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Monitoring hemodynamic changes during Robot Assisted Thoracic Surgery

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The utilization of robot assisted thoracic surgery is an upgrade on the video-assisted thoracoscopic surgery (VATS). The mechanics of the instrumentation offers increased degrees of freedom of movement for the surgeon to manipulate his instruments. The magnified and improved optics enhances the visualization of the operative field and anatomical structures, and therefore enhances the precision of the surgery. For the most part, thoracic procedures are performed with the patients lying in a lateral decubitus position. This position on its own carries some hemodynamic consequences. Insufflation of Carbon dioxide (CO2) into the pleural space, collapse of the ipsilateral lung, facilitates visualization and dissection. The insufflations of CO2 on the other hand, kinks or compresses the intra-thoracic vessels and the heart, especially the more compliant right heart. This compression leads to a drop in the venous return to the heart, stroke volume, Cardiac output, cardiac Index, mean arterial pressure, as well as the stroke volume index. There is also a corresponding increase in the Stroke Volume variation and Systemic Vascular resistance. Trans-esophageal echocardiography shows in real time, changes in the trans-mitral and trans-tricuspid valve blood flow with respiration.

In patients with poor or borderline cardiac function, these changes could stress the heart enough to elicit ischemic changes on the EKG. The deployment and utilization of appropriate monitors, permits early recognition of these adverse events, and therefore facilitates timely therapeutic intervention, to correctly manage the patient.

Biography

Dr. Asuquo N. Inyang MD, FRCS (Edin), FWACS, FASE. He holds MBBS from the University of Ibadan, Nigeria. He trained in cardiothoracic surgery in Ibadan, Nigeria, and Leeds, England. He is a Fellow of the Royal College of Surgeons of Edinburgh FRCS (Edin), Fellow of the West African College of Surgeons (FWACS), and Fellow of American Society of Echocardiography (FASE). He is American Board certified in Anesthesiology and Echocardiography. He is a share-holder and partner with Anesthesia Associates of York, PA.

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