

Plastic surgical management of scars and soft tissue contractures.
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Any injury to soft tissue and skin will initiate a cascade of events, ultimately resulting in the formation of a scar. The type of scar that is formed and its behaviour in time depends of a great number of variables such as the general condition of the patient (nutritional state and underlying diseases), the age of the patient (young versus old), type of injury (crush versus clean cut), amount of contamination with dirt and bacteria, condition of the soft tissues (healthy versus damaged by radiotherapy, chemotherapy, systemic medication), location of the scar on the body, its position relative to skin tension lines (parallel versus perpendicular), the skin type (Fitzgerald's skin types), the amount of tension on the wound, wound management etc, etc.

A surgically inflicted scar, planned and placed respecting the above in a healthy patient, usually remains within the borders of the original wound and may end as a fine line, which is hardly visible. Nevertheless, it may also become atrophic or hypertrophic or even grow beyond the borders of the original wound and give rise to the formation of a keloid. Besides, any scar has a tendency to contract which in itself may cause functional or aesthetic problems, necessitating further action.

There are various treatment modalities available for scars in the skin. Their application is dictated by the appearance of the scar, but usually consists of topical application of silicone gel sheeting, steroid injection and pressure, and 585-nm pulse dye laser, if erythema persists for more than 1 month. Whenever the primary wound conditions have been unfavourable, re-excision can be done. Widespread burn hypertrophic scars can best be treated at burn centres with the earlier mentioned treatments combined with custom made pressure garments, massage and ultrasound. Ultimately skin transpositions and transplantation might be unavoidable.

The treatment of keloid is even more difficult and should take place in specialized centres. Minor, immature keloids can be treated with intra-lesional steroid injections combined with silicone sheeting. More mature keloids usually do not respond to this treatment and need excision combined with low-dose radiotherapy on the fresh scar to reduce the rate of recurrence.

In plastic surgery we are not only faced with a great variety of skin scars. Scars may also form around tendons or joint and thereby limit function. Or form in response to the implantation of a foreign body such as a breast implant and cause capsular contraction. Or at the adaptation site of vessels or nerves hampering the passage of blood or the outgrowth of axons. Last but not least, it may form in diseases such as Dupuytren's, Ledderhosen's or Peyronie's for unknown reasons.

The aim of this presentation is to summarize what is we know about scar formation and explain how plastic surgeons try to manage this process and modulate it if necessary in all these circumstances.