APPROPRIATE SURGICAL TECHNIQUES FOR AORTIC COARCTATION BASED ON AGE CATEGORY

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INTRODUCTION

Aortic coarctation (CoA) is a congenital cardiovascular condition that necessitates early intervention to prevent severe long-term complications. The timing and selection of the most appropriate surgical technique are critical factors in achieving optimal outcomes, especially considering the variability in patient age and anatomical development. This study explores the effectiveness of different surgical approaches for CoA correction, with a focus on tailoring techniques based on age groups.

Aim

The aim of this study is to evaluate the outcomes of various surgical methods for correcting CoA in different age categories and to determine the most appropriate surgical techniques that minimize complications such as recoarctation, left ventricular dysfunction, and paradoxical hypertension.

Methods

This retrospective study included 120 patients who underwent surgical correction for CoA. Patients were divided into four age groups: <1 year, 1–3 years, 3–10 years, and >10 years. Surgical methods included resection with end-to-end anastomosis (EEA), patch aortoplasty (PA), extended end-to-end anastomosis (EEEA), and prosthetic interposition graft (PIG). Outcomes were analyzed based on perioperative data, postoperative complications, and long-term follow-up. Statistical significance was assessed using chi-square tests and correlation analyses for age-related complications.

Results

The study found that younger patients (<1 year) who underwent extended end-to-end anastomosis (EEEA) had significantly lower rates of recoarctation compared to those who underwent resection and end-to-end anastomosis (EEA). However, these younger patients exhibited a higher risk of paradoxical hypertension and postoperative complications such as left ventricular dysfunction. In contrast, older

patients (>10 years) who underwent patch aortoplasty (PA) had a lower incidence of recoarctation and a more stable postoperative course, but required longer operative times. The presence of aortic arch hypoplasia was identified as a significant risk factor for recoarctation across all age groups.

CONCLUSION

Surgical correction of aortic coarctation must be tailored to the patient's age and anatomical considerations. Extended end-to-end anastomosis (EEEA) is recommended for infants and young children, while patch aortoplasty (PA) may be more suitable for older patients. Early intervention is crucial for preventing long-term complications, though careful patient selection and technique modification are necessary to optimize outcomes. Further studies are required to refine surgical strategies for specific age groups and minimize postoperative risks.