Examples OCT In Relavent Medical Research

1. *Optical analysis of displacement and strain fields on human skin*
H. Marcellier P. Vescovo D. Varchon P. Vacher P. Humbert
First published: 28 June 2008 https://doi.org/10.1034/j.1600-0846.2001.70407.x
dermatology, surgery and cosmetology. Need to get full paper

2. *Application of optical non−invasive methods in skin physiology: a comparison of laser scanning microscopy and optical coherent tomography with histological analysis*
Juergen Lademann Nina Otberg Heike Richter Lars Meyer Heike Audring Alexa Teichmann Steven Thomas Alexander Knüttel Wolfram Sterry
First published: 16 February 2007 https://doi.org/10.1111/j.1600-0846.2007.00208.x Cited by: 45

“LSM− and OCT−measurements are efficient non−invasive tools for the characterization of morphological structures of the skin.”

3. *In vivo optical coherence tomography imaging of human skin: norm and pathology*
N. D. Gladkova G. A. Petrova N. K. Nikulin S. G. Radenska−Lopovok L. B. Snopova Yu. P. Chumakov V. A. Nasonova V. M. Gelikonov G. V. Gelikonov R. V. Kuranov A. M. Sergeev F. I. Feldchtein
First published: 25 December 2001 https://doi.org/10.1034/j.1600-0846.2000.006001006.x

“the development of various novel diagnostic techniques capable of providing in vivo information on the skin structure.”

“spatial resolution of 15–20 μm”

“imaging depth of up to 1.5–2 mm”

4. *Characterization of age-related effects in human skin: A comparative study that applies confocal laser scanning microscopy and optical coherence tomography*
Sieglinde Neerken, Gerald W. Lucassen, Marielle A. Bisschop, Egbert Lenderink, Tom A. M. Nuijs

5. *Optical Non-Invasive Approaches to Diagnosis of Skin Diseases*
Nikiforos Kollias, Georgios N.Stamatas
https://doi.org/10.1046/j.1523-1747.2002.19635.x

“early cancer diagnostics may be solved by the optical methods that allow to perform fast noninvasive neoplasm studying.”

6. *In vivo data of epidermal thickness evaluated by optical coherence tomography: Effects of age, gender, skin type, and anatomic site*
Thilo Gambichler, Rebecca Matip, Georg Moussa, Peter Altmeyer, Klaus Hoffmann
https://doi.org/10.1016/j.jdermsci.2006.09.008

“This was the first systematic in vivo study on ET investigating several influencing parameters of the epidermal dimension in a reasonable study sample by means of OCT. The results presented here may serve as ET reference data in a variety of clinical and experimental matters.”

7. *Optical coherence tomography for ultrahigh resolution in vivo imaging*
James G Fujimoto, Nature Biotechnology volume 21,pages 1361–1367 (2003) | Published: 31 October 2003

“Abstract: Optical coherence tomography (OCT) is an emerging biomedical optical imaging technique that performs high-resolution, cross-sectional tomographic imaging of microstructure in biological systems. OCT can achieve image resolutions of 1–15 μm, one to two orders of magnitude finer than standard ultrasound. The image penetration depth of OCT is determined by the optical scattering and is up to 2–3 mm in tissue. OCT functions as a type of 'optical biopsy' to provide cross-sectional images of tissue

structure on the micron scale. It is a promising imaging technology because it can provide images of tissue in situ and in real time, without the need for excision and processing of specimens."

8. *Two-dimensional depth-resolved Mueller matrix of biological tissue measured with double-beam polarization-sensitive optical coherence tomography*
Shuliang Jiao and Lihong V. Wang, Optical Imaging Laboratory, Biomedical Engineering Program, Texas A&M University, 3120 TAMU, College Station, Texas 77843-3120, Received August 10, 2001, January 15, 2002 / Vol. 27, No. 2 / OPTICS LETTERS 101

"In summary, we have developed a novel double-beam polarization-sensitive OCT imaging technique. The Jones matrix of a sample can be determined with a single scan. This technique permits the acquisition of 2D tomographic Mueller-matrix images of either hard or soft biological tissues in vivo or in vitro. The Mueller matrix can be decomposed to yield important information on the optical polarization properties of a sample. The polarization properties can potentially be correlated with the conditions of biological tissues and thus used for disease diagnosis."

Why You Should Care About OCT (Optical Coherence Tomography)

OCT is a recently developed method for using light to study three dimensional structures, like human tissue. Over the last decade there's been a huge surge in novel ways to apply light studies to medical imaging. These new techniques offer great potential to be used for diagnosing and better understanding connective tissue disorders. OCT especially stands out because it doesn't require invasive testing to be used, it's completely safe with no potential risks for cancer or side effects (because of the chosen light waves), and it's already being studied in application to a broad range of medical conditions.

Since OCT is already being studied to diagnose skin cancer, changes in skin in response to inflammation, properties of collagen in arteries, the wrinkling of skin and the tensile properties of tissue, it would be easy to expand these studies to better understanding Ehlers- Danlos syndrome. The greatest excitement is that there's already lots of funding behind this research because of it's relation to cancer diagnostics, cosmetics, the aging of skin, and plaque ruptures in arteries. It's possible that already existing data from these studies could be used to better understand connective tissue properties related to EDS and that future researchers could team up with geneticists to form studies that could benefit both groups. Collagen is already a focus point in OCT because it's uniform structure allows it to be studied within an even more informative version of OCT, polarization sensitive- optical coherence tomography (PS-OCT).

So what are we waiting for??? Ask your geneticist about OCT.

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