

## Francisco Torrent-Guasp (1931-2005)



Paco Torrent-Guasp died suddenly in Madrid after giving the closing lecture of the meeting on electrophysiology and arrhythmias organized by Jerónimo Farré and Concha Moro. I told Teresa, his widow, that he had been very pleased with the atmosphere, the way he had been treated, the attention and respect he had been shown both by organizers and participants. It had been worth his while going to Madrid, albeit in a wheelchair as he had been for some weeks due to the pain of sciatica. He had always shown an interest in talking to electrophysiologists so they might see how the contraction of the heart began in the right ventricle outflow tract myocardium and ended somewhere in the left ventricular apex, making what his great friend Pedro Zarco had, one February 25 at the Spanish Royal Academy of Medicine, termed the “cardiologic piston.” He had also been able to explain to some his daring theories about electric circulation and he had made it quite clear that the contraction of the last zones of the myocardial band produced the suction of blood from the atrium to the left ventricle.

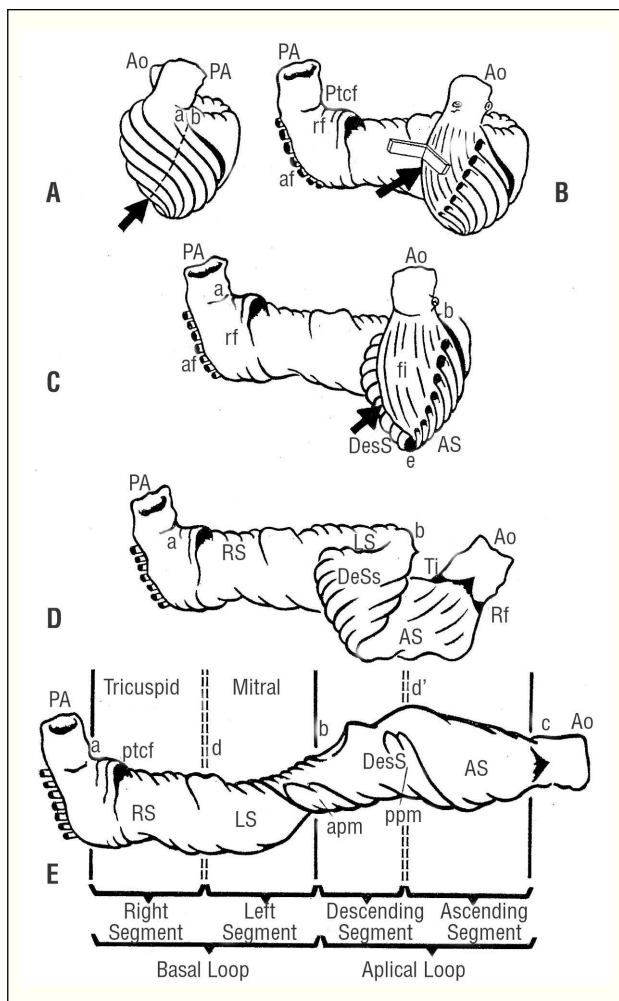
It was Jane Somerville who, in 1970, in London had likened Paco to Leonardo Da Vinci in the quality of his paintings (what Somerville did not know was that Paco was indeed a painter; he even once exhibited in Paris) and also in that he was a product that could easily be exemplary of the time and places of the Renaissance. Paco was cultured, wise, extremely curious, imaginative, spontaneous, unconventional, nonconformist, enthusiastic, committed, and well-endowed with common sense. He was an authentic individual

and he was so every time you met him, always devoted to seeking out the logic in the heart’s functioning as a pump.

