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Utilization rates of hip arthroplasty in OECD countries

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Background: Hip arthroplasty and revision surgery is growing exponentially in OECD countries, but rates vary between countries.

Methods: We extracted economic data and utilization rates data about hip arthroplasty done in OECD countries between 1990 and 2011. Absolute number of implantations and compound annual growth rates were computed per 100,000 population and for patients aged 65 years old and over and for patients aged 64 years and younger.

Results: In the majority of OECD countries, there has been a significant increase in the utilization of total hip arthroplasty in the last 10 years, but rates vary to a great extent: In the United States, Switzerland and Germany the utilization rate exceeds 200/100,000 population whereas in Spain and Mexico rates are 102 and 8 respectively. There is a strong correlation between gross domestic product (GDP) and health care expenditures per capita with utilization rate. Utilization rates in all age groups have continued to rise up to present day. A seven fold higher growth rate was seen in patients aged 64 years and younger as compared to older patients.

Conclusion: We observed a 38-fold variation in the utilization of hip arthroplasty among OECD countries, correlating with GDP and health care expenditures. Over recent years, there has been an increase in the utilization rate in most countries. This was particularly evident in the younger patients. Due to increasing life expectancy and the disproportionately high use of arthroplasty in younger patients we expect an exponential increase of revision rate in the future.

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The non-touch palpation, a new diagnostic means of skin ageing

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The longevity of life is a recent unsurpassed demographic phenomenon in the history of the humanity and impact of which will be considerable. The analysis of ageing of populations and its social consequences requests an interdisciplinary approach. By gathering capacities of research in these different domains, it becomes possible to treat in a transverse way the big questions linked to ageing and to longevity, by understanding better all the factors that drive to the fragility of the old tissues (origin of diseases, of dysfunctions and handicaps). Currently, most skin diseases are evaluated qualitatively with visual inspection and/or palpation by a clinician who has significant training and clinical experience in the field. During manual palpation, pathological tissue regions can be identified by the strain response to an imposed stress compared with its surrounding healthy tissue. This method of diagnosis has high variability among clinicians; therefore, a fast and non-invasive technique capable to evaluate skin mechanical properties is highly anticipated as a diagnostic means. Changes of dermal collagen and elastin content are characteristic for skin ageing as well as for pathological skin conditions. To study the visco-elasticity of sub-cutaneous layers during ageing, a novel combination of the non-contact air stream, 3D imaging and an ultrasonore device (20 MHz) has been developed. The skin deformation by the calibrated air pressure causes the propagation of an elastic wave. For a multi-layer aspect of skin, the velocity of the elastic wave is influenced by the mechanical properties of all the layers. The visco-elastic properties that affect the velocity dispersion include not only the Young modulus, the thickness of each layer but also the density of elastic and collagen fibers. The quantitative feature and measurement accuracy of this method is demonstrated from the experiments of ageing of volar forearm.

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