بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

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Anaesthetic Considerations for Minimal Invasive Coronary Bypass Grafting

Essay

Submitted for Partial Fulfillment of
The M.Sc. Degree
In
"Anaesthesia"

By
Ahmed Aboul-Eneen Ahmed
(M.B.,B.Ch)

Supervision of

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Faculty of Medicine - Ain Shams University

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بسم الله الرحمن الرحيم

﴿ وَعَلَّمَكَ مَا لَمْ تَكُن تَعْلَمُ وَكَانَ فَضْلُ اللَّهِ عَلَيْكَ عَظِيمًا (١١٣) ﴾

صدق الله العظيم

سورة النساء

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First and foremost, thanks to "ALLAH" who gave me the power to finish this work

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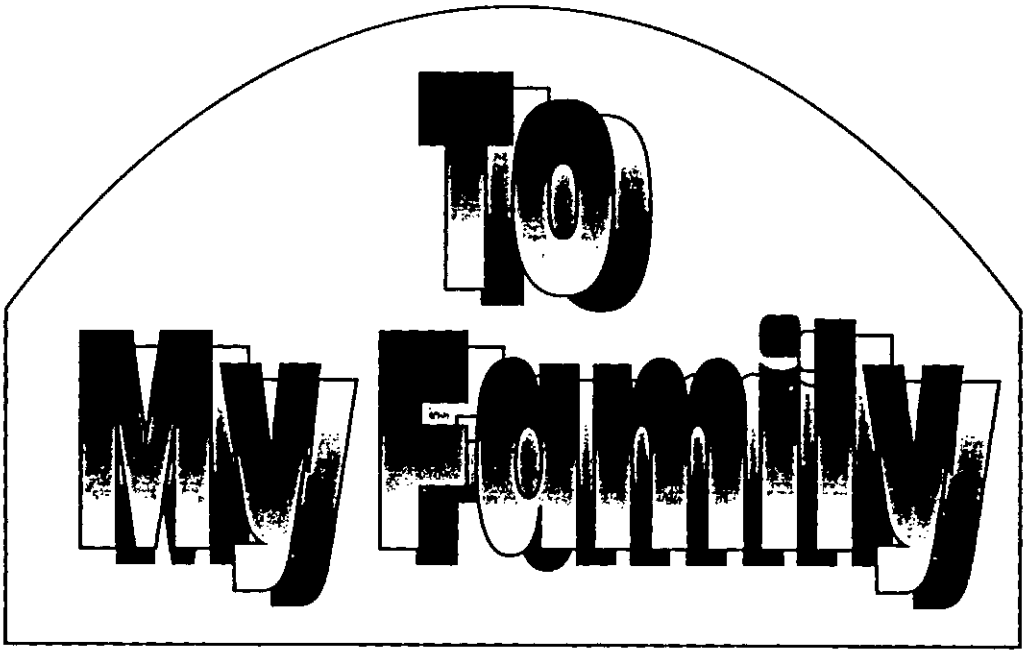
To
My Family

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Chapter (II)

Introduction & Aim of the Work

Introduction and Aim of the Work

• Historical Background :

As early as 1910 Alexis Carrel published a case report of the first experimental coronary artery bypass grafting procedure ***(Carrel, 1910).*** He created a shunt between the descending aorta and the left coronary artery using a free carotid artery graft. His work, however, did not become common practice since it was too much a head of its time. Clinical application of his experimental concept was not taken up until the middle of the last century. Murray created different types of arterial anastomosis to the coronary arteries in 1940. Other colleagues followed his work and around 1960 different studies were done to overcome problems of anastomosis suturing and cardiac preservation ***(Meyer, 1982).*** Meanwhile, the development of the cardiopulmonary bypass (CPB) machine had become practically useful and with the development of cardioplegia, a great improvement was established. The possibility of making an anastomosis on a motionless, empty heart without the risk of fibrillation during the anastomotic phase made this technique the gold standard

and the off-pump coronary artery bypass graft (OPCABG) technique faded into the background before actually reaching childhood.

However, some people persisted in the sixties with OPCAB technique. Pioneers in Russia did most of this work. With the development of automatic suturing instruments their research focused mainly on anastomosis suturing techniques. Until today, this is still a subject of extensive experimental work, but without a perfect working device on the medical market as yet ***(Favaloro, 1998).***

One of the surgeons who remained working on the concepts of minimally invasive coronary surgery was Professor Vasilli I. Kolesov in St. Petersburg (then Leningrad), where he developed and performed different types of coronary artery bypass grafting (CABG). Leningrad, as the cultural and scientific centre of Russia, was probably the most creative place to develop these ideas. But since most of his work was published in Russia and because of the political situation during the "Cold War", his ideas and experiences did not reach publicity in the western world. Gradually, his group dispersed after his retirement and off-pump CABG was rarely conducted anywhere. Kolesov is now recognized as one of the

pioneers of off-pump CABG techniques ***(Olearchyk et al., 1999).***

However, during the last two decades, much attention was focused on minimally invasive techniques. Keyhole surgery such as laparoscopic surgery in both general and thoracic surgery, was developed and became popular. Much attention was also focused on avoiding CPB. South American groups led by Benetti and Buffolo have spread their experience worldwide ***(Benetti, 1985).***

Also in Turkey, beating heart operations were performed on a daily basis. Criticism on this clinical work arose from the "established" western world that was working with its gold standards : arrested heart bypass. Inadequate and incomplete revascularization were the main objectives, although satisfactory results in large patient series were reported ***(Tezcaner et al., 1998).***

Over the last decade the urge performed keyhole CABG and to reduce the impact of the CPB procedure has stimulated research, and different groups have improved the off-pump technique ***(Mack, 1997).*** This was mainly by the development of different stabilizers in order to create a