or more key areas (Table 4).

The selected trials were submitted to trial for each domain. The delineation of articles evaluated by the method used to assess the degree of risk of bias of rcts showed a high risk of bias or risks inserts in the generation of random sequence and blinding of participants and professionals; and that in any study reports if these parameters have undertaken or not the results of research performed. In some of them there was a lack of comparison or control group and still insufficient data to trial these biases.

> The majority of articles revealed blinding of assessors characterizing low risk of biascd and in a smaller number of studies do not reveal whether or not this was blinding. Only one article with incomplete outcome having as a cause weight gain, withdrawal of consent, by contact dermatitis and loss of follow-up (Table 5).

The possible biases in the process of a review indicate the strengths and limitations of the studies. The validity of the results of the studies it is essential to draw conclusions about the effects of an intervention, and provide the best and most up-to-date available evidence about the effects of interventions for use by consumers, clinicians and decision-makers; to inform the decisions of health. To assess the risk of bias means directing the extent to which the results of the studies included should be accredited.

In this study there was no selective reporting, making the results applied by protocols such as reliable, i.e., low risk for this bias.

The responses were synthesized separately for each procedure adopted in each study. These data comes to show the poverty of therapeutic response to the available protocols and yet without fail to cause discomfort and other adverse effects, which were present in all protocols in greater or lesser emphasis, except in the study protocol using silicone gel versus placebo gel. The answers were between weak and moderate, having as best results in protocols where fractionated CO2 laser was applied and with the use of platelet-rich plasma in white streaks, and Nd:YAG laser in splines rubras. The protocols with Tretinoin 0.01% also in splines albas revealed moderate response. But in no study at the end of the Protocol there was total recovery of the skin.

The purpose of the protocols relapsed on the collagen fibers and elastic, with changes in their structures: thickening and arrangements. Although some studies reported an increase of dermal papillae and thickening of the epidermis, there have been no reports whether it was by arrangement of collagen fibers or by an increase in the number of cells, which would lead to think in a recovery of the ability to author skin regeneration; and may not, however, be completed in the evaluation of any protocol applied (Table 8).

5. Figures for Publication

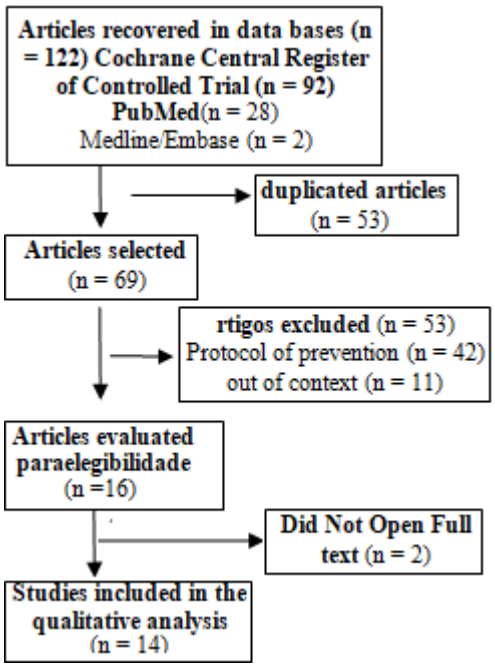

Figure 1: Flow diagram of selection of primary studies of systematic review.
Source: SOARES, 2018.

