講師：蔡勝國 Shen-Kou Tsai

主題：

The Impact of Intraoperative Transesophageal Echocardiography in Predicting Outcomes of Complex Pediatric Congenital Cardiac Surgery

摘要：

TEE has become a critical tool in cardiac anesthesia, playing a transformative role in surgical decision-making (Eitzschig HK et.al. Ann Thorac Surg 2008; 85:854-53) and improving patient outcomes (Mackay EJ et al. JAMA Netw Open 2022;2: e2147820) through continuous real-time monitoring during the perioperative period after adult cardiac surgery. The complexity of congenital cardiac surgery can vary greatly depending on the type, number, and severity of the cardiac defects. Factors contributing to this complexity include the anatomical complexity of the defect, patient-specific characteristics such as age and size, and the chosen surgical technique and staging strategy. Surgical approaches may involve single-stage or multi-stage repairs, ranging from palliative to definitive procedures. Additionally, the presence of coexisting conditions further influences the surgical plan. Pediatric congenital cardiac surgery is highly complex and variable. Obtaining a useful TEE image requires a thorough understanding of the disease, including its imaging modalities, treatment options, and potential complications. Therefore, intraoperative TEE in complex congenital cardiac surgery is essential for both intraoperative monitoring and predicting postoperative outcomes.

Over the past 25 years, we have successfully performed over 3,000 congenital heart disease (CHD) surgeries and 5,000 pediatric catheter interventions with the guidance of TEE. TEE has proven to be an invaluable tool in both diagnostic and intraoperative settings, providing real-time monitoring of pediatric congenital cardiac anatomy and function. Its use has allowed us to promptly detect complications, evaluate the success of surgical repairs, and guide immediate postoperative management, as well as facilitate long-term postoperative outcome follow-up.

In addition, our team has contributed to the field by publishing a comprehensive book. Transesophageal Echocardiography in Pediatric Congenital Cardiac

Surgery and Catheter Intervention (SK Tsai, JK Wang, SJ Chen Springer, 2023), which provides in-depth insights into the use of TEE for predicting immediate postoperative complications, guiding surgical decision-making, and assessing long-term outcomes in complex congenital cardiac surgeries and interventions. In a study of 256 newborns and infants undergoing complex congenital heart surgeries with intraoperative TEE monitoring, a 5.1% reoperation rate was reported following CPB (SK Tsai et al. Anesthesia & Analgesia 2001; 93:594-597). TEE can also predict early postoperative outcomes in 49 infants who underwent arterial switch operations due to transposition of the great arteries (YS Chen, SK Tsai. Cardiology 2008; 109:230-236).

Our extensive experience and research underscore the critical role of TEE in enhancing patient safety and improving surgical success rates. Therefore, TEE is a crucial tool for real-time intraoperative monitoring in complex pediatric congenital cardiac surgeries. It allows surgeons to promptly identify and address complications, assess the surgical repair's effectiveness, and make immediate adjustments as needed. This ensures patient safety, enhances surgical precision, and significantly improves both short- and long-term outcomes.