

## REMEMBERING THE HISTORY OF CARDIO- VASCULAR SURGERY IN RIJEKA, CROATIA (The Role of a "Minor" Centre)

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### SUMMARY

The article describes the development of the Cardiovascular surgery in Rijeka Croatia. It explains the historical and social circumstances of the region as well as the most important facts of the history of the medicine and surgery in this city. The standpoint of the paper is that all centers contribute to the progress of medicine. Besides the leading world centers which determine the pace of the development of medicine, all others are also relevant participants. The continuous and coordinated efforts of leading and "minor" centers are also decisive in the field of cardiovascular surgery. The activity of Cardiovascular Surgery of the Clinical Hospital Center in Rijeka, although a "minor" center, regarding international proportions, has been very important for the entire medicine in the region.

**Key words:** Cardio-vascular surgery, Cardio-thoracic surgery, History of medicine, Surgery, Rijeka.

*Memorizing the past we enrich the future*

### PRESENTATION OF THE TOWN

Rijeka, the largest city on the Croatian Adriatic coast is situated in the Bay of Kvarner, at the mouth of river Riječina. Because of its importance for the access of the countries in the hinterland to the sea, it is called "The gate of the Adriatic". Since the 18th century Rijeka

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*Fig 1. The house of Medical University School in Rijeka*

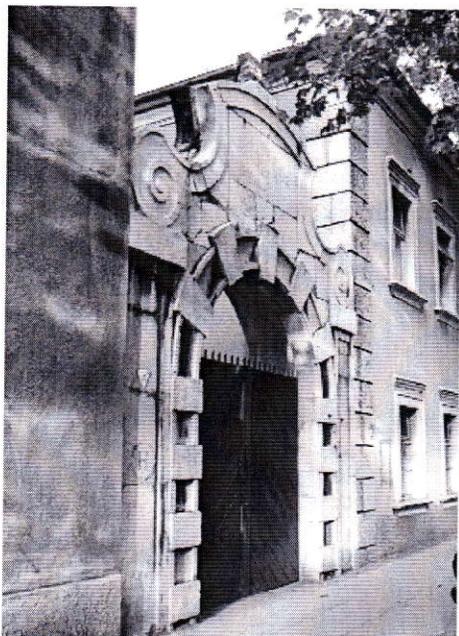
has been connected with the hinterland by roads and since 1873. by rail. Today it is situated at the confluence of the main regional and the international highways directed to Central Europe.

Rijeka is the main port of Croatia, as well as the macroregional center of the western parts of our country: Istria, Gorski Kotar, Kvarner and Lika. It is the industrial center of a region with approximately 800.000 inhabitants.

Throughout its tormented history Rijeka changed many masters. Only in the modern history it belonged to Venice, Austria, France, Hungary, Italy and Yugoslavia. It was even an independent state and for a brief time, it was split between two neighboring States. The city was destroyed many times and the migrations of its population were numerous. Its identity has been formed under the influence of different cultures, which resulted in its cultural and social specificities. It was finally united with the rest of Croatia after World War II.

Now, after the end of the war for the independence of Croatia, the new generations of inhabitants of Rijeka hope to live in peace and to develop their town in security.

## HISTORICAL ASPECTS OF MEDICINE IN RIJEKA



*Fig 2. The ancient entrance of Maritime quarantine from 18th century. Now it is the symbol of local subsidiary of Croatian Medical Association*

The multitude of political changes and the warty of cultural influences in history of Rijeka determined all aspects of its life, including science and medicine. Rijeka was developed into an educational and cultural center in the 18th century, but the University of Rijeka was established only in 1973. However its School of Medicine (Fig.1.) began its work already in 19551, [2]. The growth of medicine and health culture in western part of Croatia was greatly influenced by the specificities and characteristics of the development of Rijeka. It was also determined by the needs of the population in respect of the national pathology mostly because of the occurrence of many epidemics, but also some endemic diseases. The foundation of the

first institution with some characteristics of a hospital in the 16th century, and the maritime quarantine (Fig.2.) in the 18th were described in old documents<sup>1</sup>. The first real hospital in Rijeka was established in 1823. It was named "The Hospital of Holy Ghost" [3]. Specialized departments were organized only in the second part of the 19th century and through first years of the 20th century, during the modernization of the hospital<sup>4-6</sup>. The medical profession in Rijeka through history tried to follow the most prestigious centers in Europe. This can be explained by the fact that some of most respectable personalities

of the world of medicine visited and even worked in this town, such as T. Billorth, R.F. Chaudin, J.Glax and R. Koch. On the other hand, some very respected doctors from Rijeka were educated in the best medical centers and their experience was realized in practice here. Some of them were T. Host, G.B. Cambieri, N.H. Host, G. Catti etc1. The particular interest for balneology at the end of 19th century helped in forming some very important medical and curative institutions in the region and the near islands [1,7]. Some important innovations in medicine were applied in this town very soon after first world experiences. This was the case with X-rays, which were introduced by P. Salcher only one year after the magnificent discovery of Conrad Röntgen 8. In some cases Rijeka was the medical center where some innovations were applied for the first time. In this respect it can be mentioned that Iodine tincture as a desinfective solution was used for the first time by surgeon A. Grossich, working in Rijeka in 1909 [6].

