

## Table of Contents

### **Part I. WOUND MANAGEMENT AND PREVENTION OF PATHOLOGICAL SCARRING**

#### **Chapter 1. Healing process**

##### 1.1. Hemostasis

###### 1.1.1. Vasoconstriction

###### 1.1.2. Platelet plug formation (primary hemostasis)

###### 1.1.3. Coagulation and thrombus formation (secondary hemostasis)

##### 1.2. Inflammation

###### 1.2.1. Neutrophils in the wound healing process

###### 1.2.2. Macrophages are the leading conductors of the healing and scarring process

###### 1.2.3. Contribution of mast cells to wound healing and pathological scarring

##### 1.3. Proliferation

###### 1.3.1. Formation of new vessels (Albanova V.I.)

###### 1.3.2. Pronounced inflammatory response and ineffective angiogenesis as predictors of pathological scarring

###### 1.4. Remodeling and re-epithelialization (Albanova V.I.)

###### 1.5. Skin microbiome in wound healing. Prospects for the use of probiotics

#### **Chapter 2. How to ensure normal healing (Albanova V.I.)**

##### 2.1. Healing time

##### 2.2. General principles for ensuring normal healing

##### 2.3. Factors interfering with normal healing

##### 2.4. How to remove obstacles to normal healing

##### 2.5. What a skincare specialist and plastic surgeon can do to improve healing

##### 2.6. Nutraceutical support for the skin healing

###### 2.6.1. Amino acids

Arginine

Proline N-acetylcysteine

Glutamine

###### 2.6.2. Whey proteins

###### 2.6.3. Zinc

###### 2.6.4. vitamins

Vitamin A

Vitamin E

Vitamin C

###### 2.6.5. Plant extracts and natural compounds

#### **Chapter 3. Skincare approaches to the prevention of pathological scarring and aesthetic scar treatment**

##### 3.1. Pre-treatment preparation. Genetic testing assesses the regenerative potential and the risk of pathological scarring (Yutskovskaya Ya.A.)

###### 3.1.1. Assessment of inflammatory potential

###### 3.1.2. Assessment of regenerative potential

###### 3.1.3. Assessment of the risks of pathological scarring

##### 3.2. Intraoperative prophylaxis

###### 3.2.1. Seamless tissue fusion for wound closure

- 3.3. Post-treatment preventive measures
  - 3.3.1. Reducing the tension of the wound edges
  - 3.3.2. Skin hydration
  - 3.3.3. The use of topical products containing onion extract
  - 3.3.4. Preventive use of laser therapy (Bragina I.Yu., Sharova A.A.)
  - 3.3.5. Sun protection

## **Part II. CAUSES OF APPEARANCE AND VARIETY OF SCAR TYPES**

### **Chapter 1. Etiopathogenesis and classification of scars**

- 1.1. Factors underlying pathological scarring
- 1.2. Scar classification
- 1.3. Pathological scar formation
  - 1.3.1. Dermis structure
    - Basement membrane
    - Dermal layer
    - Dermal cells
  - 1.3.2. Changes in the structure of the dermis and basement membrane during scarring

### **Chapter 2. Scar assessment tools**

- 2.1. Instrumental diagnostics (Paramonov B.A.)
  - 2.1.1. Color rating
  - 2.1.2. Metric parameters
  - 2.1.3. Biomechanical properties of the skin
  - 2.1.4. Acoustic methods
  - 2.1.5. Other instrumental methods
- 2.2. Vancouver Scar Rating Scale
- 2.3. Differential diagnosis

## **PART III. HYPERTROPHIC AND KELOID SCARS**

### **Chapter 1. Etiology and clinical manifestation**

### **Chapter 2. Conservative methods of scar prevention and treatment**

- 2.1. Compression therapy
  - 2.1.1. Silicone sheets and gels
    - Mechanism of action
    - Mode of application
    - Therapeutic effects
  - 2.2. External and intralesional drug therapy (Paramonov B.A.)
    - 2.2.1. Use of topical preparations
      - Influence of various factors on skin permeability
      - Drug penetration enhancers
    - 2.2.2. Physical methods of introducing drugs into scars
      - Phonophoresis (sonophoresis)
      - Electrophoresis (iontophoresis)
      - Electroporation
      - Photophoresis
    - 2.2.3. Injection administration of drugs
  - 2.3. Topical and injectable drugs for the treatment of pathological scars
    - 2.3.1. Glucocorticosteroids (Paramonov B.A.)
    - 2.3.2. Enzyme-containing preparations (Paramonov B.A.)