Table 1: Selected studies of treatment protocols of dermal splines

Intervention protocol/Methodology	*Study Design*	*Population*	*Result*	*Reference*
Group 1: 15 received superficial dermabrasion (16 weekly sessions/) Group 2: 17 recebeeram Tretinoin 0.05% cream daily. Without a control group Parameters: width, length of the splines and satisfaction of patients	Randomized and open Do not blind	32 Women 11-25 years Phototype I-IV Estriae rubra	The interventions had similar efficiencies, but the superficial dermabrasion has fewer side effects and better patient adherence.	HEXSEL (2014)
Group 1: 46 splines fractionated CO2 Laser (5 sessions) Group 2: 46 splines glycolic acid at 10% + 0.05% cream Tretinoin(all nights) Parameters evaluated: Area of splines and patients' satisfaction	Simple random sampling Evaluator blinded	6 Women 30 years Fitzpatrick skin type III and IV Striae alba	Significantly better use of CO2 compared to glycolic acid and Tretinoin	NAEIN (2014)
Group 1:placebo gel Group 2: silicone gel Apply 1 time per day for 90 days Parameters: The dermis thickness, number and arrangement of elastic and collagen fibers	Double-blind: Patients and assessors	20 Women 37 years (18 to 52) Striae alba and rubra	Best result with silicone gel	UD-DIN (2013)
Group I: Prp Group II: microdermabrasion Group III: PRP + microdermabrasion in the same session. 6 sessions each 2 weeks Parameters evaluated: Evaluation of collagen fibers and elastic	Distribution in the groups was random Inclusion and exclusion criteria	68 Patients Group I: 23 patients Group II: 34 patients Group III: 11 patients Striae alba and rubra	Better results with a smaller number of sessions in Group III: PRP + microdermabrasion	IBRAHIM (2015)
Nd: YAG Laser long pulse 1064 nm Er:YAG Laser variable square pulse of 2940 nm Parameters evaluated: Thickness of the epidermis The number and arrangement of elastic and collagen fibers	Double-blind Random Leasing	20 Women 20 to 40 years Fitzpatrick skin type II to V Striae alba and rubra	The splines alba there was no satisfactory improvement The splines of the type rubra there was moderate response	GUNGOR (2014)
Group 1: fractional radiofrequency (FMR) Group 2: Frequency + CO2 fractional laser fractionated (FMR + CO2) 5 Sessions with intervals of four weeks Parameters evaluated: surface area of ribs; Subjective evaluation of participants	Random allocation Evaluators blind	6 Women (48 pairs of ribs) Striae Alba	Best result in Group 2: FMR + CO2	NAEIN (2016)
Group I: CO2 Laser fractioned 40 mJ /pulse width of 4 ms /scanning area 10 mm × 10 mm. 5 months (monthly sessions) Group II: intense pulsed light 590 nm, 20 to 30 J/cm2. 5 months (fortnightly sessions). Parameters evaluated: surface area of the splines	Evaluator blinded	40 Women 23 to 48 years	The fractional CO2 laser is more effective than the IPL in the same duration of treatment and with fewer treatment sessions	EL TAIEB (2016)
Group 1: bipolar radiofrequency potentized with infrared (IR) Group 2: bipolar radiofrequency fractionated Group 3: bipolar radiofrequency Group 4: control. 3 monthly sessions Parameters evaluated: Depth of the splines	Randomization centered on methodological center. Evaluators blind (2) Professional and the patient also evaluated	22 Patients (Men and women) >18 years Striae Rubra and Alba 14 patients completed the treatment	Effective Treatment in Group 1: Fractionated bipolar RF + Go	HARMELIN (2016)
Group 1: Microagulhamento, 1 session per month. 3 Sessions Group 2: CO2 fraction, 1 session per month 3 sessions Parameters evaluated: Provision of elastic fibers and collagen thickening of the dermis	Evaluator blinded	20 Patients	Best result in Group 1 Microagulhamento	KHATER (2016).
Microagulhamento: 3 (1 sessions each 4 weeks) Parameters evaluated: Thickness of the epidermis Number and arrangement of elastic and collagen fibers Evaluation of patients	Evaluator blinded	16 patients (14 - 44 years) Striae alba and rubra	43.8% of the patients: excellent improvement 56.2% of the patients: minimal to moderate improvement 37.5% of the patients: highly satisfied	PARK (2012)
Intradermal RF + autologous PRP	Evaluator	19 Patients	42.1% of the participants	KIM

