

“MODERN CORONARY ARTERY BYPASS GRAFTING SURGERY”- SAVES LIFE!

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Received: 22 Jul 2021

Accepted: 01 Oct 2021

Published: 04 Oct 2021

“Diseases can rarely be eliminated through early diagnosis or good treatment, but prevention can eliminate disease”.

- Denis Burkitt (1911 – 1993)

ABSTRACT

Coronary artery bypass grafting (CABG) is the universal cardiac surgery performed today worldwide. While traced back for more than 100 years of this Procedure, the development has been touched in several pioneers in the field of cardiac surgery, who have contributed with both their successes and failures. This article reviews the modern CABG technological advances and benefits. 25% of people's death due to heart attack less than 40 years. In India 30/900 deaths due to heart disease. The main reason behinds, is a sedentary lifestyle. Now a day's most of the doctors prefer (MICS) Minimally invasive cardiac surgery. It's a new and advanced technique for performing CABG for cardiac disease. After MICS the patient may discharge from the hospital in about 3 days, it will take 7 days to recover.

KEYWORDS: Coronary Bypass Surgery (CABG), Minimally Invasive Cardiac Surgery (MICS), Endoscopic Vein Harvesting (EVH), Closed – Chest Robotic / Totally Endoscopic Coronary Artery Bypass (TECAB).

INTRODUCTION

“If you want to change the future, you must change what you're doing in the present.”

- Mark Twain

The journey of CABG has been embraced by many of the pioneers in cardiovascular surgery with both their successes and failures. All those contributions can be abstractly categorized into three different eras. In First era numerous experimental work performed up to the early 1960's, also some impressive early clinical results was achieved. During the Second era coronary artery surgery has developed on the foundation of testing several grafts and an endeavor to regulate them, which has brought along the establishment of evidence-based cardiac surgery. In third era, like in other surgeries in the 21st century, the minimal invasive surgery evolves towards enhanced collaboration between conventional surgery and interventional medicine.

Risk Factors of Cardiac Diseases

- Sedentary lifestyle
- In addition to stressful work condition

- Compromised diet
- Other leading factors of heart disease of healthy heart between the age group of 30 to 44 years.

Causes of Cardiac Diseases

- Stress
- Smoking
- Obesity
- Diabetes
- Genetics
- High cholesterol
- Hypertension
- Unhealthy food habits
- Physical inactivity

CORONARY ARTERY BYPASS GRAFTING

CABG is conceivably (traditional method of performing open heart surgery) common performed cardiac surgery in worldwide. During this procedure, the blocks in the coronary arteries are bypassed using various grafts.

Types of CABG

- Conventional CABG
- Coronary Artery Revascularization
- Off pump CABG (OPCAB)
- Modern techniques
 - Minimal Invasive Cardiac Surgery
 - Robotically – Assisted Heart Surgery

MODERN ENHANCED TYPES OF CABG

Minimal Invasive Cardiac Surgery Includes Closed – chest Robotic / Totally endoscopic coronary artery bypass surgery.

Minimally invasive heart surgery includes robot-assisted heart surgery, thoracoscopic surgery and surgery through a small incision in the chest (direct less invasive access heart surgery). In all types of minimally invasive procedures, surgeons reach the heart through small incisions between the ribs of your chest.

- A tool with a small video camera inserted through one of the incisions will enable the surgeon to see inside your body.

Most minimally invasive procedures use a heart-lung bypass machine, as is used in open-heart surgery. The machine keeps blood moving through your body during the procedure.

Robot-Assisted Heart Surgery

- In robot-assisted heart surgery also called as closed heart surgery, it is a type of MICS. The surgeon uses robotic arms, rather than his or her hands, to perform the exact maneuvers used in traditional open-heart surgery.
- During this procedure, the surgeon works at a remote console and views the heart in a magnified high-definition 3D view on a video monitor. From the console, the surgeon's hand movements translate precisely to the robotic arms at the operating table, which move similarly to the human wrist.
- A second surgeon and surgical team assist at the operating table, changing surgical instruments attached to the robotic arms.

Indications

- Mitral valve repair and replacement surgery
- Tricuspid valve repair and replacement surgery
- CABG and ASD repair
- patent foramen ovale repair
- Biventricular pacemaker / defibrillators implants.

Thoracoscopic Surgery

- In thoracoscopic surgery (sometimes referred to as a mini thoracotomy), your surgeon inserts a long, thin tube (thoracoscope) containing a tiny high-definition video camera into a small incision in your chest.
- Your surgeon repairs your heart using long instruments inserted through small incisions between your ribs

MINIMAL INVASIVE CARDIAC SURGERY

Minimal Invasive Cardiac Surgery has been done through a small incision by the side or front of the chest (without cutting the central bone of the chest). Improving patient comfort by reducing pain. Minimally invasive surgery is performed through a small incision, often using specialized surgical instruments. The incision is about 3 - 4 inches instead of the 6-8 inch incision required for traditional surgery.

Types of MICS

1. Epicardial

- MIDCAB

2. Endocardial

- Valve Surgery
- ASD Closure
- Cardiac Mass Resection

Indications

- Patients with single coronary artery blockages who cannot be treated by PTCA or with contraindication for CPB.

Types of Cardiac Surgery Done by MICS

Many types of heart procedures may be conducted with minimally invasive heart surgery, including:

- Mitral valve repair or replacement
- Tricuspid valve repair or replacement
- Aortic valve replacement
- Atrial septal defect and patent foramen ovale closure
- Atrioventricular septal defect surgery
- Maze procedure for atrial fibrillation
- Coronary artery bypass surgery
- Saphenous vein harvest for coronary artery bypass surgery

Advantages / Benefits of Minimally Invasive Surgery Include

- Smaller incision no bones are cut

First and foremost is the fact that no bones are cut. This has served in reducing pain, retaining function and having a positive effect on breathing, can start with daily activity immediately.

- Less Blood Loss

Blood loss is almost negligible eliminating blood transfusing in most and eliminating blood borne infection.

- Reduced risk of infection

All infections are reduced whether it be wound infections or post surgical lung infection. This makes the procedure ideal in diabetics and older patients who have poor resistance to infection.

- Less Scars

The incision is so cosmetic and measures 2 – 3 inches that it's practically impossible to tell that a heart operation has been done. It doesn't leave a scar behind.

- Less pain and trauma
- Less hospital stay and fast recovery
- **Decreased Recovery Time:** The average recovery time after minimally invasive surgery is 2 - 4 weeks, while the average recovery time after traditional surgery is 6 - 8 weeks

Disadvantages

- More cost comparing to open heart surgery
- Not practicing in all the hospitals
- Need trained and experienced person to do the surgery
- Sometime during the MICS procedure may go with Open heart surgery.

Preoperative Preparation – MICS

- Stop medication that could affect blood clotting
- Stop smoking
- Shower properly and keep the chest clean
- You will need to fast on the day of surgery

Complications for MICS

Like open heart surgery Minimally invasive cardiac surgery also involves risk such as

- Bleeding
- Stroke
- Infection
- Dysrhythmias
- Irregular heart rhythms
- Death

CONCLUSIONS

Minimally invasive cardiac surgery is one of the modern technical method of CABG but we need the experienced doctors, public also need the awareness about MICS. Comparing to open heart surgery MICS having more benefits, even though comparatively 70% cases are going under open heart surgery 30% of cases only undergone MICS on a yearly basis. While in the healing basis MICS patient may get discharge in about 3 days, for recover only it will take 7 days.

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