

Minimally Invasive Mitral Valve Surgery

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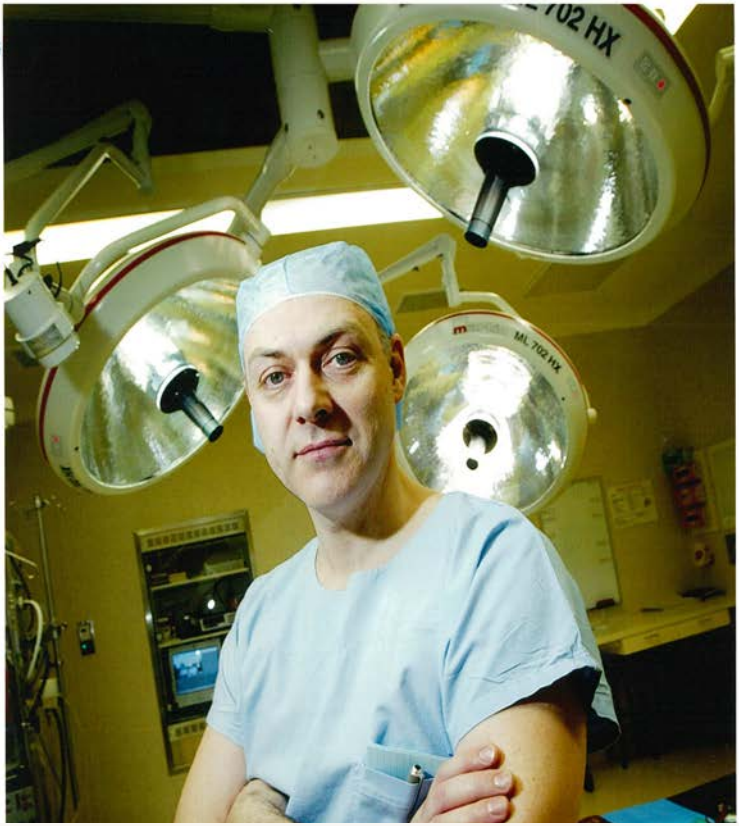


Mr Pick offers

Superior options in cardiac surgery, including the latest techniques and research for minimally invasive cardiac surgery. Advanced operative techniques give patients a repair of their native valve with the use of their own natural heart tissue.

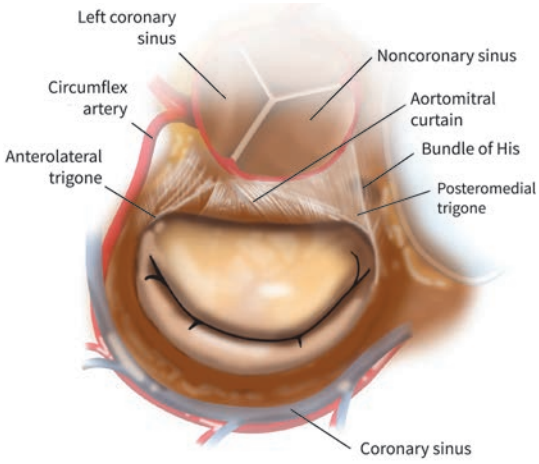
Minimally Invasive Mitral Valve Surgery

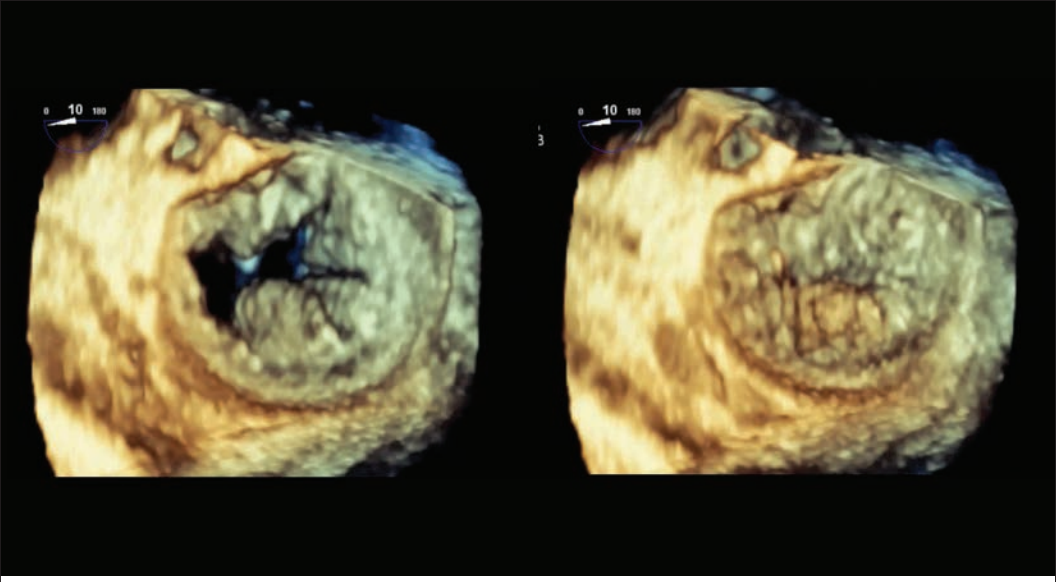
The mitral valve is located on the left side of the heart between the left atrium and the left ventricle. With each heartbeat, the mitral valve opens and allows blood to flow from the left atrium into the left ventricle. In mitral valve prolapse, the two leaflets do not close properly, causing regurgitation, or the backflow of blood, into the left atrium. Regurgitation forces the heart to work harder to eject blood out of the heart and to the body and can permanently damage the heart. Over time, this excess work may cause the heart to enlarge, which predisposes patients to abnormal heart rhythms and heart failure. Surgical intervention is necessary to prevent harmful changes to the heart and to stop the progression of these symptoms.

