

THE DYNAMICS OF DIFFERENT TISSUES DURING PASSIVE MOTION

Millesi H.¹, Hausner T.^{2,3}, Schmidhammer R.^{1,3}

1: Millesi Centre for Surgery of Peripheral Nerves, Vienna, Austria

2: Lorenz Boehler Trauma Hospital, Vienna Austria

3: Austrian Cluster for Tissue Regeneration, Vienna, Austria

Introduction

Static properties of tissues have been studied thoroughly, part of them are subjects of the Fascial Congresses. We want to draw the attention to the dynamic properties of the tissues. The centre of our interest is to describe the consequences of passive motions as they happen constantly and everywhere within the human body. Passive motions happen with each movement whether active or passive due to the tree-dimensional construction of tissues. Only tissue points located within the plane of the axis of the moving joint don't change position to each other. All other tissue points not only move against each other but also in relation to the position to the plane of motion. Passive movement is also provoked indirectly by muscle contraction due to displacement of volume. Nerves are especially exposed to such passive motions. Symptoms like pain or even neuropathic pain syndromes may be provoked if the nerves cannot comply.

Materials & Methods

We studied this phenomenon on the example of peripheral nerves in vivo by high magnificent ultrasound and during surgical exposures as well as during anatomical exposures in cadavers. We describe the tissues within and around peripheral nerves which provide gliding with low friction and compensate volume changes. It is also outlined what happens if these mechanisms fail.

Discussion

In spite of earlier descriptions the gliding tissue within and around peripheral nerves is not well recognized in the medical community. Knowledge about gliding tissue is essential for different surgical procedues, especially neurolysis. In this study we tried to describe in which way peripheral nerves are involved in this type of passive motion. Other gliding tissues are the **paratenon** around tendons, the **adventitia** around vessels, the **tissue around and within muscles**, the tissues underneath the **superficial fascia** and the gliding layers on **both sides of separating fascias** just to mention the most important. For an increasing number of indications the application of a gliding tissue flap is extremely helpful as will be demonstrated by case reports.

Summary

Gliding tissue, a special form of connective tissue, deserves much more attention and understanding.

STATEMENT: our research conforms to the Declaration of Helsinki.