Evaluation of a new anti-adhesion resorbable collagen membrane
For upper extremity nerve surgery (Cova™ Ortho)

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Introduction- Postoperative adhesion formation is an issue and a sequelae source, especially in upper extremity nerve surgery. The primary surgery often doesn’t result in problems but iterative neurolysis may lead to plenty of difficulties. Different therapeutic solutions were proposed in order to prevent postoperative adhesions formation: sliding flaps (fat or muscular), use of biomaterials, early rehabilitation. Local flaps may be beneficial but the results are often unpredictable. The aim of this study is to analyze the efficacy and tolerance of a new anti-adhesion resorbable collagen membrane Cova™ ORTHO for primary and secondary upper extremity nerve surgery.

Material and methods- The membrane (Cova™ ORTHO, Biom’Up, France) is composed of 100% of resorbable collagen and can be sutured if necessary. This is a retrospective study including 40 patients, with an indication of neurolysis of the upper extremity with a partial sensory and motor deficit and/or a disabling irritative syndrome, over a 29-month period (04/2009-09/2011). The series involves 25 males and 15 females. The mean age is 48.3 years-old (15-83). Primary neurolysis involved elbow ulnar nerve neurolysis with anterior subcutaneous transposal for 11 patients (27.5%). Secondary neurolysis involved 29 patients (72.5%) including recurrent or recalcitrant carpal tunnel syndrome (n=7), recurrent cubital tunnel syndrome at the elbow (n=3), post-trauma neurolysis (n=12), or after nerve graft (n=3) neuroma cure (n=2), thoracic outlet syndrome (n=1) and median nerve compression by tendon transfer (n=1).

All the patients benefitted from a membrane wrapped around the nerve without fixation after neurolysis. Patients were seen again with a 9.3-months follow-up. The evaluation included: Quick Dash score, pain (EVA), grip strength measured by Jamar® dynamometer, sensitivity, motricity, paresthesias, irritative syndrome and patient’s satisfaction.

Results- Scar was normal in 97.5% of the cases. A local hyperpigmentation was observed in one case. No serious adverse events were noted.

The Quick Dash test (performed in 80% of the cases) improved 14 points (+5/-11). Jamar® dynamometer grip strength (assessed in 72.5% of the cases) improved 8% (-28%/+45.4%). Pain was completely resolved in 25% of the cases and improved in 55% of the cases. For sensitivity, a S4 complete recovery was observed in 23% of the cases and improved in 40% of cases. For motricity, a M5 complete recovery was noted in 20% of the cases and an improvement in 20% of the cases. A complete resolution of paresthesias was observed in 30% of the cases and improvement was observed in 45% of the cases. For irritative syndrome, a complete resolution was observed in 53% of the cases and improvement in 35% of the cases. Patients’ global satisfaction was considered excellent or good in 75% of the cases, moderate for 10% and weak in 15% of the cases.

Conclusion- The collagen membrane is a natural and resorbable device presenting with excellent tolerance. The procedure for using this anti-adhesion collagen membrane is simple, reliable and reproducible. The main interest seems to be tunnel syndrome recurrences and post-traumatic neurolysis to prevent postoperative adhesions and to decrease the irritative syndrome. It is an alternative to the use of local pedicle flaps or free flaps for covering the nerve for which complications are an important consideration. Prospective randomized clinical study realization is needed to codify precisely the indications.

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