

barnaclínic⁺
GRUP HOSPITAL CLÍNIC



CARDIOVASCULAR
INSTITUTE
AT THE HEART OF
BARCELONA

Summary

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Who we are



Our Institute / Teaching & Research

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Our Facilities & Technology



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Leading services



22

Annexed



Minimally invasive cardiac surgery / Interventional Cardiology / Sports Cardiology

"We offer you the best and fast resolution option for your cardiovascular disorder"

"Comprehensive approach to all cardiovascular disease"

"State-of-the-art in cardiovascular therapies, technology and procedures"

"Best scientific evidence-based Medicine"

"Precision Medicine, personalized and patient centered care"

"Team Work at Institutional level"



DRA. MARTA SITGES
HEAD OF THE INSTITUTE

Who we are



The Cardiovascular Institute of barnaclínic+ was created by a group of professionals involved in Cardiovascular Medicine and Surgery to give a service of excellence to patients with heart and vascular disorders requiring a very personalized way of care and in the shortest time possible with a comprehensive and multidisciplinary approach using state of the art and most developed equipments.



One of the largest, most experienced cardiovascular groups in Spain, and one of the best well-known in Europe, cares for patients from all our Country and many different areas around the world.

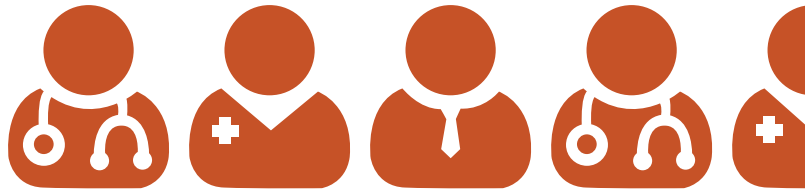


Our depth and breadth of experience allows us to perform high complex surgeries and treatments, with success rates above the national average. Our staff works with the newest surgical and interventional techniques, equipment and devices, including most recently developed strategies. We are one of the largest and best equipped University Medical Center in Europe, due to the prestigious and devoted professionals, researchers and teacher in the Cardiovascular field.



For nation-wide scores, it has been established a comprehensive rating system to compare the quality of cardiac surgery among hospitals across the country. Most years the Hospital and our Institute have been awarded with the highest positions at the Top ten which is based on Aortic Valve Replacement, combined Aortic Valve Replacement and Coronary Artery Bypass Graft (CABG) Surgery, and CABG or PCI.

Our Institute



 **44** Doctors

 **168** Nurses



4.576
Admissions



22.270
Outpatient visits



1.308
Emergencies



1.959
Surgeries

*ONE-YEAR RESULTS

Our facilities and Technology



8 BEDS

Coronary
Care Unit



18 BEDS

Medial
Intermediate
care



8 BEDS

Surgical ICU



5

Angio Hemodynamic
rooms



46 BEDS

Hospitalization



8 BEDS

Short stay



8 BEDS

Surgical
Step-down unit



2 cardiac 1 vascular

Operating Rooms
(24/365 availability)



2 LABS.

Cath. Labs.



3 LABS.

EPS Labs.



7

Echo
machines



2

OR Echo
machines

Teaching

University of Barcelona.
Master degrees



Advanced Medical Skills. Specialization in:

- Acute Cardiac Care and Perioperative Intensive Care
- Diagnosis and Interventional Treatment in Coronary Heart Disease
- Clinical Electrophysiology and Rhythm Management Devices
- Non-Invasive Cardiac Imaging
- Endovascular and Cardiac Treatments



Advanced cardiovascular surgery and specialized intensive care



Techniques of extracorporeal perfusion and oxygenation



Collaboration in International Master of Valve Repair



FELLOWSHIP PROGRAMS



Cardiac Insufficiency
and transplantation



Interventional
cardiology



Acute cardiac
care



Non invasive
imaging



Sports
cardiology



Cardiac surgery



Electrophysiology
and Arrhythmias



Vascular surgery

Research



The Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS) is a biomedical research institute of excellence. It combines clinical and basic research in order to accelerate the translation of the knowledge to the benefit of the patients.