Paco Torrent-Guasp was born in Gandía (1931), in the duchy of the Borggia, the driving force behind the culture of the Quattrocento, but he lived and researched in Denia, a Roman, Moorish and always Mediterranean city. He read Medicine in Madrid and Salamanca and soon, in 1954 while still a student, he became interested in the heart’s functioning. He never believed that blood could enter the left ventricle without the help of suction. Paco thought it strange that from Harvey’s historic denial to Erasistratus and Galen an impossible mechanism should be considered viable. In fact, whenever he named the *vis a tergo* he would laugh and wink, conspiratorially enjoining you to disbelief, too. He began with microscope studies that gave him no answers and followed by dissecting hearts from all kinds of animals. In 1973, for the first time in history, he described the structure of the heart as a band of muscle that starts at the pulmonary artery entry-point and ends below the aorta exit, wrapping itself into a double helical coil that bounds both ventricular cavities with a wall to separate them (Figure). Taking this architecture as his basis, in 1997 he presented a theory that provided an explanation as to how progressive contraction of the band accounted for the ejection and suction of the blood. By then, it was 43 years later.

He made his anatomic discoveries known in no fewer than 40 prestigious universities in Europe and America, and Japan, too. He received funding from the Fundación Juan March in 1972 and, more recently, from the Spanish Society of Cardiology. But the truth of the matter is that he financed his own research relying, as he could, on the unconditional support of his wife and his entire family.

Dr. Torrent-Guasp was a free-minded individual, master of his own time and his own arguments. To know him you had to listen with a mind free from fears and totally without prejudice. He completed the final 4 years of his first degree in just one and this led some good doctors to distrust him. For many others though, he was a genius, a man ahead of his time, someone different. He was this to Donald Ross, James L. Cox, Gerald D. Buckberg, John P. Boineau, Mladen Kocica, Hisayoshi Suma, Masashi Komeda, Constantine L. Athanasuleas, R.J. Vilela Batista, H. Cecil



**Figure.** Structure of the heart. Progressive unfolding of the myocardial band (A, B, C, D, E), according to the dissection by Dr Torrent-Guasp. Drawn by Torrent-Guasp. Ao indicates aorta; PA, pulmonary artery; RS, right segment; LS, left segment; DesS, descending segment; AS, ascending segment; ptcf, pulmotricuspid cord fiber; rf, recurrent fibers; af, aberrant fibers; fi, intraseptal fibers; ti, left fibrous trigone; a, root of pulmonary artery; b, center of the band; c, square root; d, d', level of the posterior interventricular cleavage plane; e, point of the heart; apm: anterior papillary muscle; ppm: posterior papillary muscle.

Coghlan, Carmine Clemente, and Morteza Gharib: all have expressed their deep sense of loss. At home in Spain, many of us have enjoyed his friendship and his science. Here, I have to mention his great friend the

late Pedro Zarco and the Society of Cardiology, which awarded him its gold medal in 1996. In 1974, in Geneva, he received the Miguel Servetus medal. In contrast, for 3 consecutive years he was proposed by various members of our profession and foundations as a candidate for the Valencia regional government's Rey Jaime I prize for research, to receive not even minimal recognition for his work.

Dr Torrent-Guasp's cardiac structure is now the anatomy of the heart. As such, early on, it was introduced by Daniel Streeter in the *Handbook of Physiology* (1979), and more recently by Carmine Clemente in her textbook *Anatomy*. The new structure and novel concepts have been influential in the introduction of new surgical techniques by Ross, Batista and Buckberg—who named a technique of ventricular rebuilding “Pacopexy” as a tribute. Fruit of this interrelationship with anatomists and surgeons was the monographic issue of the American Association of Thoracic Surgeon's journal dedicated to his work (*Seminars in Thoracic and Cardiovascular Surgery*-October 2001).

His theory on the contraction of the heart caused such a tremendous impact in the scientific world that in 2002 the National Institute of Health organized a multidisciplinary Workshop at its base at Bethesda, USA. There, some 30 top European and American scientists came together for a week to debate and, above all, offer analogic and digital data that supported even further Dr. Torrent-Guasp's theory of cardiac function.

As cardiologists, we know that sudden death always means an early death. When it comes to someone still young, full of projects, who has not even begun to look to his memories, we feel it is an even earlier one. Paco was working on a new book, *Atlas de anatomía*; he was involved in a research project with Mladen Kocica in Brasil; for June 2005, in Denia, he and his son, also Paco, had organized an appropriately accredited, international course on cardiac function and structure; and, moreover, a number of researchers counted on him to continue with our work. May he rest in peace.

Juan Cosín Aguilar

Centro de Investigación La Fe, Valencia, Spain.