3 sessions, 1 time /week every 4 weeks Parameters evaluated: Patient's Satisfaction	blinded	19-43 years	demonstrated Excellent improvement 63.2% of the patients described themselves as "satisfied" or "very satisfied"	(2012)
Group 1: Pulsed Diode Laser (PDL) Group 2: Intense Pulsed Light (IPL) 5 sessions with an interval of 4 weeks Parameters: Width of the stria, skin texture	Evaluator blinded	20 Patients Stria rubra and alba	Stria rubra gave a higher response with PDL or IPL in comparison with the stria alba The PDL induced expression of collagen I so highly significant in comparison with IPL	SHOKEIR (2014)
Nd: YAG Laser Two Potential: 75 J/cm2 X 100 J/cm2 4 sessions with an interval of 3 weeks Each rib was divided into three equal segments: in the middle was the control Parameters evaluated: number and arrangement of elastic and collagen fibers. Evaluation of patients	Text not reported	45 patients: 35 Women 10 Men	With 100 J/cm2: Improves the splines alba With 75 J/cm2: There was a better response in the splines rubra	ELSAIE (2016)
IPL: 650nm/IPL: 590nm 5 sessions of 2 weeks intervals. Parameters evaluated: Length and width of the splines	Prospective study of comparison No other reports	20 Patients 15 women and 5 men 15-32 years Splines rubras	Both the wavelength (650nm and 590nm) were effective	MUHSIN (2013)

Legend: PRP(Platelet-rich plasma); Nd:YAG(**n**eodymium- DOPED **Y**ttrium **the**luminium **g**arnet*);* Er:YAG(Erbium-doped **Y**ttrium **the**luminium **g**arnet
Source: SOARES, 2018

Table 4: Different Aspects of risk of bias

Article	Editorial bias						
	Generation of random sequence	Allocation concealment	Blinding of participants and professionals	Blinding of assessors of the outcome	Incomplete Outcome	Report of selective outcome	Other sources of bias
HEXSEL (2014)	Insufficient data	List of randomization	Do not blind. And not reporting alters the outcome	The study does not report information	Data loss and is related to the outcome investigated	Protocol and outcome report available	Seems to be free from other biases
NAEIN (2014)	Randomly by the professional judgment	Simple random sampling Randomization is open	Do not blind No reports if you change the outcome	Blinding of assessors and unlikely to have been broken.	There was no loss of data	Protocol available	Seems to be free from other biases
UD-DIN (2013)	Insufficient data	Packaged Products of identical forms	Blinding of participants	Blinding of assessors and unlikely to have been broken.	There was no loss of data	Protocol available	Without a control group
Ibrahim (2015)	Insufficient data	Insufficient data	Do not blind. No reports if you change the outcome	Not reporting this information	There was no loss of data	Protocol available	Seems to be free from other biases
GUNGOR (2014)	Insufficient data	Insufficient data	Not reporting this information	Blinding of assessors and unlikely to have been broken.	There was no loss of data	Protocol available	Seems to be free from other biases
NAEIN (2016)	For the judgment of the professional	Insufficient data	Not reporting this information	Blinding of assessors and unlikely to have been broken.	There was no loss of data	Protocol available	Seems to be free from other biases
EL TAIEB (2016)	Insufficient data	Insufficient data	Not reporting this information	Blinding of assessors and unlikely to have been broken.	There was no loss of data	Protocol available	Seems to be free from other biases
HARMELIN (2016)	Concealment by a central	Insufficient data	Not reporting this information	Blinding of assessors	There was no loss of data	Protocol available	Seems to be free from other biases
KHATER (2016)	Insufficient information	Insufficient data	Not reporting this information	Blinding of assessors	There was no loss of data	Protocol available	Seems to be free from other biases
PARK (2012)	Insufficient information	Do not hide	Not reporting this information	The study reports This information	There was no loss of data	Protocol available	Insufficient information
KIM (2012)	Professional Judgment	Do not hide	Insufficient information	Blinding of assessors and Unlikely to have	There was no	Protocol available	Insufficient information

				been broken.	loss of data		
SHOKEIR (2014)	For the judgment of the professional	Do not hide	Do not blind. No reports if you change the outcome	Blinding of assessors	There was no loss of data	Protocol available	Insufficient information
ESAIE (2016)	For the judgment of the professional	Do not hide	Not reporting this information	Blinding of assessors and unlikely to have been broken.	There was no loss of data	Protocol available	Seems to be free from other biases
MUHSIN (2013)	For the judgment of the professional	Do not hide	The study does not report this information.	The study does not report this information	There was no loss of data	Protocol available	Insufficient information