The research activity of Cardiology is primarily involved in two main lines of research:



Atherosclerosis, coronary disease and cardiac insufficiency



Arrhythmias, resynchronization and cardiac imaging



OUR RESULTS



81

Published
originals



5.13 413
Mean Total

Impact factor



19

Competitive
national projects

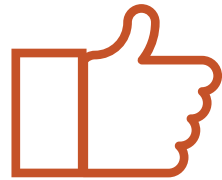


2

Competitive
international
projects

*ONE-YEAR RESULTS

Activity



0,83

RAMI



0,94

RACI



0,84

RARI



3.650

Admissions



2,19

Complexity



6

Length of stay

* ONE-YEAR RESULTS

RAMI - Risk-adjusted Mortality Rate

RACI - Risk-adjusted Complication Index

RARI - Risk-adjusted Readmissions Index

Our results



50

Percutaneous
heart valve
interventions



800

Device
implantation
(pacemaker ICD)



900

Cardiac
surgeries
Including MICS



3.000

Catheterization



1.200

Arrhythmia
ablation
(Including atrial
fibrillation and
ventricle tachycardia)



100

Aortic aneurism
(Including endovascular
treatment)



300

Vascular surgery
(carotid artery, AV
fistula)



12.000

Echocardiograms



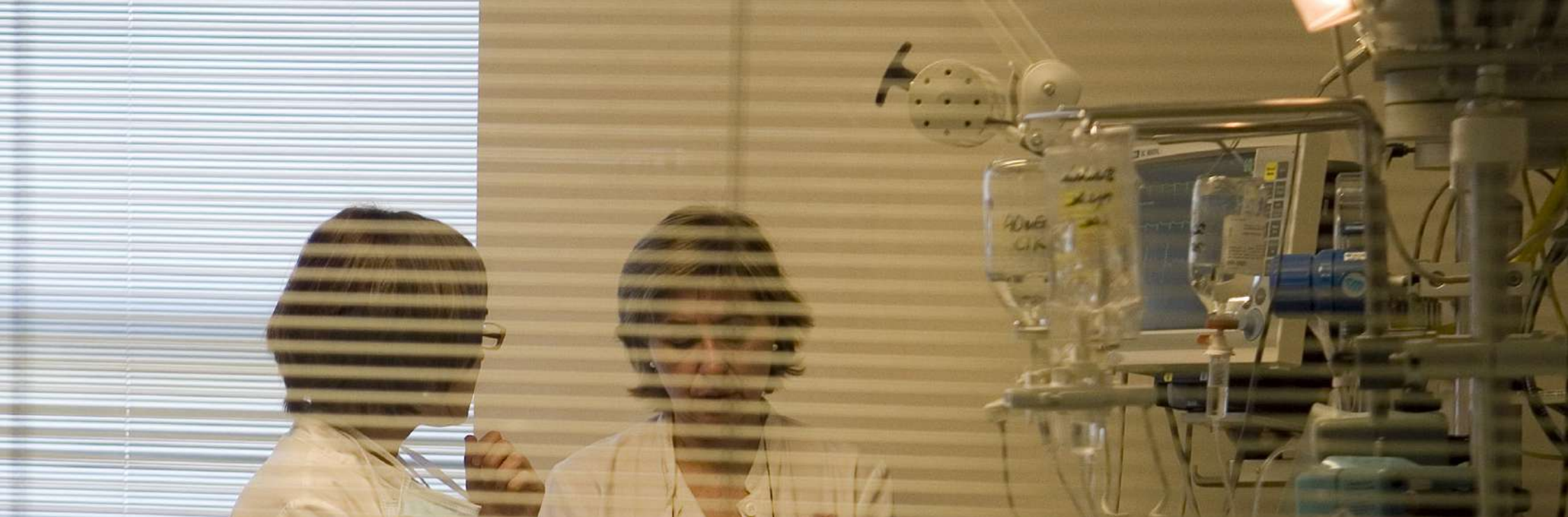
700

Cardiac MRI



1.700

Stress test



Professionals

Our core values are the vocation of patient service and respect for people and rely on the intense teamwork of our group and the ambition for excellence and excellence.

The department comprises a strong team of professionals from various cardiac subspecialties, (cardiovascular surgeons, interventional cardiologists, non-interventional cardiologists, cardiovascular intensive care professionals), and specialized nurses, among others, capable to treat all types of heart diseases.

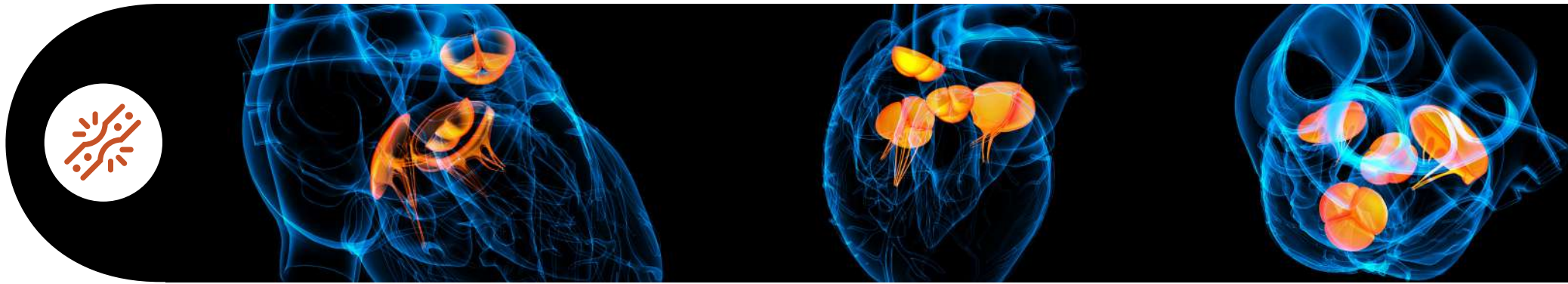
Our prestigious and devoted professionals, researchers and teachers in the Cardiovascular field are international opinion leaders in all the subspecialties.

