STUDENTS' CORNER
LETTER TO THE EDITOR

An indispensable revolution for Pakistan, the beginning of robot assisted Minimally Invasive Mitral Valve Surgery

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Madam, Minimally invasive surgical (MIS) techniques or 'sternal sparing' strategies, performed by making minor right chest incisions, were introduced in the mid-1990s.[1,2] From that point forward, there has been a decrease in surgical injury and postoperative recuperation, coming about in expanded acknowledgement of these approaches. It works on three essential standards: rebuilding and conserving MV pamphlet portability, creating a vast flyer coaptation surface, and remodeling of the mitral annulus to supply an ideal and steady orifice area.[1] The history of MIMVS expanded from the 1990s when minimally invasive approaches such as the parasternal incision, hemi sternal incision and the mini thoracotomy were investigated by autonomous groups led by Delos Cosgrove and Lawrence Cohn. Further advancements include the primary video-directed repair and substitutions performed through a mini-thoracotomy and the primary utilization of end balloon clamping. Later, improvements incorporated the coming of stereoscopic 3D video endoscopy and mechanical surgery.[3]

Robotic technology facilitates complex surgical procedures on the mitral valve without opening the chest. The most significant advantage is diminished surgical injury, which deciphers into early recuperation. In 1998, robotic mitral valve repair was initiated and adopted in 2005 by the US following the first multicenter trial. In classic robotic mitral valve surgery, femoral-femoral cardiopulmonary machine cannulation is performed through a small incision in the groin. The surgeon leading the robotic mitral valve surgery must have the relevant heart surgery certification from the country's certifying institution. The console surgeon should be experienced in all aspects of mitral valve surgery and be highly versed in repair techniques as robotic procedures take longer than traditional surgeries, especially during the learning curve. Apprenticeship in the so-called mini-mitral using conventional videoscopy is also an advantage, but not a mandatory requirement. The courses on robotic mitral valve surgery including formal didactic and practice-oriented training should be obtained by the lead surgeon and the team. Virtual stimulators and wet labs should be provided by the hospital to the team to practice their first 8-10 cases until they gain expertise.

For a programme to be proficient in robotic mitral valve surgery, they must perform at least 20 robotic cases per year. The whole team must continue to acquire additional expertise through accredited continuing education programmes.[4] One of the essential aspects of training is mentoring, although there are other diverse routes to robotic assisted MIMVR. A consolidated approach should be adopted by a successful team. There should be a hospital robotic committee to initiate a robotic programme by meeting the hospital requirement, monitor and assess the outcomes of such surgeries.[5]

The advantages of this surgical approach are less tissue trauma and bleeding due to small incisions and the absence of sternal bleeding, which typically occurs throughout the operation unless agents such as bone wax, which have been implicated in infection, are used and ultimately less pain and low chances of infection. A small cut in the chest heals very quickly, while the sternum takes weeks to months for healing after the sternotomy. Weight bearing restriction placed for three months after the sternotomy tends to reduce the operation time and costs. Through robotic assisted minimally invasive approaches, the de-airing of the heart is less due to reduced access to the aorta, the left ventricular apex and the heart, specifically.

MIMVS have indisputable implicit disadvantages such as the expanded cardiopulmonary bypass and cross-clamp times, hazard of aortic dismemberment and other blood vessel complications with the end balloon and insufficient capacity to de-air the heart.[2]

Surgeons in Pakistan need to be trained in minimally invasive surgical alternatives as technology, and innovative methods are progressively used for patient management. Future specialists should train and evaluate surgical strategies utilizing recreation models, dry and damp labs, and other instructive apparatuses.[6]

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