#### THE DEVELOPMENT OF CARDIOVASCULAR SURGERY IN RIJEKA

As a real medical profession, surgery has existed in Rijeka since the 18th century; however as a formed medical specialty it was developed at the turn of the 19th and 20th century. This process was marked with the activity of our own important surgeons, A. Grossich, R. Grossich, V. Guteša, and after them, also during the first decades of 20th century, J. Komljenović and A. Medanić [9]. After the establishment of the Medical School, two surgical clinics were organized [10]. Their progress in professional, scientific and educational work was rapid. Highly specialized surgical departments and experimental surgical programs were developed. In 1983.the two surgical clinics were united in the new Clinical Hospital Center, with all the departments, including the Thoracic and Cardio-vascular Surgery (Fig.3.) [9].

The modern thoracic and cardiovascular surgery in the Clinical Hospital in Rijeka has evolved from the developed general surgical profession. Naturally, the professional interest and knowledge of surgery were decisive in the establishment of the cardiovascular department. The interest in thoracic surgery orginazed from the activities of the former surgeons who were the teachers of the generations of surgeons



*Fig 3. Clinical Hospital Center in Rijeka: The Seat of Cardiovascular Surgery*

that introduced vascular and heart surgery in Rijeka [6]. Already at the beginning of 20th century Dr.A. Grossich brought important experience in thoracic and lung surgery from the Vienna surgical school lead by Dr. Albert. After his work in Zagreb - the most important medical center in Croatia, Dr. J. Komljenović continued his surgical work in Rijeka. His teacher was the famous surgeon Dr. J. Budisavljević. Dr. V. Frančičković organized clinical departments specialized in cardiovascular and chest surgery [11]. Remarkable were also the efforts and results of a group of Professor A. Longhino and his group from the other surgical clinic in Rijeka. This generation of surgeons realized many methods and continued transferring the knowledge from most prestigious foreign centers to the surgical clinics. Gradually they were able to transfer the knowledge and technology from the leading centers and also from the most famous clinical hospitals from USA, UK, France, Denmark, Germany and Italy and others. This process enabled them to reach a high professional level. They followed the recent experiences of the leading centers and famous scientists such us Dubost,

Sondegard, Fjeldborg, Hamburger, Cooley, Ross, Stark, Malan, Michaud, Papo, Radovanović, Bentall, Waterstone, Martin, Buck-Grancko etc.

It is not easy to single out one date when cardiovascular surgery was introduced in Rijeka. After individual earlier efforts and successes in vascular surgery, in the early sixties, systematic work in cardiovascular surgery commenced. New methods were introduced in the clinical work and it can be said that cardiovascular surgery was established just in those years. 1962. was the year when various methods of revascularisation procedures for ischemic extremities were applied for the first time. This was also the time when the angiography procedures began to be a routine examination [11]. The surgical team developed experimental programs devoted to vascular and heart surgery as well as to organ transplantation. In this period of time the first heart cateterisations were performed, and the first operations for persistent arterial duct and mitral transatrial procedures were successfully undertaken [12]. All these affords are a valid reason to mark the beginning of the Cardiovascular Surgery in the Clinical Hospital in Rijeka. The following years brought further successes in introducing new



*Fig 4. Open heart surgery introduced in Rijeka 1967. The first aorto-coronary bypass graft performed in 1977.*

methods in the field of cardiovascular surgery, such as arterial and venous visceral reconstructions, surgical treatment of renovascular hypertension and portal hypertension [13], surgery for aorto-iliac occlusive and aneurysmatic disease [14], etc. The beginning of treating terminal renal insufficiency raised interest for the procedures of arterio-venous angioaccesses for haemodialysis and for renal transplantation. The first Brescia-Cimino procedure was performed here in 1967, only two years after the first operation of the kind in the world [15]. In 1967 heart operations with the use of cardio-pulmonal bypass (Fig.4.) and in 1970 the methods of heart pacing were mastered by this group [12]. The Surgical Clinic in Rijeka started with renal transplantation in 1971

