Deep Fascia Compartments in the Upper Extremity. Clinical and Therapeutic Implications

Sara Ortiz Miguel, - Universitat Internacional de Catalunya, Spain
Dr. Maria Isabel Perez - Universitat Internacional de Catalunya, Spain
Dr. Albert Pérez-Bellmunt - Universitat Internacional de Catalunya, Spain
Dr. Juan Carlos Ortiz-sagristà - Fundación Puigvert, Spain
Dr. Ingrid Möller - Unit of Human Anatomy and Embryology, Department of Experimental Pathology and Therapeutic, Faculty of Medicine and Health Sciences (C.Bellvitge), Universitat de Barcelona, Spain
Jose Garcia - Unit of Human Anatomy and Embryology, Department of Experimental Pathology and Therapeutic, Faculty of Medicine and Health Sciences (C.Bellvitge), Universitat de Barcelona, Spain
Prof. Carlo Martinoli - Radiology Department, DISC, Università di Genova, Genoa, Italy

BACKGROUND
The deep fascia is formed of well-organized tough dense conjunctive tissue. It surrounds anatomical structures, intervenes to separate them from each other and delineates muscular and neurovascular compartments\textsuperscript{1}. From the clinical point of view, the deep fascia may be causative of pain\textsuperscript{2} in specific settings, such as compartmental syndromes. In these patients volar fasciotomy is performed in an emergency context to provide adequate decompression of compartments\textsuperscript{3,4}. A thorough anatomical knowledge of the spaces delimited by the deep fascia is mandatory to plan an appropriate treatment.

METHODS
Fifty cryopreserves upper limbs from male and female cadavers (mean age, 78 years (age range, 60-85) were examined in this study. All specimens did not show any evidence of traumatic injuries or surgical scars. Different colours were injected at different levels in the forearms under ultrasound guidance to separate the compartments delimited by the deep fascia. Each of them was then individualized on gross dissection or anatomical cuts.

RESULTS
We observed that the deep fascia inserts into forearm bones creating the classical compartments. Special extensions of the deep fascia were constantly demonstrated to create subcompartments by surrounding and individualizing specific muscles, such as the flexor carpi radialis and flexor carpi ulnaris, extensor carpi radialis and the anconeus.

CONCLUSIONS
In addition to the classical compartments, others subcompartment should be taken into consideration during treatment planning of compartmental syndromes.