Source - Soares, 2018

Table 5: The level of risk of bias based on judgments for each study

Article	Degree of risk of bias						
	Generation of random sequence	Allocation concealment	Blinding participants and professionals	Blinding of assessors of outcome	Incomplete Outcome	Report of selective outcome	Other sources Bias
HEXEL (2014)	+	+	–	–	++++++++	–	–
NAEIN (2014)	++++++++	++++++++	++++++++	+	+	+	+
UD-DIN (2013)	–	+	+	+	+	+	++++++++
Ibrahim (2015)	–	–	++++++++	–	+	+	+
GUNGOR (2014)	+	–	–	–	+	+	+
NAEIN (2016)	++++++++	–	–	+	+	+	+
ELTAIEB (2014)	–	–	–	+	+	+	+
HARMELIN (2014)	+	–	–	+	+	+	+
KHATER (2016)	–	–	–	+	+	+	+
PARK (2012)	++++++++	++++++++	–	–	+	+	++++++++
KIM (2012)	+	++++++++	++++++++	+	+	+	++++++++
SHOKEIR (2014)	++++++++	++++++++	++++++++	+	+	+	–
EL SAIE (2016)	++++++++	+	–	+	+	+	+
MUHSIN (2013)	++++++++	++++++++	–	–	+	+	–

Legend: Low risk: +; High risk: ++++++++; Risk uncertain: –.
Source: SOARES, 2018.

Table 6: Number of articles correlated to the risk of bias

	Generation of random sequence	Allocation concealment	Blinding participants and professionals	Blinding of assessors of outcome	Incomplete Outcome	Report of selective outcome	Other sources Bias
High	7	6	4	0	1	0	3
Low	3	3	1	5	13	13	9
Uncertain	4	5	9	9	0	1	2

Source: SOARES, 2018

Table 7: Protocol Applied / Type of stria

Protocols used	Type of splines
Dermabrasion X Tretinoin 0.05%	Stria Rubra
CO2 Laser X Tretinoin 0.05% + Glycolic Acid 10%	Stria Alba
Silicone Gel X Placebo	Stria Rubra and Alba
Microdermabrasion PRP X X (PRP+Microdermabrasion)	Stria Rubra and Alba
Nd:YAG X Er:YAG	Stria Rubra and Alba
Fractional frequency X CO2 fractional Radiofrequency Fractioned +	Stria Alba
Fractionated CO2 X Intense Pulsed Light	Stria Alba
Bipolar radiofrequency enhanced with IR light X Bipolar radiofrequency fractionated X Bipolar radiofrequency	Stria Rubra and Alba
Microneedles X CO2 Laser	Stria Rubra and Alba
Microagulhamento	Stria Rubra and Alba
Intradermal Rf + PRP	Stria Alba
Pulsed dye laser (PDL) X Intense Pulsed Light (IPL)	Stria Rubra and Alba
Nd: YAG 75 J/cm2 X Nd: YAG 100 J/cm2	Stria Rubra and Alba
Intense Pulsed Light: 650 nm X 590 nm	Stria Rubra

Legend - PRP(Platelet-rich plasma); Nd:YAG(**n**eodymium - DOPED **Y**ttrium **the**luminium **g**arnet*);* Er:YAG(Erbium-doped **Y**ttrium **the**luminium **g**arnet).
Source: SOARES, 2018.

