AORTIC VALVE REPLACEMENT IN SMALL AORTIC ANNULUS

An Essay
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By

Mohamed Abd El-Fattah Abd El-Basset

Under Supervision Of

Prof. Dr. Mohamed Bassiouny
Prof. and Head Of Department Of Cardiothoracic Surgery
Ain Shams University

Dr. Ahmed Bahig El-Kerdany
Ass. Prof. Of Cardiothoracic Surgery
Ain Shams University

Dr. Mohamed Mohamed El-Fiky
Lecturer Of Cardiothoracic Surgery
Ain Shams University

Faculty Of Medicine
Ain Shams University
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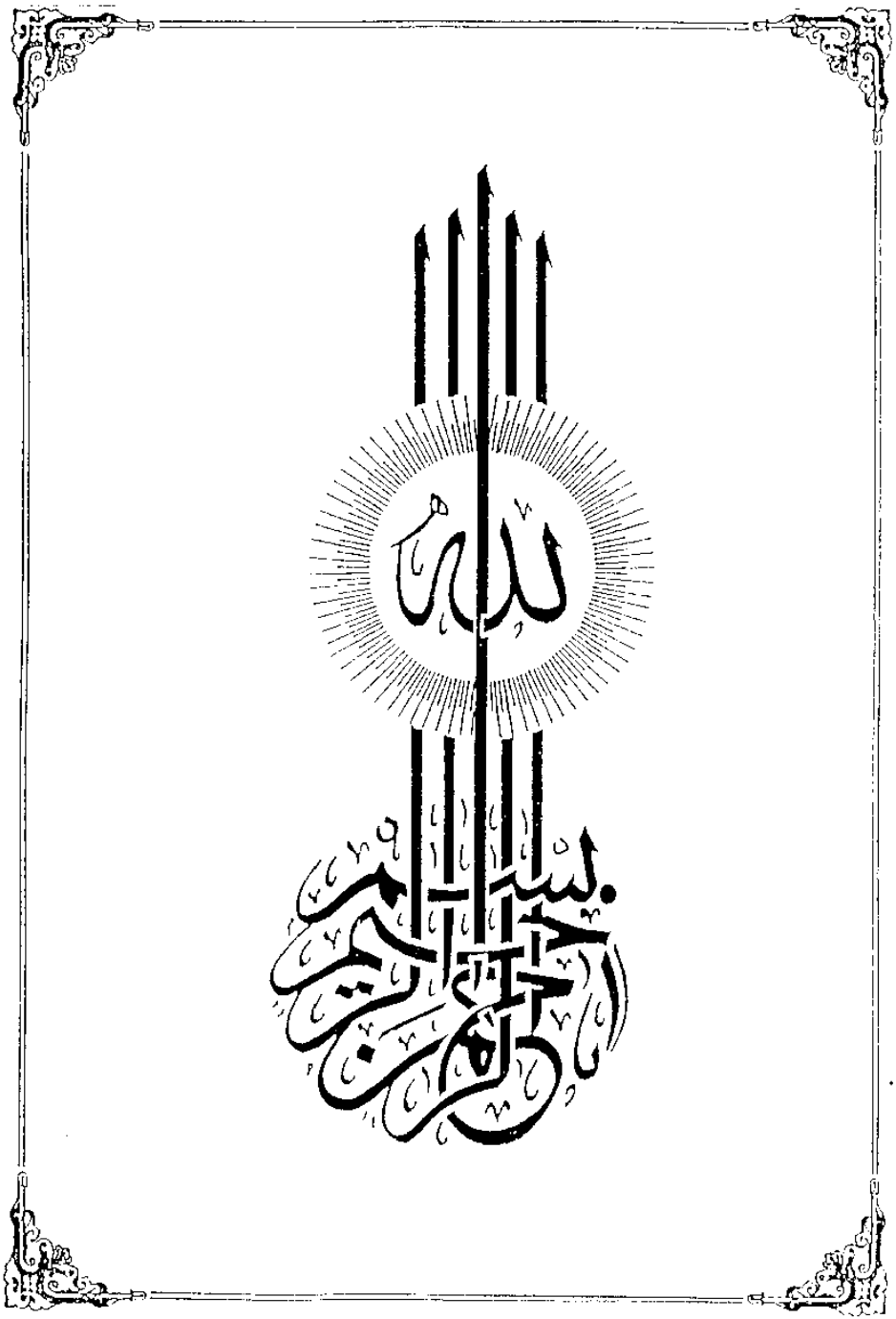

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INTRODUCTION

Replacement of the aortic valve has become a relatively simple procedure with low mortality in most patients (Fosteret al., 1986). However, the presence of small aortic root may present difficult problems to the surgeon inspite of several methods of annulus enlargement have been described (Fleming et al., 1987).

Annular enlarging procedures can be logically divided into two groups, anterior radical enlargement (aortoventriculo-plasty) and posterior limited enlargement (annular split)(Rossiter et al., 1980).

Long term follow up results after aortic annular enlargement are poor but it is known that the anterior approach causes injury to the conducting system and the septal coronary branches (David et al., 1987) and that the posterior approach allows for only a few millimeters of enlargement and risks tearing the roof of the left atrium once the heart starts beating again (Jaffe et al., 1990).

Small aortic prostheses providing acceptable palliation for short term follow up periods especially with patient with small body surface area (Kawachi et al., 1992) but no data are available for long term follow up and generally the large prostheses related to body surface area provides more successful long term results (Jaffe et al., 1990).

Mechanical aortic valves are frequently implanted in small aortic roots. Small sized bioprosthetic valves have unacceptably high gradient and the implantation of a homograft or autograft needs special setup and training (Barner et al., 1994).

Whatever aortic prosthesis a surgeon chooses to use, it will always cause some degree of obstruction to flow since its effective orifice area is smaller than the aortic annulus.

An improvement in the effective orifice area can be attained by inserting a prosthesis larger than the aortic annulus. Placement of the aortic prosthesis in supraannular position is a simple method of accomplishing that. However, this technique allow for insertion of a prosthesis only one size larger than the aortic annulus. If a larger prosthesis seems desirable enlargement of the aortic annulus is necessary.

A small aortic prosthesis may be acceptable for a small and inactive patient. The difficulty lies in determining how small the aortic prosthesis can be in a given patient (David et al., 1983).

Anatomical consideration of the aortic valve