Our multidisciplinary team has extensive experience in the patient centered care and is completely committed to the patient process during the treatment but also to the post-procedural care.

We are known to deliver a professional, individualized and compassionate care to all patients.



Leading services



HEART VALVE DISEASE

- Aortic Stenosis
- Aortic Insufficiency
- Mitral Insufficiency
- Mitral Stenosis
- Tricuspid Valve Disease

SERVICES



Imaging diagnostics: ultrasound, stress tests, CT scan, cardiac MR, hemodynamics (cath lab)



Medical treatment: follow ups



Percutaneous intervention treatment: Implant of valve prosthesis, valve repair devices, percutaneous closure of paravalvar leaks.



Minimal invasive Cardiac surgery targeted at repair and substitution in mitral disease



Open heart surgery targeted at the substitution with valvar prosthesis or homograft valves transplant (valvar transplant) in valve disease



Second opinion



Pre- and post-operative rehabilitation

Leading services



HEART RHYTHM DISEASE

- Atrial fibrillation
- Other supraventricular tachycardias
- Ventricular tachycardia
- Artificial cardiac pace makers and defibrillators
- Pace-makers and desfibrilators (ICD)
- Bradicardia

SERVICES



Imaging diagnostics: monitoring of ambulatory ECG, echocardiography, stress tests, CT scan, cardiac MR, electrophysiological studies



Medical treatment with medication



Percutaneous intervention treatment: ablation of arrhythmias



Prevention of embolism in patients with atrial fibrillation: treatment with anticoagulants and percutaneous closure of left atria



Surgical treatment: Minimal invasive surgery targeted at atrial fibrillation and combined treatment for valve disease (valve repair and substitution)



Implanting and follow up with artificial cardiac pace makers and defibrillators



Second opinion

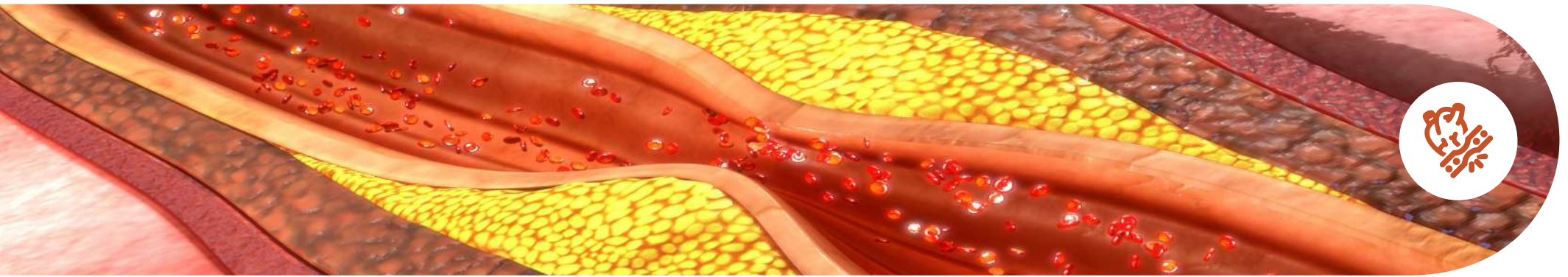


Evaluation of sudden cardiac death



Familiar Arrhythmic diseases







Leading services



CORONARY ARTERY DISEASES

- Myocardial infarction and acute coronary syndrome
- Chronic ischemic cardiopathy
- Angina pectoris
- Coronary bypass
- Coronary stenting
- Total coronary chronic occlusion

SERVICES

-  Imaging diagnostics: echocardiography, stress tests, CT scan, cardiac MR, catheterization
-  Medical treatment with medication
-  Percutaneous intervention treatment: angioplasty and coronary stenting
-  Surgical treatment: surgery of coronary artery bypass grafting (CABG)
-  Second opinion
-  Pre- and post-operative rehabilitation