Table 8: Responses to treatment protocols are applied

Procedures performed	*Answers*			*Adverse Effects*	*Evaluation*
	F	M	MR		
HEXSEL (2014):					
Dermabrasion		X		X	↓ The length and width and epidermal atrophy
Tretinoina		X		X	
NAEIN (2014):					
Fractionated CO2 Laser				X	↓ The surface area of the splines.
Tretinoina 0.05% + Glycolic Acid 10%	X	X		X	Larger reduction with the CO2
UD-DIN (2013)					
Silicone Gel	X			–	↑ The collagen and the thickness of the
Placebo Gel					papillary dermis
Ibrahim (2015)					
PRP				X	↑ The epidermal thickness
Dermabrasion		X		X	↑ The ridges of the reticular dermis
Dermabrasion + PRP	X		X	X	
GUNGOR (2014):					
Nd:YAG Laser	X	X			↑ The elastic fibers
Er:YAG Laser	X	X		X	↑ Alignment of collagen fibers
NAEIN (2016):					
Radio frequency with micro needles alone					↓ The surface area of the splines
Radio frequency with micro needles + CO2		X	X	X	
				X	
EL TAIEB et al (2016):					↓ The width of the splines with a lesser effect on the length
Fractionated CO2 Laser			X	X	
Intense Pulsed Light	X				
HARMELIN (2016)					↑ Of collagen
Bipolar radiofrequency Fractionated	X			X	↑ The dermal papillae
Bipolar radiofrequency+ infrared light		X		X	↓ The depth of the splines
KHATER (2016)					
Microneedles			X		↑ The fibroblasts and collagen and Elastin
CO2 Laser		X			↓ Stretch Width
PARK (2012)					↑ Of collagen fibers and elastic
Microagulhamento		X		X	Thickening of the epidermis
KIM (2012)					42.1% of the participants evaluated subjectively (photo)
Intradermal Rf + PRP			X	X	showed excellent or marked improvement
SHOKEIR (2014)					↑ Collagen: greater with PDL; STRIAE rubra gave a higher
Pulsed dye laser (PDL)			X	X	response
Intense Pulsed Light (IPL)			X	X	
ELSAIE (2016)					↑ Of collagen
Nd:YAG 1064 nm:					↑ The ELASTIN
75 J/cm2		X		X	↑ The dermal papillae
100 J/cm2		X		X	
MUHSIN (2013)					↓ Total No. of splines:
Intense Pulsed Light:					650 nm: 256 to 240
650 nm		X	X	X	590 nm: 251 to 228
590 nm				X	↓ The sum of the length (cm):
					650nm: 935 to 830
					590 nm: 948 to 803
					↓ Sum of the width (mm):
					650 nm: 159 to 135
					590 nm: 151 to 22

Legend: F(low); M (moderate); MR(best response); Nd:YAG(n-doped eodymium Yttrium theluminium garnet); Er:YAG(Erbium-doped Yttrium theluminium garnet). PRP (platelet rich plasma); (increases ↑ (decreases); ↓ (there was no adverse effect)
Source: SOARES, 2018.

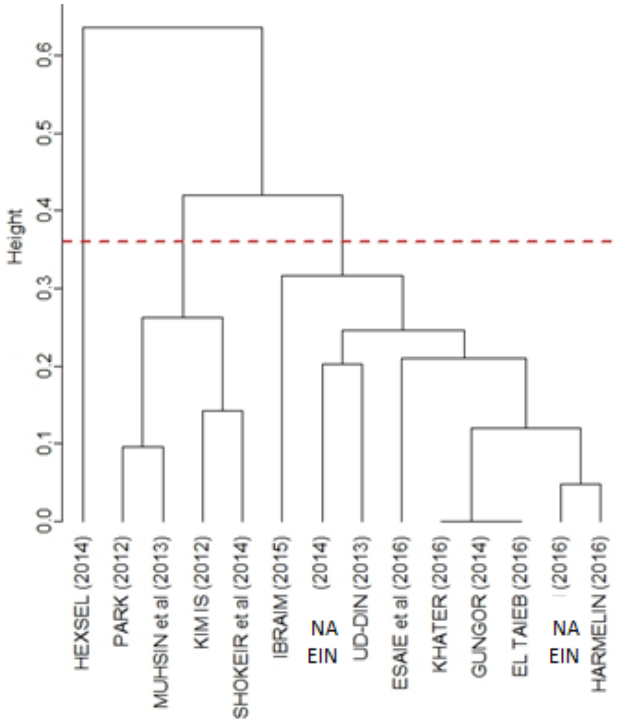

Figure 3: DENDROGRAM of dissimilarity of jobs according to different aspects of risk of bias