*Table I.  
The dates of first operation at Cardiovascular Surgery in Rijeka*

	Rijeka	First World experience
Transatrial mitral commissurotomy	1963 <sup>12</sup>	1948 <sup>19*</sup>
Cardio-pulmonal bypass	1967 <sup>11</sup>	1953 <sup>20</sup>
Brescia-Cimino A-V Angioacces	1968 <sup>15</sup>	1966 <sup>21</sup>
Endocardial permanent pacemaker	1970 <sup>12</sup>	1958 <sup>22</sup>
Abdominal aneurysm graft reconstruction	1966 <sup>14</sup>	1953 <sup>23</sup>
Prosthetic heart valve implantation	1970 <sup>12</sup>	1961 <sup>24</sup>
Renal transplantation in immunosuppressed recipient	1971 <sup>16</sup>	1959 <sup>25</sup>
Judkins coronary angiography	1974 <sup>17</sup>	1967 <sup>26</sup>
Aorto-coronary bypass graft	1977 <sup>17</sup>	1967 <sup>27</sup>
Percutaneous transluminal angioplasty	1984 <sup>18</sup>	1974 <sup>28</sup>

*\*Except experiences in the twenties  
(References numbers in superscript signs)*

as the first center in the region. The first cadaveric renal transplantation was performed in 1972 [16]. The first selective coronary angiography was made in 1974, and aortocoronary bypass grafting has been used since 1977 [17]. Transluminal arterial dilatation procedures began in 1984 [18]. Table I contains dates when some of the operations in the field of cardiovascular surgery were performed in Rijeka for the first time. They are compared with the dates of the first operations of the kind in the world [11, 12, 14-28].

The achievements in medicine and particulary surgery are always the result of a continous teamwork. However, there are always prominent persons, leaders who inspire and motivate other members of the group. This is also true for Cardiovascular Surgery in Rijeka. The persons to whom credit musut be given should be mentioned.

Dr. J. Komljenović was the founder of chest surgery and the author of some attractive innovations in surgical technology. He presented his publication about the treatment of penetrating heart wound al-

ready in 1937, in the same time as Dr. Medanć did. Dr. B. Fink performed first arterial reconstruction in the fifties. In those years he also participated in a prestigious experimental work in vascular surgery during his stay in New York. Dr. J. Košak from Ljubljana, Slovenia helped with his proposals organizing cardiovascular surgery in Rijeka [11]. The paramount merit for the whole activity goes to Dr. V. Frančišković (Fig.5.), the head of Surgical Clinic, Dean of the School of Medicine and member of Croatian Academy of Arts and Sciences. He was the founder and leader of most of the mentioned and together with his collaborators, he realized the greatest part of the programs and procedures in vascular, heart and transplantation surgery. He was the author of the majority of the scientific programs in cardiovascular medicine and surgery presenting the Rijeka University.



*Fig 5. Dr. Frančišković-the founder of Cardiovascular Surgery in Rijeka*

### THE IMPORTANCE OF CARDIOVASCULAR SURGERY

The affirmation of vascular and heart surgery in Rijeka contributed greatly to the clinical medicine in the region. In the course of its development besides the introduction and application of new methods in the treatment of many diseases, it influenced the work of other branches of surgery. It also contributed to the better and advanced education of all surgeons. This is due to the peculiar view and philosophy of vascular and heart surgery and its specific technology. In the Clinical Hospital Center in Rijeka the same group of physicians that introduced and developed cardiovascular surgery (Fig.6.) was capable also to put into practice many other methods such as the invasive cardiovascular examinations, heart catheterization, coronary angiography, etc. They also realized experimental and clinical programs and kidney and pancreatic transplantation [29], dialysis methods, etc. The postgraduate education and activity in the regional transplantation association con-



Fig 6. The members of cardiovascular and transplantation team, Rijeka 1971.

tributed to the progress of the knowledge of vascular surgery. The dynamic expansion of cardiovascular surgery in the sixties and seventies influenced greatly some other surgical specialties such as reconstructive and replantation surgery; transplantation of organs; digestive and urologic surgery and neurosurgery. The work of the Department and its activities enhanced also the work of cardiology and radiology; they have improved the methods relevant for these professions and for surgery. The cooperation with the fundamental medical science was in the focus of interest in various programs [30]. The members of the Surgical Clinic have also introduced the ultrasound methods; the first experience in these methods were also in the field of vascular pathology [31, 32].