Leading services



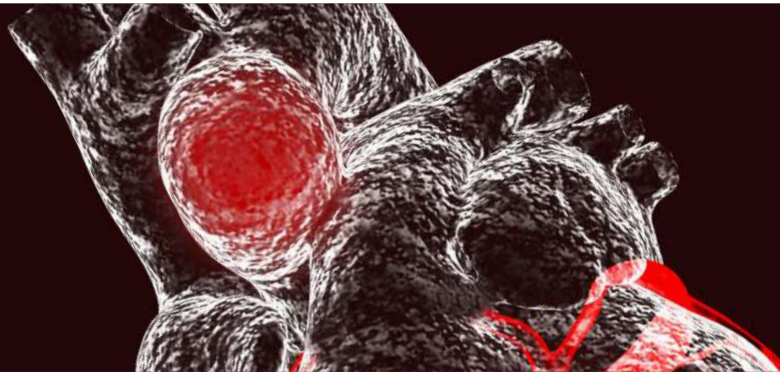
HEART FAILURE

- Hypertrophic cardiomyopathy
- Amyloidosis and other forms of cardiomyopathy
- Dilated cardiomyopathy
- Ischemic cardiomyopathy
- Familial cardiomyopathies

SERVICES

-  Image diagnostics: echocardiography, stress tests, CT scan, cardiac MR, catheterization, electrophysiological studies
-  Medical treatment: follow ups
-  Percutaneous intervention treatment: angioplasty and coronary stenting, alcohol septal ablation in hypertrophic cardiomyopathy (myectomy)
-  Surgical Treatment: Minimal invasive surgery targeted at repair and substitution with valve in secondary mitral disease
-  Surgical treatment: surgery of coronary artery bypass grafting (CABG), surgery of ventricular remodeling, surgery for hypertrophic cardiomyopathy (myectomy), cardiac transplant
-  Second opinion
-  Pre- and post-operative rehabilitation
-  Treatment with devices: Left ventricular assist device (artificial heart), Pacing in hypertrophic cardiomyopathy, Resynchronization therapy (CRT) in dilated cardiomyopathy

Leading services



AORTIC DISEASES

- Aneurysm and dilation of thoracic and abdominal aorta
- Dissection of aorta
- Intramural hematoma

SERVICES



Imaging diagnostics: echocardiography, CT scan, cardiac MR, vascular MR (angiography), catheterization



Medical treatment with medication



Percutaneous intervention treatment: endovascular therapy for abdominal and thoracic aortic aneurysms



Surgical treatment: Open surgery for thoracic and abdominal aortic aneurysm



Second opinion









Pre- and post-operative rehabilitation

Leading services

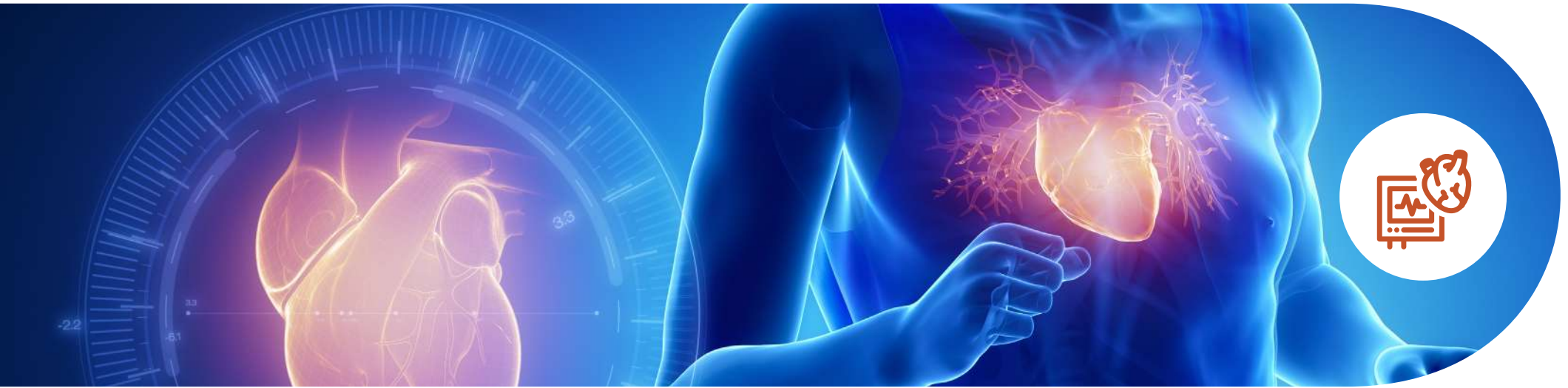


CONGENITAL CARDIOPATHY IN ADULTS

SERVICES






-  Image diagnostics: echocardiography, stress tests, CT scan, cardiac MR, catheterization, electrophysiological studies
-  Medical treatment with medication
-  Percutaneous intervention treatment: implantation of occludes for atrial septal defect, ventricular septal defect, alcohol septal ablation in hypertrophic cardiomyopathy (myectomy), trans catheter pulmonary valve implantation
-  Surgical treatment: Repair and palliative surgery for congenital heart disease, valve surgery, surgery for hypertrophic cardiomyopathy (myectomy)
-  Second opinion
-  Pre- and post-operative rehabilitation

