

# *Arterial Revascularization of the Ischemic Myocardium*

*Essay submitted for partial fulfillment of the M.Sc.  
Degree in General Surgery*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا

إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ

صَدَقَ اللَّهُ الْعَظِيمُ

(سورة البقرة الآية ٣٢)





To My  
Beloved  
Family



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# *Introduction*





## **INTRODUCTION**

**D**iseases of the cardiovascular system were responsible for 39% of all deaths registered during 1986 in Switzerland (range over the last 25 years : 39% to 44% as reported by the Bundesamt für Statistik) and dominated all other causes such as malignant tumors (24.9%), accidents (8.3%), diseases of the respiratory system (6.7%), diseases of the nervous system (6.4%), metabolic disorders (3.9%), diseases of the digestive system (3.3%) and others (7.4%). As in other countries of the west hemisphere, the diseases of the cardiovascular system were also the most frequent cause of hospitalization (21.9%), consultation of a medical doctor (14.8%), and prescription of an ambulatory treatment (17.6%) (*Pharma Information, 1988*). Apart from the obviously severe consequences of cardiovascular diseases for the individual (morbidity and mortality), there can be no doubt about the micro- and macro-economic impact of these diseases. This might explain the extremely rapid expansion in treatment of a single segment of cardiovascular diseases, that is coronary artery disease (*von Segesser, 1990*).

The construction of aorto-coronary bypass grafts with reversed saphenous vein (S.V.) was introduced by



Favaloro in 1967 (*Favaloro et al., 1968*). This procedure has been recognized as one of the most significant surgical advances ever. According to Loop and colleagues (*1981*) all operations performed in the U.S.A. from 1970 through 1978 increased approximately 25%. In contrast, coronary artery operations increased nearly 700% during those years. An estimated 180.000 coronary artery operations are performed annually in the United States (*Lefrak, 1987*).

Coronary artery bypass surgery improves the blood supply to territories supplied by blocked or narrowed arteries and it is generally agreed to be highly effective (*Takaro et al., 1976; Kennedy et al., 1980; National Heart, Lung and Blood institute 1981; Loop 1981; Braunwald et al., 1983; Turina 1987*). Percutaneous transluminal angioplasty is another direct approach for limited coronary artery lesions (*Gruntzig et al., 1979; Meier et al., 1985; Finci et al., 1987*), as well as thrombolysis. Pure medical treatment however, reduces angina by increasing the efficiency of the heart and reducing demands but it is much less successful than surgery in relieving symptoms and does little to improve the defective blood supply (*Finci et al., 1987*).