#### THE CONTINUATION OF A SPECIFIC WAY

The life of the medical profession, including clinical surgery, is not always easy and simple. The time changes the circumstances; some times quickly and unpredictably. That is why the results and successes do not always correspond to the efforts. The usual initial enthusiasm of

the research in a new field of medicine should never end, although the initial stages have some dimensions which later can fade away. The further development and final results always depend upon many factors. The general well being of the society creates the conditions for the development of science. The health organization and medical profession can flourish only in a prosperous society. Their specific development should be determined by the needs of national pathology. The ambitions of a medical group and their feeling of responsibility are the guarantee of success [33]. The Cardiovascular Surgery in Rijeka was the leading center in Croatia in the seventies, and among the best in eighties. The institution was one of those, which suggested plans for further specialization in surgery at the national level [11]. In those years the Center was able to practice all the aspects of contemporary cardiovascular surgery; those in the field of vascular surgical methods, heart, transplantation and chest surgery [36, 37]. It participated in the organization of other clinical activities. Having been educated in vascular surgery, fifteen teams for renal transplantation could be organized. Since 1983 two similar vascular surgeries in Rijeka have been united, which has benefited the further work.. The number of doctoral thesis written in the Center also are a confirmation of the scientific activity as well as of the plans of the new generations of surgeons for new tasks in their profession. Heart surgery was able to treat most of surgically correctable acquired cardiac diseases as well as a number of congenital diseases. The complexity of different duties of cardiovascular department, but also other reasons prevented in those years the development of a special center for heart surgery [38]. The prepared programs of hepatic and cardiac transplantation have not yet been realized. The load of work and the scientific level of Cardiovascular Surgery were constantly increasing, although the material and organizing factors have never been optimal. In contrast to the expected smooth and continuous expansion, after a peak that lasted several years, the activity began to decline. The end of the eighties and the beginning of the nineties brought stagnation for this and also other branches of surgery. Various negative conditions and circumstances appeared at the same time. They could be characterized as social changes, personal changes, financial situation and health care organization. But most of

all the war in Croatia affected all aspects of our life, because of its complexity, brutality and the level of destruction in many parts of the country [39].

Although Rijeka was not a destroyed city and it was attacked only on several occasions, the war events have in many ways affected the medical and surgical practice [40]. Due to unsecured material and technological conditions, some branches of surgery have been reduced. The most sensible part of cardiovascular surgery - the open-heart surgery was suspended for some years. All the members of the cardiovascular team as well as the members of the staff of the Surgical Clinic participated in the defense of Croatia, working in the field hospitals. This was the reason for the decrease in the basic activity of the Department for cardiovascular surgery. But, the presence of highly specialized teams in the first line hospitals greatly determined the war surgery results [41]. Now we live in peace again and we are again aware of new progress and programs also in our cardiovascular medicine when a new specialised department of heart surgery and that of cardiology diagnostics are among the leading points of the kind in our country [42]. The students and young physicians benefit from the fact that notwithstanding the war, the continuity in medical education has not been interrupted. Now Rijeka is the second center in the independent State of Croatia. Its responsibility for all the social as well as medical problems of the population, including the cardiovascular medicine has increased. The activities in this field have been financially helped by the State and regional authorities, but also sometimes supported of different institutions [43].

The history and development of the Cardiovascular Surgery of the Clinical Hospital Center in Rijeka were not always smooth and easy. The conditions were not always optimal and favorable. It was developed through several decades, between two of our war misfortunes. The people that started with this branch of surgery participated in World War II. and began with this new aspect of surgical work in years after its end. The recent war in Croatia drastically hindered the work of this extremely important medical activity. It was once said that surgeons and surgery are the only winners in every war [44]. This is true only as far as the saving of young lives is concerned. But the destiny

of Cardiovascular Surgery in Rijeka cannot confirm this saying, because the war conditions were very unfavorable for the work, especially for the heart surgery. Thus surgery was the looser in that way. The tradition of surgery and surgeons here as all over the world is to fight constantly for creating the circumstances for being able to follow the science and art of surgery. Therefore, in the present plans of the development of medicine in Croatia, the Clinical Hospital Center in Rijeka participates again with new proposals for developing cardiovascular medicine and surgery.

### FINAL REMARKS

Besides the leading world centers, which determine the pace of the development of medicine, all others are relevant participants too. Their coordinated efforts in discovering and applying higher standards create the history of medical science and practice. This pattern is relevant also in the field of cardiovascular medicine and surgery. The cardiovascular surgery of the Clinical Hospital Center in Rijeka is one among such "minor" centers. Since its establishment, it has been very important for the medicine in the region, but sometimes its work had a wider impact.

Not all the stages of its activity were happy and successful. Yet it may be interesting to be acquainted with its particular history, its problems and its results. Notwithstanding all the problems, it has never betrayed the principle of following the best examples and serving the highest ideals.

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