

The Septum: Preventing Unnecessary Damage during Cardiac Operations

As successful as open-heart operations have become, there is a portion of the heart that is so commonly injured during these procedures – that it is simply considered *an acceptable complication of cardiac surgery*. The patient may be discharged four to five days later with no apparent negative symptoms. Yet lurking in the background is an injured septum that can later lead to serious problems, like right or left heart failure, or diastolic dysfunction. A recent survey of 3,292 post-operative patients showed approximately 40% had septums that were bulging or showing “paradoxical motion.” It was still higher after valve surgery – 60%. Even when the septum does get better, the healing process can still impose a significant burden on the patient.

Unfortunately, the entire cardiovascular community (cardiologists and surgeons) has a lack in awareness of the critical importance of the septum.

Yet one of the great anguishes in medicine is its inability to treat right (ventricle) heart failure. Here again, the underlying problem is an absence of understanding how the normal right ventricle truly functions. Conventional views hold fast to a 400-year-old belief that the right ventricle compresses like “a bellows” (filling and ejecting as a bellows might pump air into a fireplace). But in reality, that compression motion only accounts for 20% of the right ventricle’s blood pumping ability. The shortening of *the septum* (the muscular “curtain” between the left and right ventricles) during each heartbeat produces 80% of its function.

Fortunately, Paco Torrent-Guasp’s “helix and wrap” structural model clarifies why this happens, as modern 3-D imaging confirms that the septum portion of the helix structure twists to pump blood from the right ventricle to the lungs (to be nourished with oxygen). In animal testing, we further verified that *the septum* is primarily responsible for right ventricle performance (not the compressing wrap).

Fortunately, compression (bellows) can by itself provide sufficient force to pump blood into the lungs even when the septum is injured – *under normal conditions*. However, *when disease is present*, there can be increased resistance in the lung arteries. Then right ventricular failure develops if the septum is unable to twist and provide the added required force.

Clearly it’s important not to injure the septum during operations. So why is it happening repeatedly? We concluded this was likely due to improper myocardial protection (the technique used to protect the heart during operations that was my initial major medical discovery and quickly adopted worldwide). We further tested 119 consecutive patients and found *no septum damage* when protection was done correctly. We realized that others who used the proper cardioplegic solutions – but *did not* follow its proper delivery methods – had septum damage occur.

Successful protection involves both components – the cardioplegic solution *and* adopting a correct delivery strategy. The bottom line is if surgeons are to prevent the all-too-frequent injury to the heart’s vital septum, they must avoid taking shortcuts that compromise this essential combination.

Summary of Chapter 24 from the book:

SOLVING THE MYSTERIES OF HEART DISEASE

Life-saving Answers Ignored by the Medical Establishment

By Gerald D. Buckberg M.D., D.Sc.

www.GeraldBuckberg.com