Title: Mechanical properties of stent-graft materials

Author(s): Santos, Isa C. T.; **Rodrigues, Alexandra**[2]; Figueiredo, Lígia; Rocha, Luis A.[3]; Tavares, João Manuel R. S.[1]

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Abstract: An aneurysm is a localized blood-filled dilatation of an artery whose consequences can be deadly. One of its current treatments is endovascular aneurysm repair, a minimally invasive procedure in which an endoprosthesis, called a stent-graft, is placed transluminally to prevent wall rupture. Early stent-grafts were custom designed for the patient through the assembling of off-the-shelf components by the operating surgeon. However, nowadays, stent-grafts have become a commercial product. The existing endoprostheses differ in several aspects, such as shape design and materials, but they have in common a metallic scaffold with a polymeric covering membrane. This article aims to gather relevant information for those who wish to understand the principles of stent-grafts and even to develop new devices. Hence, a stent-graft classification based on different characteristics is presented and the desired features for an ideal device are pointed out. Additionally, the materials currently in use to fabricate this type of endoprosthesis are reviewed and new materials are suggested.

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Reprint Address: Tavares, JMRS (reprint author), Univ Porto, Inst Engn Mecan & Gestao Ind, Dept Engn Mecan, Fac Engn, Rua Dr Roberto Frias,S-N 4200-465, Oporto, Portugal.

Addresses:
1. Univ Porto, Inst Engn Mecan & Gestao Ind, Dept Engn Mecan, Fac Engn, Oporto, Portugal
2. Inst Super Tecn, Inst Ciencia & Engn Mat & Superficies, Inst Super Engn Lisboa, Lisbon, Portugal
3. Univ Minho, Inst Polimeros Compositos, I3N, P-4719 Braga, Portugal

E-mail Address: tavares@fe.up.pt

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