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Pericardium – An editorial success

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PERICARDIUM. Anatomy, physiology, pathophysiology, pathology and surgery

By Teodor Horvat and Daniel Fudulu

Why did I write this book? I keep asking myself this question... Why did I write it? Maybe because cardiovascular surgery was my first rotation during my residency that I started after graduating with a first honors degree (gold medal), from the Faculty of Medicine Bucharest in 1975.

My destiny in the winter of 1976, was to be allocated to start my first rotation in the newly formed Military Department of Cardiovascular Surgery, Fundeni Clinical Hospital, under the supervision of Lieutenant Colonel (Lt Col) Dr Vasile Cândea. Because this unit was not fully functional, I started working under Professor Ioan Pop D. Popa and then in the Vascular Surgery Department where I had the opportunity to meet a brilliant, master surgeon – Professor Tiberiu Ghițescu. Finally, I started working in the Military Department of Cardio-vascular Surgery in August 1976, 7 months after the completion of the official paperwork certifying the opening of this new department.

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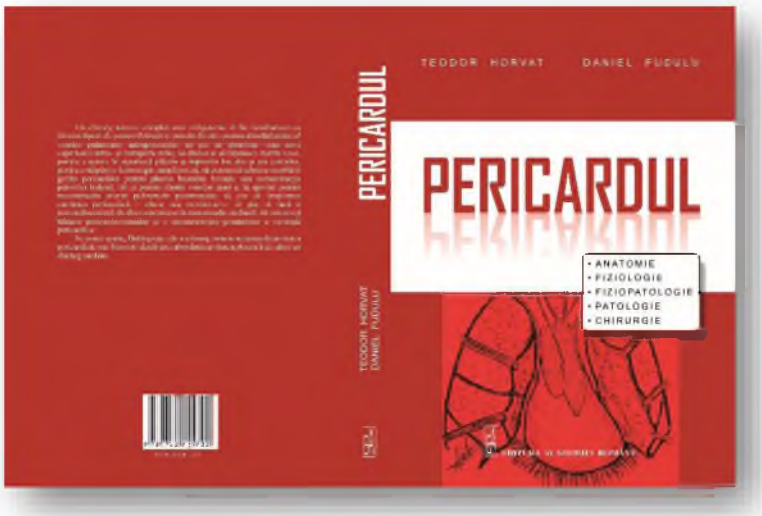
At the beginnings, we were just a few of us, Lieutenant Colonel (Lt Col) Dr Vasile Cândea and Lieutenant Dr Horvat. Later, Dr Richard Florescu, a non-military doctor and my medical school colleague joined us. He immigrated later to Germany. After a few months Captain Dr Ion Țintoiu – cardiologist,



Captain Dr Alexandru Popa – anesthetist, Major Dr Ioan Condor surgeon and Captain Dr Ioan Mociornița – surgeon joined us. Our senior scrub nurse was Mrs Rodica Poreceanu and she was an exceptional first assistant. I've rarely seen such manual dexterity that she had. So, I started as a second assistant while she was the first assistant for Dr Cândea. I have learned a lot from her. She was unique. I have never met a

clone of her.

Week by week our department grew and this culminated with the first open heart operation – an atrial septal defect that was corrected in the February of 1977. The operation was a success. All of us were very cheery until the great disaster came – March the 4th, 1977 – The Great Earthquake.

Both the old and new Fundeni Hospital buildings were affected; the old building was in a terrible state. I remember our department being affected very badly, the interior walls were full of cracks because this was located on level 2 where the flexion and extension of the walls happened. Not even level 3 – Professor Ghițescu's Vascular Surgery Department was spared from these cracks. Above level 4, there was less damage. The old building was beyond any description. No medical treatments and of course no surgery could be performed there. All the departments were moved, in the end, into the new building, the most robust out of all.

The Department of General Surgery led by Professor Dan Setlacec had to move too. Here, in the new building, at floor level, in the building with three levels, I saw The Professor for the first time. He was going to supervise me later as general surgery resident. I've spotted Professor Dan Setlacec in a big group of young surgeons. I could see only his head, his short haircut and his bushy, unmissable eyebrows. That's what I could only see!

After the rubble was scooped and some renovation was undertaken, I went to see Lt Lieutenant Colonel (Lt Col) Cândea and I asked his permission to leave his department. He asked the reasons for leaving. I've had to explain: "I started building the "surgical house" with the roof rather than the" foundation". I have started in the "super-specialty" of Cardiovascular Surgery without having a basic surgical foundation. In other words, I have started without completing a general surgical rotation.

