

**Dupuytren's disease shows profound hematopoietic and mesenchymal stem cell  
abnormalities involving palmar fat and skin in addition to fascia:**

**Novel implications for pathogenesis and therapy**

**Hindocha S<sup>1</sup>**

**Iqbal SA<sup>1</sup>**

**Farhathullah S<sup>1</sup>**

**McGruther DA<sup>1,3,4</sup>**

**Paus R<sup>2,3</sup>**

**Bayat A<sup>1,3,4</sup>**

<sup>1</sup> Plastic & Reconstructive Surgery Research, Manchester Interdisciplinary Biocentre, Manchester. M1 7DN.

<sup>2</sup>Department of Dermatology, University of Luebeck, Luebeck, Germany.

<sup>3</sup>Epithelial Sciences Research Group, School of Translational Medicine, University of Manchester, Manchester, UK.

<sup>4</sup>Department of Plastic & Reconstructive Surgery, South Manchester University Hospital Foundation Trust, Wythenshawe Hospital, Manchester, UK.

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## **Abstract**

**Background:** DD is a common fibroproliferative disease affecting the hand. Myofibroblasts found in the DD palmar fascia are responsible for digital contracture. However, their exact source is unknown. Palmar skin and fat-derived cells as a potential origin of abnormal cells remains underexplored.

**Objective:** To characterise hematopoietic and mesenchymal stem cells in Dupuytren's disease (DD) fascia, fat and skin compared to carpal tunnel control.

**Methods:** Nine DD patients with digital fixed flexion deformity were enrolled, and biopsies taken from the diseased cord, nodule, peri-nodular fat, distant palmar fat and the skin overlying the nodule. Fluorescence Activated Cell Sorting (FACS), immunohistochemistry and quantitative real time polymerase chain reaction (QRT-PCR) were used to identify expression of five mesenchymal (CD's 13, 29, 44, 90, 166) and two haematopoietic (CD's 34,117) stem cell markers.

**Results:** There was a significantly higher expression of CD13 in all examined DD tissue sites compared to controls ( $p=0.02$ ). In addition CD44 was significantly over expressed in the cord and nodule ( $p=0.02$ ), while CD34 was over expressed in the skin overlying DD nodules ( $p=0.008$ ). The mean number of positive cells expressing all stem cell markers were significantly greater in the DD cord compared to carpal tunnel fascia ( $p= 0.003$ ).

**Conclusions:** This study provides the first detailed characterization of mesenchymal stem cells in DD which are predominantly located in the cord. DD appears to represent a benign

tumour that may potentially result from abnormal mesenchymal progenitor cell expansion than a primary inflammatory disorder. If confirmed, adipodermofasciectomy may be a potentially important primary therapy.

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