Carboxymethylcellulose Gel (Dynavisc®), as a long term barrier to prevent fibroblasts migration and differentiation, a retrospective analysis

Monticelli Andrea, Regina Sonda, Erica Dalla Venezia, Diego Faccio, Alex Pontini, Cesare Tiengo, Franco Bassetto

OBJECTIVE

Perineural and peritendineous scar formation is responsible for loss of function, pain, loss of gliding in peripheral nerve and tendon surgery. Collagen synthesis rate is considerably increased during the 4th week. Neurolysis and tenolysis are often required to restore the range of motion (ROM) and to reduce pain, but outcomes are not always excellent. In order to prevent re-operations, anti-adhesion gels have been developed. Carboxymethylcellulose Gel has a long decomposition, compared to other anti-adhesion barrier gels, releasing Polyethylene Oxyde (PEO) and maintaining an anti-inflammatory effect. According with its properties, we reviewed our patients treated with Dynavisc, evaluating the rate of re-operation and clinical outcomes.

METHODS

75 patients have been treated with Dynavisc gel from 2015 and 2016. 50 were tendon fresh injuries or tenolysis, 25 were fresh major nerve injuries, neurolysis or carpal tunnel syndrome recurrences. We evaluate at 12 months of follow-up, the rate of tenolysis or neurolysis compared to the period from 2013 to 2014 on a similar group of patient. Clinical evaluation of ROM and pain intensity has been performed.

RESULTS

The group of tendon injuries, the incidence of loss of ROM and subsequent tenolysis has been showed lower in patient treated with Dynavisc than patients treated otherwise, but with no statistically significant difference. ROM at 12 months has been shown similar in both groups after 12 months from the last surgical operation. In the group of nerve injuries, the rate of tenolysis has been reduced, with no statistically significant difference. The pain and paresthesias have been reduced in patients treated with Dynavisc.

CONCLUSIONS

CMC-PEO gel can reduce peritendineous and perineural scar tissue. Long term hydrolysis (> 30 days) can protect, in our opinion, the surgical site from fibroblasts migration and differentiation, during an important period of collagen synthesis (4th post-operative week), especially compared with other faster reabsorbable products. Our experience suggested a lower incidence of re-operation in peripheral nerve and tendon surgery and better clinical outcomes.