So, I left. We ended up our collaboration in good terms, and we kept in touch until today. I learned a lot from surgeon Cândea, both about surgery but also about interpersonal relations. I have seen and heard a lot in these 14 months not only amongst military doctors but more amongst civilians. They are only a few cardiac surgeons within this specialty but they there is an intense rivalry and hate between them. If I would put aside the parasites who used to copy their personalities, you had what to learn from these remaining doctors – both surgery and medicine.

I have worked directly, as an intern, both at the bedside and in the operating theatre with doctors outside the Military Departments such as: Professor Pop D. Popa, Clinical Lecturer, Dr Dan Făgărăsanu towards the end and with Dr Ilie Pavelescu who was going to become later a professor in Timisoara. I also worked with Dr Martin Constantinescu, a great loss for Romanian Surgery by his immigration, Dr Tiberiu Ghițescu – the great master, Dr Traian Stefănescu, Dr Francisc Proinov – Fundeni Hospital Medical Director, Dr Dan Mogoș, specialty doctor, later Professor of Surgery in Craiova, Dr Vasile Sârbu – specialty doctor later Professor of Surgery and Dean of Constanța Faculty of Medicine, Dr Radu Nemeș – specialty doctor, currently Professor of Surgery at Craiova, Dr Șoimaru – specialty doctor, Dr Roth – specialty doctor who later immigrated to Germany and many others.

I remember our top cardiologists: Dr Daniel Constantinescu, Dr Tudorică Popa, Dr Ion Ținotoiu, Dr Sichitiu and our devoted anaesthetists: Dr Aurelia Bălan ("Tanti"), Dr Teodora Petrilă, Dr Radu Făgarașanu and Dr Alexandru Popa – they have all taught me a lot.

I was in close relationship with the Department of Haemotology led by Professor Ștefan Bereceanu. I used to be very happy when my expertise was needed by: Dr Dan Coliță later Professor and Clinical Lead of the Haematology Department, by Dr Adriana Coliță – later clinical lecturer in Haematology, by clinical lecturer Dr Elena Butoianu, the second in the department hierarchy. I was happy because they were asking for my help, whom I was a beginner at that time, a non-initiated in the art of surgery. They used to refer patients for lymph node biopsies and this is how I became an operator, by doing lymph node, muscle and skin biopsies. Over the years, our work collaboration grew and this time they were no longer referring lymph node biopsies but complex mediastinal tumors with haematological implication.

But let us get back to my career story. I left Fundeni Hospital in March 1977, intern in surgery, and I returned specialty doctor in general surgery, to build up the foundations of my surgical house.

I have met Professor Dan Setlacec in November 1977. In January 1978, the General Surgical Department moved to the old building where I worked until the spring of 1980 when I moved to the Central Military Hospital, General and Thoracic Surgery Department II, led by Professor General Dr Traian Oancea. I first visited this department on Thursday, 9th of October 1969, when I was a first-year medical student, but I will write this story in another book.

In Professor Setlacec's department everyone was focused on work, on performance. There was no rivalry amongst the surgeons, it was a true school of general surgery that was overseen by The Professor. He was The Master, the conductor of the surgical orchestra. He was producing "true" surgeons. Here, I assisted daily in operations. Not one operation, but two, three even four major operations. We had no minor or simple procedures. I was the operator's "second hand ", the "first assistant" in English language. I have learned a lot from the surgeons in the old building. Here I started to build the foundations of my surgical school. I believe that every surgeon, regardless of the pursued specialty needs to learn the basic surgical skills, the principles of surgery in general surgery not in an "super-specialty", like I have started. Luckily, I have realized I made a mistake and I repaired it. I like to believe I made the right choice and that I have succeeded!

Because Professor Traian Oancea was also doing general thoracic surgery not only general surgery I was attracted by this specialty. Thoracic Surgery was also performed by other two surgeons there: Colonel Dr Therdor-Stefănescu Galați and Major Dr Gheroge Voicu – later promoted to lieutenant colonel and then colonel. Both of them were working in the department of thoracic surgery located on the 5th floor of the surgical building. I have never returned to the field of cardiovascular surgery, however, I have encountered and treated in my practice surgical conditions at border between the thoracic and cardiac surgery. I have always cultivated and consolidated my relations with the cardiovascular surgeons and anesthetists.

Now, let me return to my first question. Why did I write this book? Well… because sometimes I feel guilty and regret I have abandoned and never returned to cardiovascular surgery – it is an argument that we must consider. But, the most powerful reason is because as a pure thoracic surgeon I often used to cross the "pericardial border" during major lung or mediastinal surgery but also when addressing surgically diseases of the thoracic wall or the diaphragm.

