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Editorial

March of cardiac surgery through the decades

"Surgery of the heart has probably reached the limit set by nature; no new method can overcome the natural difficulties that attend a wound of the heart."

Stephen Paget, 1896.

"A surgeon who decides to suture a heart wound deserves to lose the esteem of his colleagues."

Billroth, 1896.

It is ironical that in the same year that the heart was considered unassailable, Ludwig Rehn of Frankfurt performed the first cardiac surgery by suturing the heart of a young German soldier. The Americans were quick to follow. In 1902, Dr Luther Hill repaired a boy's stab wound of the heart in the kitchen of a shack at midnight. His neighbours provided two kerosene lanterns for lighting, and the left ventricle was sewn with catgut.¹

Throughout history the heart has been an organ that has fascinated millions. Mankind has long recognized the heart as vital to sustaining life, often romanticizing it as the repository of the soul and the seat of the emotions. However, we did not have the ability to repair the heart surgically until a relatively short time ago.

It is interesting in this context that Military History is intimately entwined with Cardiac Surgery. Bailey and Cutler were the first to attempt valve surgery prior to the era of Cardiopulmonary Bypass. Dwight Harken, a US Army Surgeon during World War II, removed a total of 134 missiles from the mediastinum including 13 from the cardiac chambers. All this was done by manually pumping blood from several bottles using air.^{1–3}

In the 1950s C. Walton Lillehei, an American surgeon, pioneered a direct and safe approach to open heart operations and is hence known as 'Father of Open Heart Surgery'. He served in the Army Medical Corps in Europe rising to the rank of Lieutenant Colonel earning a Bronze star for meritorious services. On 26 Mar 1954 he used controlled cross circulation to successfully repair a Ventricular Septal defect in a child using the child's father as the oxygenator. This technique was used by him for more than 45 complex congenital heart surgeries and although it was a major advancement it was not adopted for widespread because of serious risk to the 'Donor'. From such modest beginnings, we are in an era where Open Heart Surgery seems so commonplace now that it is

sometimes difficult to remember that it was not widely available until the mid-1970s.^{4,5}

We owe this great transition in no small measure to a man named Dr John Gibbon. Having spent a night in the Massachusetts at the bedside of a young woman dying of pulmonary thromboembolism, he resolved to dedicate his life to discovering a machine which would take over the function of the heart and lung. The fortuitous discovery of Heparin by a medical student, McLean, and a chance meeting with the chairman of IBM made it possible for Gibbon to make the first Cardiopulmonary bypass machine.^{5,6}

Viewed in the light of the scepticism that preceded cardiac surgery, the triumph of the first ASD repair with a heart lung machine on CPB (1953) is truly comparable to events no less than the moon landing and the discovery of nanoparticles.

Meanwhile, even more dramatically, Dr Werner Forssmann in 1929 performed the first cardiac catheterization on himself, eventually paving the way of a roadmap for the coronaries. In 1945, the first landmark surgery for the blue baby was performed by an unlikely team of Alfred Blalock, a cardiac surgeon and Helen Taussig, a Cardiologist who fought female prejudice.

The entire history of Cardiology and Cardiac Surgery in this century is strewn with such rich legacies.

Today we stand at the threshold of Cardiology and Cardiac surgery in the Indian Armed Forces, having travelled a long way on a journey of ups and downs, to achieve levels of excellence which were considered inconceivable a few years earlier.

Beginning from the first lobectomy in the Asian Subcontinent at the Military Hospital (CTC) by Maj Leigh Collis in 1945, Cardiac Centres in the Armed Forces have come of age, signifying a quantum jump in the technical know-how of cardiac specialities. Our centres can perform such diverse procedures such as Arterial Switch Operations, Total Anomalous Pulmonary Venous Repair, Total Arterial CABGs, Arch Reconstructions and Aneurysm Repairs, Mitral Valve Repairs with ease. Surgeries such as closure of Atrial Septal Defect have become "trainee surgery". Perhaps it is testimony to the painful journeys and the long arduous nights in the hospitals of our founding fathers that it is so. The days of Minimally Invasive Cardiac Surgery are finally upon us, a far cry from the days of "the longer the incision, the bigger the surgeon".

In the Armed forces we have already entered the domain of Cardiac Transplantation with successful surgeries being done in Army Hospital (R&R) New Delhi.

More than anything else, the Cardiac Surgeon and the Cardiologists deal every second with life and death issues. The problems are real, mortal and often such as in the case of paediatric cardiac surgery, never straightforward.

The journey of the cardiac surgical team is a battle with an organ that paradoxically needs rest, but cannot be rested. There are issues of neurological, haematological, pulmonary and renal complications that beset every case by virtue of the difficulties encountered in extra-corporeal circulation.

The scenario of Cardiac Surgery in India is vastly different from the West. Mass emigrations, lifestyle changes, overpopulation, atypical presentation of heart disease, and a burgeoning increase in longevity have led to a completely different statistical pattern of heart disease. Just to cite an example, the current burden of CAD in India is 32 million, more than the population of an average European nation.⁷

Unless we gear up to this reality, it will be premature to expect ourselves to be ready for this millennium.

This issue of MJAFI brings to attention the complexities of the field through four publications. These articles sum up different interesting aspects of its disease, and management.

In going through them, one is reminded of how far we have travelled in this journey of cardiac sciences. The list of landmarks in Cardiac Surgery in the Armed Forces would probably fill a page more, but significantly, we tend to forget the failures that taught us and brought us here. It would therefore be apt to end with a Churchillian quote:

“Success is moving from failure to failure without loss of enthusiasm”.

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