Leading services



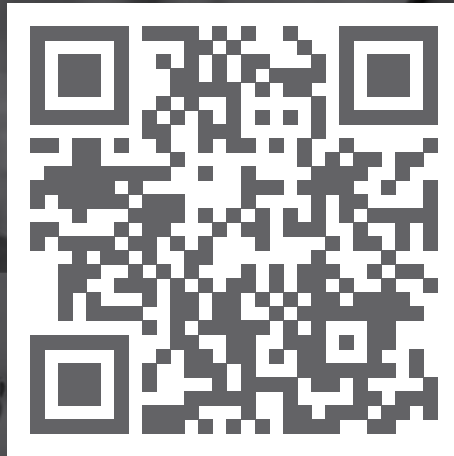
SPORTS CARDIOLOGY

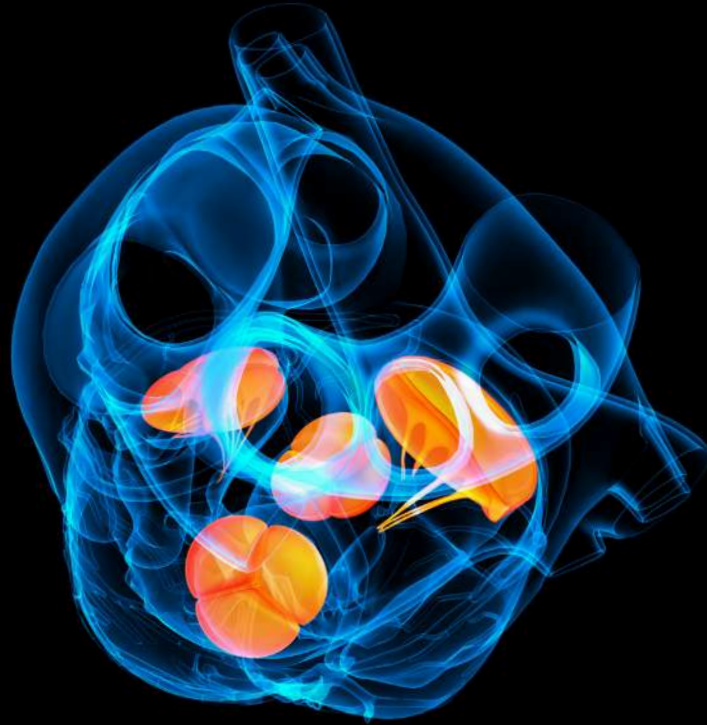
SERVICES

-  Imaging diagnostics: echocardiography, stress test, CT scan, cardiac MR, catheterization, electrophysiological studies
-  Pre-participation screening
-  Evaluation of exercise capacity in athletes with heart disease (assessment and counselling)
-  Specific care and treatment of cardiovascular disease in professional and amateur athletes
-  Second opinion

MEDICAL EXCELLENCE AND INNOVATION

IF YOU WANT TO KNOW MORE ABOUT US,
SCAN THE QR CODE...





MINIMALLY INVASIVE CARDIAC SURGERY

Minimally Invasive Mitral Repair

The Hospital Clinic of Barcelona was one of the first centers in Europe to initiate a program of minimally invasive mitral valve surgery back in 1997. Since 2012 we started the program of advanced minimally invasive mitral repair and currently we are able to offer a minimally invasive repair to the vast majority of patients requiring a surgical intervention on their mitral valve with state-of-the-art technology and results. We are able to perform this type of repair even in the most difficult subsets of indications such as elderly patients, reoperations, endocarditis and Barlow's disease.



Activity

Our Hospital is a leading institution in mitral valve repair, both nationally and internationally, and has been appointed by the Spanish Ministry of Health as a nationwide center of reference for complex mitral repair uninterruptedly since 2010 when this recognition was first created, with our results being audited yearly to renew this certification. (<https://www.msssi.gob.es/profesionales/CentrosDeReferencia/CentrosCSUR.htm>).



Minimally Invasive Mitral Repair



INDICATIONS



DEGENERATIVE MITRAL REGURGITATION OR MITRAL PROLAPSE

- Includes fibroelastic deficiency, mitral prolapse and Barlow's disease
- It's the most common valve disease and the n°1 indication for mitral repair in Europe
- Near 100% repair chance in our institution.



