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Off-pump coronary artery bypass grafting or percutaneous transluminal coronary angioplasty with stenting for proximal left anterior descending coronary artery disease?

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Summary

This thesis describes and discusses the results of a prospective randomized controlled clinical trial comparing percutaneous coronary angioplasty with stenting (stenting) and off-pump coronary artery bypass grafting with a left internal mammary artery (surgery) in patients with a high-grade stenosis of the proximal left anterior descending coronary artery.

Chapter 1

This chapter contains the General Introduction and the aims of this thesis. Patients were included between March 1997 and September 1999 and were randomized to stenting (n=51) or to surgery (n=51). Details of clinical outcome are described in the chapters 1-4.

Chapter 2

Surgery resulted in a better angiographic outcome than stenting at 6-month follow-up. A stenosis rate of 4% was found in the anastomoses after surgery, while a restenosis rate of 29% was found after stenting. However, clinical outcome did not differ between both treatment groups at 6-month follow-up.

Chapter 3

At 3-year follow-up (range 2-4 years), a statistically non-significant difference between both treatments was observed regarding freedom from Major Adverse Cardiac or Cerebrovascular events (MACCE). Incidence of MACCE was 23.5% after stenting and 9.8% after surgery (p=0.07). However, surgically treated patients had a significantly lower angina class and a significantly lower need for anti-anginal medication compared to stented patients.

Chapter 4

At 4-year follow-up (range 3-5 years), the trend of a lower MACCE rate after surgery compared to stenting became statistically significant. MACCE occurred in 27.5% of patients after stenting and in 9.8% of patients after surgery (p=0.02). In addition, freedom from angina pectoris was 67% after stenting and 85% after surgery (p=0.04). Furthermore, the need for anti-anginal medication remained statistically lower after surgery compared to stenting (p=0.002).

Chapter 5

Parallel to clinical follow-up as described in chapter 4, the functional health status (FHS) of our study population was assessed with the generic Short-Form-36 (SF-36) and the physical domain of the disease specific Minnesota Living with Heart Failure Questionnaire (MLHFQ). The assessed FHS did not differ between surgery and stenting. Global questions showed that the majority of patients perceived an improvement in their physical status since stenting or surgery. Patients without a MACCE had a better FHS than patients with a MACCE during follow-up. The FHS status of the whole study population appeared to be equal to the FHS of a healthy reference population. Because stenting as well as surgery resulted in the same FHS, but in a significantly different freedom from MACCE at 4-year follow-up, FHS-assessment cannot be used to aid decision-making between stenting and surgery for the type of patient enrolled in our trial.

Chapter 6

This chapter is a review of all recent major prospective randomized controlled trials, comparing stenting and surgery in single vessel LAD disease as well as in multivessel disease. It also presents future perspectives and it discusses some new developments such as those regarding drug eluting stent technology.

Chapter 7

This chapter contains the published discussions we had with other clinical researchers in the field of coronary artery disease and revascularization.

Chapter 8

Contains the summary of this thesis.