We also need to take into consideration the malignant pericardial effusions that were associated to pleural effusions (both conditions having a common cause) that required concomitant surgical treatment, under the same anesthesia. Not only the associated pericardial effusions but also the isolated pericardial effusion caused by a malignant a condition are mainly treated within my specialty – thoracic surgery.

In addition to the points mentioned above, it is mandatory for a "complete" thoracic surgeon to be familiarized with the pericardiotomy approaches, to know how to approach the superior vena cave both intra- or extra-pericardially; he has to know how to dissect and isolate the major heart vessels in order to safely repair the various vascular or cardiac injuries but also to be able to control a cataclysmic surgical bleeding; he needs to know how to harvest a pericardial flap to reinforce the bronchial stump, to reconstruct the tracheal wall but also to do a patch repair of the major vessels – particularly patch angioplasty of the pulmonary artery; they have to know how to perform a pericardial window via classical or minimally invasive approach; they have to know how to perform pericardiocentesis to decompress a cardiac tamponade and finally to master the technique of pericardiectomy and "geometric" pericardial cavity reconstruction.

I can confirm, without doubts, that a thoracic surgeon approaches the pericardial cavity more often than a cardiac surgeon approaches the pleural cavity.

From what I remember seeing in my early years of

surgical practice, there were thoracic surgeons that never crossed the pericardium. In other words, they used to declare tumors inoperable even if there was slight involvement of the extrapericardial pulmonary vessels. I have always asked myself asked myself why they do not dare to cross the pericardium; the explanation is in their early days of training. In Romania, thoracic surgery, as stated by Professor Alexandru Boțianu from Târgu Mureș, was born because of Professor Dr Cărpinișan and a disease of his time – tuberculosis. In such circumstances, thoracic surgery was born with a ''limp'', without the esophageal surgery but with the pericardial surgery for the relief of pericardial constriction due to tuberculosis. Unfortunately, after the founder of thoracic surgery passed away, in Romania, the interest in the pericardium had almost disappeared amongst his descendants.

In the year of 1986, while I was working at Filaret Hospital, under Prof Dr Constantin Coman, to complete my general thoracic surgery fellowship (e.g. after completion of my general surgery training), I have never witnessed the pericardium being opened to approach the intrapericardial pulmonary vessels.

I remember a day in 1987 when I was working in the Central Military Hospital and I had to scrub to assist Professor Traian Oancea to perform a left pneumonectomy for a lung cancer. The tumor appeared unresectable. Despite this, I persuaded my ex-boss and Professor to open the pericardium. After a moment of reflection, he turned to me and asked: ''Have you ever been inside the pericardium?'' I responded without hesitation: 'Yes! I've been there before!'' He replied: ''OK then, let's open it!'' It was the first intrapericardial dissection of the pulmonary vessels that I ever assisted and observed. The operation was a success.

Anyone who had seen Professor Oancea operating, remained deeply impressed, like me, of his delicate surgical gestures, of his control of the situation and his safeness and many others skills and attributes that I do not have enough space here to enumerate.

The years have passed and the work volume in thoracic surgery increased exponentially, with cases that were more and more difficult to tackle. However, I have never seen again a case being declared inoperable based on extrapericardial involvement. The majority of the pneumonectomies were performed using an intrapericardial approach.

Pericardial resections for lung tumors invading the pericardium had followed. In selected cases, we even performed atrial, mediastinal, chest wall or diaphragmatic resection associated with geometric pericardial reconstructions.

We admitted more and more cases of malignant pericardial effusions either isolated or associated to unilateral or bilateral pleural effusions and even peritoneal effusions.

In the Thoracic Surgery Department at the Central Military Hospital, that I led for 15 years, we were the first ones to perform nationally: pericardial-peritoneal fenestration, the pericardial-pleural window performed with the use of a endostapler (right and left), VATS pericardoscopy (right and left) and subxiphoid pericardoscopy.

I was unpleasantly surprised by a certain event, in addition to many other disappointments or harassments choreographed by the Central Military Hospital management. The first assistant who helped me perform the first subxiphoid pericardoscopy followed by a VATS pericardial resection, published this novel procedure under his own signature, in the ''Journal of Military Medicine'' – the case operated by me. I am going to say only this – I was helped by Dr Cornel Savu and this is the end of the story, and it is not worth expanding on this.