RHEUMATIC MITRAL DISEASE

- As a consequence on rheumatic fever many years before mitral dysfunction appears
- May cause mitral stenosis (narrowing), regurgitation or both
- Most frequently requires valve replacement with a prosthesis: mechanical or biological



FUNCTIONAL AND ISCHEMIC MITRAL REGURGITATION

- As a consequence of a diseased cardiac muscle, most commonly after a myocardial infarction
- In most cases the valve can be repaired



Personnel

Our strategy involves a multidisciplinary team approach focused in treating this pathology to assure we achieve the best possible individual outcomes. All patients are treated by a multidisciplinary team including surgeons, anesthesiologists, cardiologists, physiotherapists and nurses, combining their knowledge and skills to provide the best possible care.





Resources

Mitral repair is an open-heart operation performed under cardiopulmonary bypass (with a heart-lung machine) and the heart arrested.

The cardiac surgery department has its own postoperative intensive care unit exclusive for cardiac surgery patients and run by our cardiac surgery staff. This way we can provide continuous surgical care 24/7 to all of our patients, including emergency establishment of extracorporeal life support.



Minimally Invasive Mitral Repair

OUR BASIC APPROACH



3-4cm incision between ribs / periareolar



No rib retraction needed (less postoperative pain)



High-Definition thoracoscopic video assistance



Cardiopulmonary bypass established through the femoral vessels using a 2-3cm incision in the groin



Continuous intraoperative transesophageal 3D echocardiography



Patients are extubated in the OR immediately after the operation



THORACOSCOPIC VISUALIZATION

- High definition intracardiac imaging (3D)
- Provides the greatest anatomical detail
- Greater surgical precision

Minimally Invasive Mitral Repair



BENEFITS



Better cosmesis (nearly invisible in women, below breast incision)



Shorter mechanical ventilation and better respiratory function



Less pain



Faster return to normal activities and work



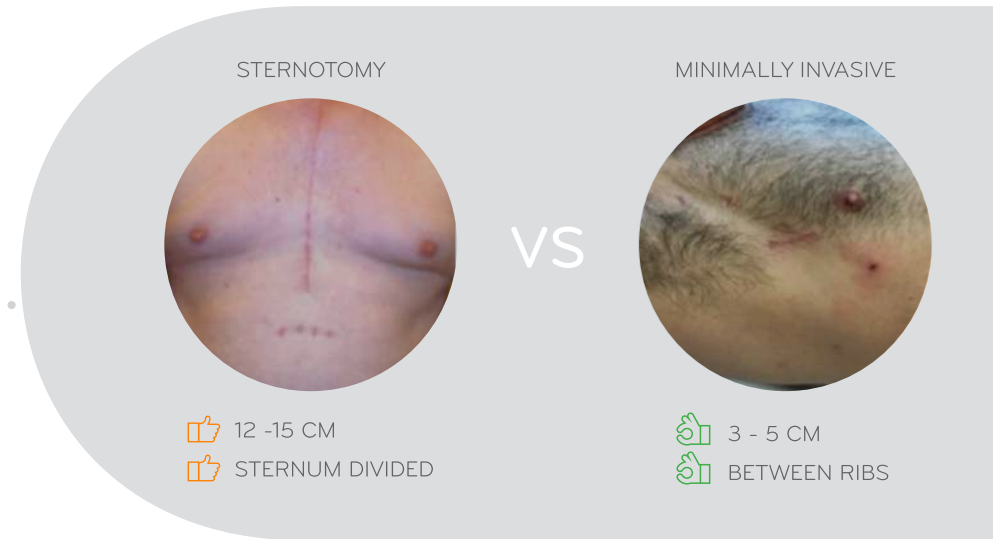
Less blood loss and transfusions



Lesser incidence of wound infection



No mediastinitis or sternal dehiscence



Estimated time frame



PREOPERATIVE EVALUATION

- Interview with cardiologist, anesthesiologist and the surgeon.
- Transthoracic or transesophageal echocardiography
- Coronary angiogram (cardiac catheterization or CT-angiography)
- Thoraco-abdominal multi-slice CT



