The aXurge© project. Feasibility of a mathematical platform for Abdominal Aortic Aneurism (AAA) risk assessment and surgical planning

Department of Clinical and Community Science University of Milan (I), * Ecole Politechnique de Lausanne (CH), **Moxoff, Milan (I), # MOX - Politecnico di Milano (I)

Aortic Abdominal Aneurysm (AAA) management requires to deal with different tasks: clinical evaluation, analysis and forecast risk of rupture, analysis of radiological imaging, evaluation of the feasibility for endovascular repair (EVAR) and planning.

www.aXurge.com web-app provides the following features:

1. Private case history database.
2. Image processing and automatic sizing. The application guides the surgeons to obtain AAA sizing and morphological characterization from medical imaging.
3. Statistical classification and enhanced morphological and biomechanical assessment in order to produce a statistical classification of AAA.
4. Patient-specific numerical simulations with haemodynamic and biomechanical models of the risk of rupture tailored to the specific patient.
5. EVAR devices configuration planner. The web-platform proposes the most suitable devices by scouting through the catalogues of all the brands of EVAR manufacturers. The surgeon selects the desired kit and the platform generates a report. All the EVAR choices are recorded in the remote database.

RESULTS Over a training set of 283 AAA’s geometries, after the manual selection of solely 5 seed points, our algorithms are currently able to automatically perform sizing in the 79% of the cases.

aXurge© web-platform is currently in the CE Certification phases.