Current guidelines recommend early surgical repair, even in asymptomatic patients, at a nationally recognized cardiothoracic surgical center of excellence. .

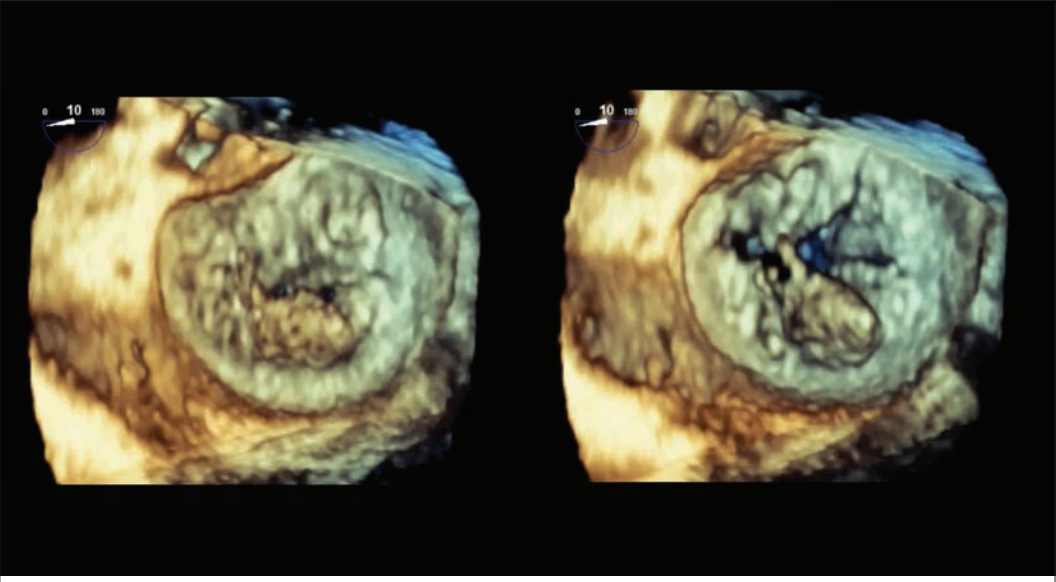
For decades, the standard surgical approach to mitral valve repair has been a median sternotomy, where an incision is made down the length of the sternum. Increasingly, patients are seeking a less invasive approach to this standard procedure. Using a smaller incision, minimally invasive mitral valve repair has proven to be an effective and highly durable alternative, reducing the need for subsequent surgeries and improving patient safety.

Normal Mitral Valve Anatomy





During this procedure, adequate visualization is key to ensuring a safe and effective operation. The small, right-sided incision made in this minimally invasive procedure provides a direct view of the mitral valve that is equivalent to that obtained via a sternotomy. The surgeon can access the entire surgical field to safely and effectively perform a valve repair or replacement. This view also allows for advanced repair techniques, including complex leaflet work and the implantation of an annuloplasty ring.



Candidates for Minimally Invasive Mitral Valve Surgery

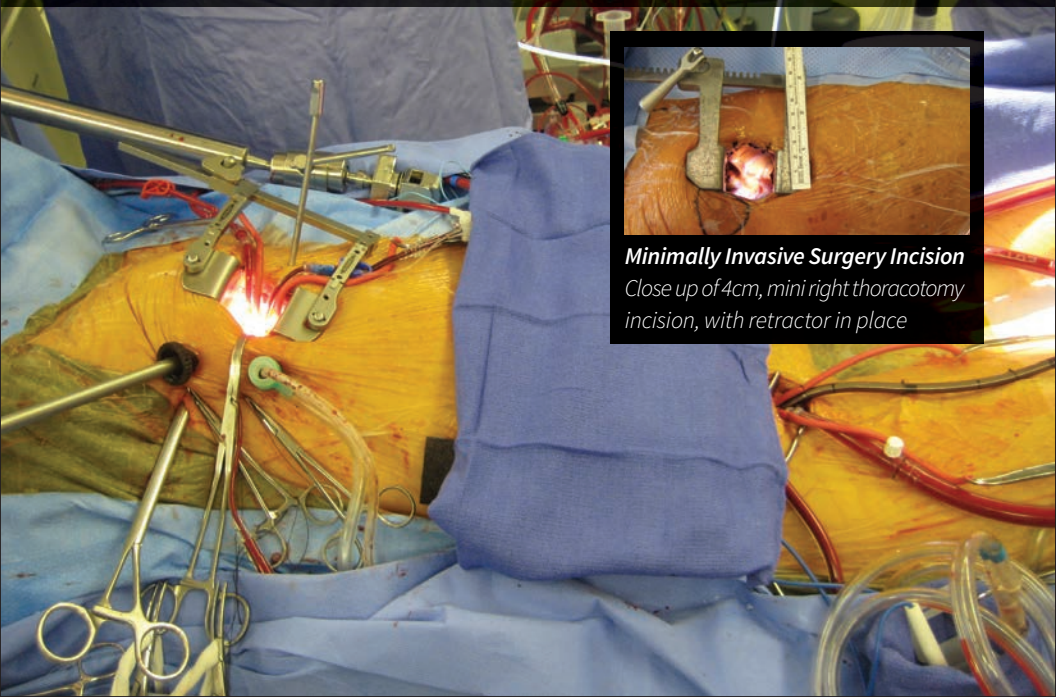
A broad range of patients are eligible for minimally invasive approach via the right chest, including those with:

- Mitral valve prolapse and/or regurgitation
- Mitral stenosis requiring a mitral valve replacement
- Atrial fibrillation requiring a Maze procedure and left atrial appendage exclusion
- An atrial septal defect (ASD) or patent foramen ovale (PFO)
- Tricuspid valve disease

Benefits of Minimally Invasive Mitral Valve Surgery

- Avoids a sternotomy incision and eliminates risk of sternal wound complications
- Reduced risk of infections
- Small, right-sided chest incision measuring 4-5cm
- Minimal scarring that can be easily concealed under clothing for eligible patients
- Safe and effective repair that will be durable in the long term
- Concomitant procedures are possible
- Lower risk of complications
- Reduced risk of post-operative bleeding and blood transfusions
- Comparable outcomes when compared to similar surgery completed via a sternotomy
- Shorter ICU stay
- Shorter hospital stay, typically five days
- Faster return to an active life, typically four weeks

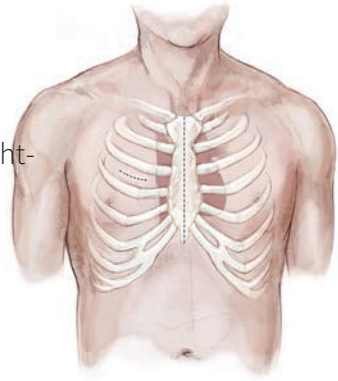
Minimally Invasive Surgery Setup
Small, 4cm, mini right thoracotomy approach, port access, instruments & 2cm groin cannulation



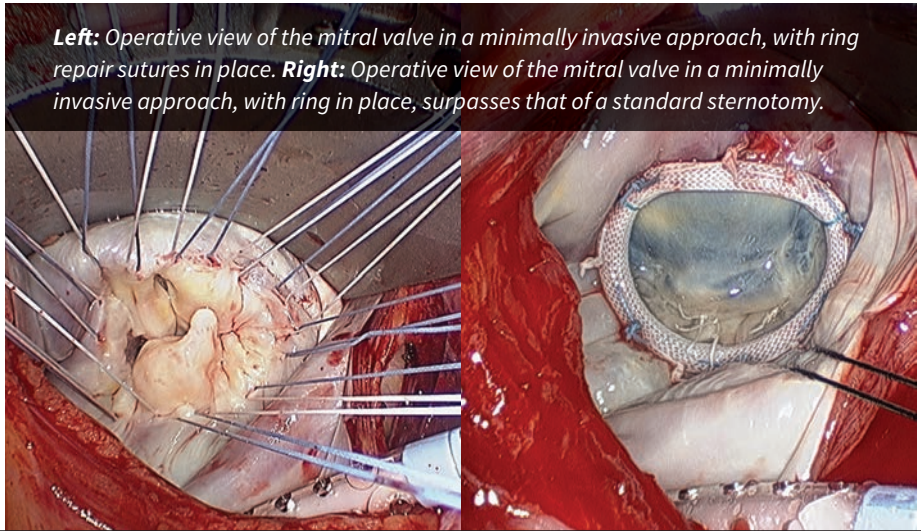
Minimally Invasive Surgery Incision
Close up of 4cm, mini right thoracotomy incision, with retractor in place

Procedure Details

- Standard arterial line and central venous line for monitoring and medication administration
- Single-lung ventilation with a double lumen endotracheal tube
- Access to the mitral valve via a small 4-5cm right-sided chest incision between the 3rd and 4th ribs
- A small, 2-3cm incision in the groin for femoral arterial and venous cannulation, both of which are removed upon completion of the operation
- Three small lateral incisions for minimally invasive surgical instruments
- Intra-operative Echo to confirm adequate valve repair
- Standard chest tube placement to prevent accumulation of excess blood and fluid within the chest after surgery
- All incisions are closed with dissolvable sutures



Minimally Invasive Incision
Small 4cm mini right thoracotomy incision instead of the larger median sternotomy



Left: *Operative view of the mitral valve in a minimally invasive approach, with ring repair sutures in place.* ***Right:*** *Operative view of the mitral valve in a minimally invasive approach, with ring in place, surpasses that of a standard sternotomy.*

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