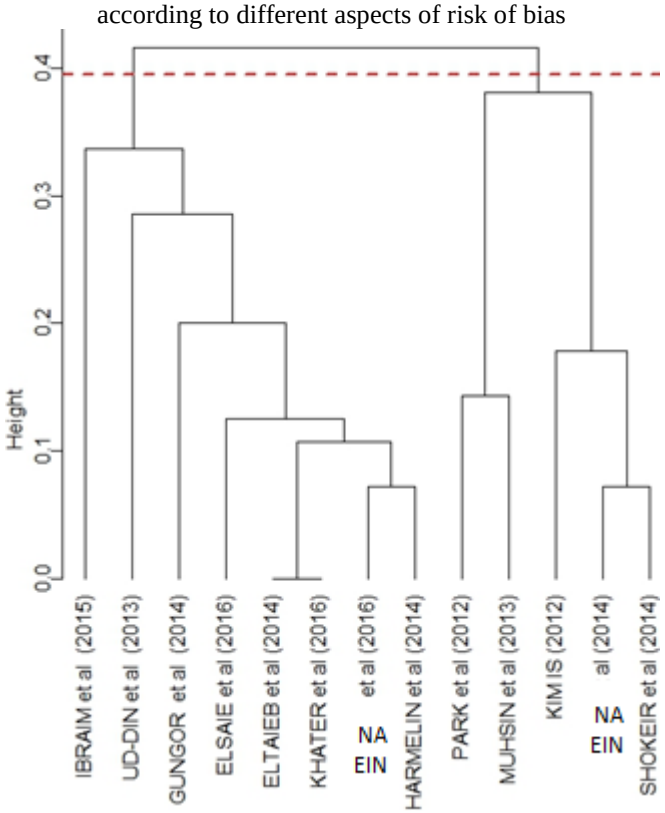

Figure 4: DENDROGRAM of dissimilarity of jobs according to the degree of risk of bias based on judgments for each study
Source : SOARES, 2018

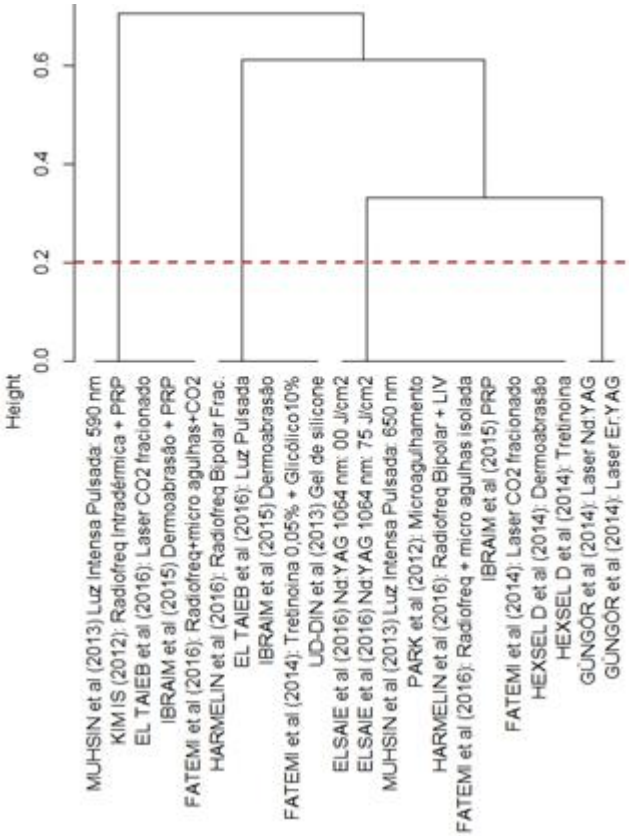

Figure 5: DENDROGRAM of dissimilarity of jobs according to the responses to treatment protocols are applied.
Source : SOARES, 2018

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