Certainly, all thoracic surgeons who trained in the Thoracic Surgery Department at the Central Military Hospital learned all the various pericardial procedures that they use when needed. These surgeons are the ones who either have not moved: Dr Claudiu Nistor, Dr Adrian Ciuche, Dr Constantin Grozavu, or the ones that work in other parts: Professor Ioan Cordoș, Dr Codin Saon Dr Mihnea Orghidan, Dr Radu Matache, Dr Cornel Savu from Filaret Hospital, Professor Alexandru Nicodin from Timișoara, Dr Cezar Pavelescu, Dr Laurentiu Marinescu from Floreasca Emergency Hospital, Dr

Madalina Grigoroiu and Dr Codruț Stănescu at Fundeni Hospital, Dr Constantin Mitrofan at Iași, Dr Emanuel Palade who worked in Wagen, Germany, then Freiburg and at present in Lubeck – Clinical Lead, Dr Marius Paraschiv at Bagdasar-Arsene Hospital, Dr Cristescu and Dr Brânză from Brașov, Dr Hugoi from Oradea, Dr Demetrian and Dr Dobrinescu from Craiova and others. All these thoracic surgeons will teach the new comers to work on the land of thoracic surgery. They will teach them about the pericardial border, how to approach and go pass it without risks, incidents or accidents.

Like them, I had to move to another hospital along with Dr Cezar Motaș, Dr Mihnea Davidescu, Dr Natalia Motaș, Dr Corina Bluoss, Dr Rus Ovidiu, Dr Daniel Fudulu, Dr Andrei Bobocea. We arrived at the Institute of Oncology, on the Fundeni platform. For me it was like in the fairy tales, I have returned at old age where I used to work when I was young but in another building.

Here pericardial diseases are more frequently referred than at the Military Hospital. All the surgical pericardial conditions used to be referred to our neighbors, across the fence, to the Cardiovascular Department at Fundeni, before our arrival.

I cannot remember the day and the month, but I remember the year of 2007 when I went to visit the thoracic surgery theatres at the Military Hospital. The younger surgeons were not allowed to discuss with me or request my help for the various cases at that time. This was imposed by the new clinical lead that was supported by the management. So, I used to go uninvited. I used to go like I used to do in the previous years. During that day, Dr Cezar Motaş was assisted by Dr Natalia Motaş – his wife. Dr Motaş told me he was operating a malignant pericardial effusion and that he approached the pericardium from the left side of xiphisternum. I said: ''Well done!'' and left. After a few steps, I came back to him and told him: ''This was never done, take some pictures! It is an original procedure'' It was and it is indeed the ''left paraxiphoid approach to the pericardial cavity''. The procedure was published in the ''Interactive Journal of CardioVascular and Thoracic Surgery'' in January 2010 under the heading: ''New Ideas in Oncology''. The idea was applied and published by a Romanian thoracic surgeon – Dr Cezar Motaş who unfortunately passed away too early in the year of 2013, month October, the 30th.

Because we had a lot of clinical and operative experience in pericardial surgery accumulating throughout the years I thought this will be a very good topic to study by a young medical student, future doctor and future thoracic surgeon. Therefore, more than 10 years ago, a young medical student from Bucharest approached me and asked my permission to observe a thoracic surgical procedure. He proved to be a responsible and serious student and later a thoracic surgery trainee and sponsored PhD student. His name is Daniel Fudulu.

His graduation diploma thesis was based on the surgical experience of the Thoracic Surgery Clinic II, University of Medicine and Pharmacy ''Carol Davila'' in the treatment of pericardial diseases. The above academic surgical department functioned until 2009 at the Military Hospital and from October 2009 was moved to the Institute of Oncology Bucharest.

The plan was for this subject to be further explored and researched in the form of a PhD thesis for which Dr Fudulu successfully obtained sponsorship of his tuition fees. He had to abandon his PhD when he immigrated to England in 2010.

This distance was not an obstacle or a reason to abandon the writing of the monograph ''The Pericardium – Anatomy, Physiology, Pathophysiology, Pathology and Surgery''. Therefore, we decided to write this book. Some of the drawings are done by Dr Fudulu while others are done by a young and talented drawer – Eugen Tudorache. I want to thank them both for the detailed and exceptionally clear illustrations.

Together with Dr Fudulu I also published on CTSNet – ''Pericardial Reconstructions in Thoracic Surgery''. Thank you to Professor Mark Ferguson from Chicago for accepting to publish our work and all his editing work and advice. The article was published online on December 2010.

In this chapter, I have told you the story of my career

path and the motivations behind writing this book. This monograph is written from the point of view of a senior thoracic surgeon and of a thoracic surgery trainee – we have nothing against the cardiac surgeons! On the contrary, it is our meeting point at the border between the thoracic and cardiac surgery.

This book is written for anyone who has the desire to read and learn regardless of their position. It is intended for students, junior trainees, registrars, consultants, academics and no academics.

I do hope it will prove useful!