ICU STAY

2 days



HOSPITAL STAY

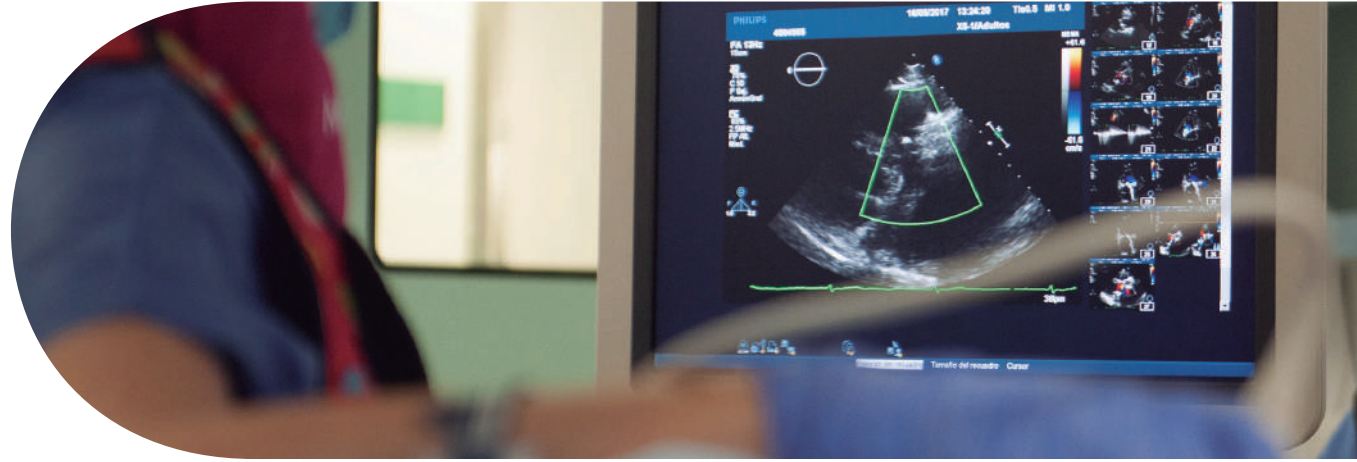
5 days



IN BARCELONA

10 days

Process



- 1 Preoperative evaluation
- 2 Surgical Consultation
- 3 Interview with a cardiac anesthesiologist specialized in these procedures before the operation
- 4 Specifically designed and equipped operating theater
- 5 Strict postoperative follow-up at ICU and ward
- 6 Postoperative long-term follow-up of the patients in communication with the patient's local cardiologist

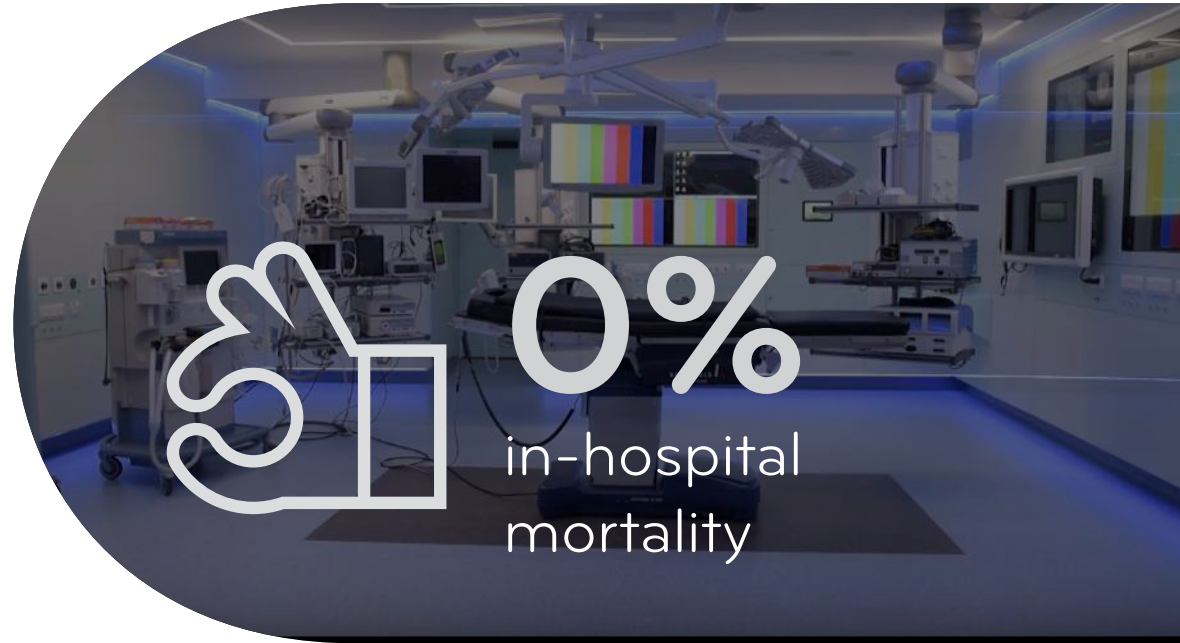
Our results

 **>30%**

of our patients are complex
(with anterior or bileaflet prolapse)