- 2.3.3. Onion extract
- 2.3.4. 5-Fluorouracil
- 2.3.5. Immunomodulators
- 2.3.6. Botulinum therapy

### **Chapter 3. Laser therapy**

- 3.1. Laser devices and treatments
  - 3.1.1. Vascular lasers
  - 3.1.2. Laser resurfacing
  - 3.1.3. Ablative fractional lasers
  - 3.1.4. Spatially modulated ablation (Kalashnikova N.G., Urakova D.S.)
  - 3.1.5. Non-ablative fractional lasers
- 3.2. Laser therapy of clinical manifestations of hypertrophic and keloid scars
  - 3.2.1. Pigmentation disorders
    - Hyperpigmentation
    - Hypopigmentation
  - 3.2.2. Erythema
  - 3.2.3. Texture, elasticity, scar height & thickness
  - 3.2.4. Pain and itching
- 3.3. Early start of laser therapy
- 3.4. Preparation and rehabilitation after laser therapy
  - 3.4.1. Skin preparation. Preventive antibiotic therapy
  - 3.4.2. Anesthesia
  - 3.4.3. Post-procedure care
- 3.5. Features of laser therapy in patients with dark skin phototypes
- 3.6. Safety profile of laser scar treatment

### **Chapter 4. Other physical methods** (Bragina I.Yu., Sharova A.A.)

- 4.1. Radiation therapy
- 4.2. Cryotherapy
  - 4.2.1. Intralesional cryotherapy
- 4.3. Vacuum therapy
- 4.4. Ultrasound therapy
- 4.5. Microcurrent therapy
- 4.6. Controlled microcrystalline dermabrasion

### **Chapter 5. Treatment strategy**

- 5.1. Immature erythematous hypertrophic scars
- 5.2. Linear hypertrophic scars
- 5.3. Extensive burn hypertrophic scars
- 5.4. Small keloid scars
- 5.5. Large keloid scars

## **Part IV. POST-TRAUMATIC ATROPHIC SCARS**

### **Chapter 1. Etiology and clinical manifestation**

### **Chapter 2. Aesthetic treatment**

- 2.1. Fractional laser therapy
- 2.2. Volume correction with fillers
- 2.3. Dermal matrix restructuring
  - 2.3.1. Collagen

- 2.3.2. Calcium hydroxyapatite
- 2.4. Lipofilling (transplantation of autologous adipose tissue)
- 2.5. Combined protocols

## **Part V. STRETCH MARKS (STRETCH MARKS)**

### **Chapter 1. Etiology and clinical manifestation**

- 1.1. Prevalence and risk factors
- 1.2. Formation process and classification

### **Chapter 2. Preventive measures Chapter 3. Aesthetic treatment**

- 3.1. Local treatment
- 3.2. Energy-based methods
  - 3.2.1. Laser therapy
    - Ablative fractional photothermolysis (Urakova D.S.)
    - Non-ablative fractional photothermolysis
    - Clinical cases (Urakova D.S.)
  - 3.2.2. Intense pulsed light (IPL) (Urakova D.S.)
  - 3.2.3. RF therapy
  - 3.2.4. Microneedling
  - 3.2.5. Microdermabrasion
- 3.3. Injection methods
  - 3.3.1. Platelet-rich plasma (PRP therapy)
  - 3.3.2. Carboxytherapy
  - 3.3.3. collagen therapy
  - 3.3.4. Calcium hydroxyapatite
  - 3.3.5. Poly-L-lactic acid
- 3.4. Strategy for the stretch marks aesthetic treatment

## **Part VI. POST-ACNE SCARS**

### **Chapter 1. Etiology and clinical manifestation**

### **Chapter 2. General approaches to post-acne prevention and treatment**

- 2.1. Enlarged pores
- 2.2. Post-acne scars
- 2.3. Pigmentation disorders and congestive spots

### **Chapter 3. Light therapy (Urakova D.S., Kalashnikova N.N.)**

- 3.1. Scars and skin relief
  - 3.1.1. Atrophic scars
  - 3.1.2. Hypertrophic and keloid scars
- 3.2. Pigmentation
- 3.3. Laser therapy combined with other methods
  - 3.3.1. Laser therapy and soft tissue fillers
  - 3.3.2. Atrophic post-acne scars treatment with using a fractional Er:YAG laser and PRP therapy
- 3.4. Post-treatment recommendations

### **Chapter 4. Other physical methods**

- 4.1. RF therapy
- 4.2. Microneedling
- 4.3. Dermabrasion and microdermabrasion

### **Chapter 5. Injection and topical methods**

- 5.1. Dermal fillers

5.2. Mesotherapy, biorevitalization, carboxytherapy

5.3. Chemical peel

5.4. Cosmetic products

**References**