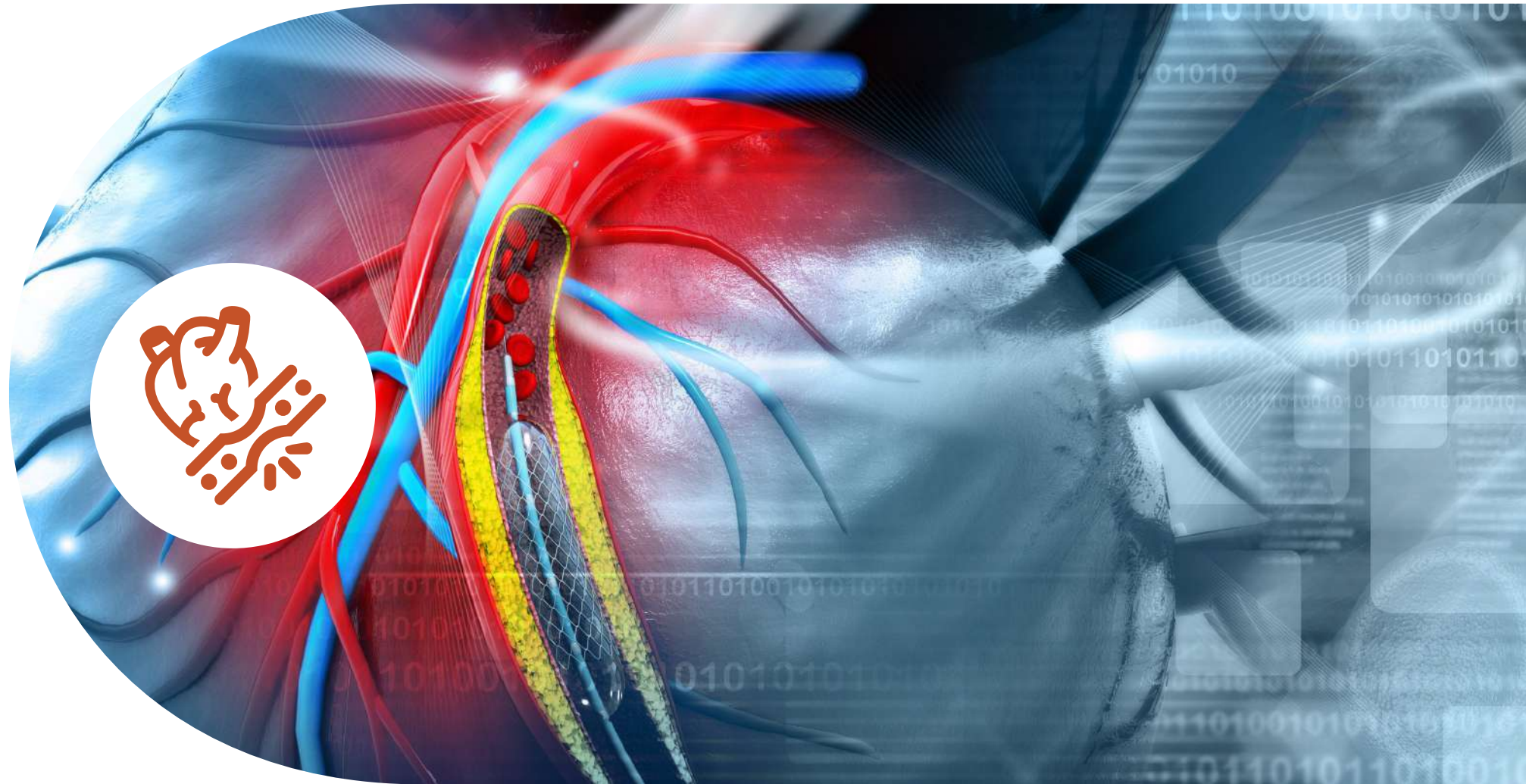


100%
repair success rate



Cases with mitral prolapse

>90% freedom of recurrence
20 years after the surgery



INTERVENTIONAL CARDIOLOGY





Activity

- The treatment of cardiac structures other than coronary arteries has experienced a major development within the last 10 years. Transcatheter aortic valve implantation (TAVI), Mitral repair (Mitraclip), closure of residual para-valvular leaks after cardiac surgery and other interventions can be currently performed through catheters. Once again, our institution has led this field in Europe and offers all available techniques with a highly experience medical team.
- The experience of one of the largest and best equipped University Medical Centres in Europe





Personnel

The department comprises a strong team of professionals from various cardiac subspecialties to treat all types of heart disease.

The medical team is 100% dedicated to Hospital and patient care. Our doctors are international opinion leaders in percutaneous cardiology interventional.

The medical team have extensive experience in the care of cardiac patients and committed to the intervention process but also to the post-procedural care.

The most prestigious and devoted professionals, researchers and teachers in the Cardiovascular field Known to deliver a very professional, individualized and friendly nursing care to all patients



Lines of care



CORONARY ARTERY DISEASE

Cardiac ischemic disease is one of the leading causes of death in developed countries. The treatment of coronary narrowing/occlusions with catheters has become a first-line treatment in several situations. Our center has pioneered and led this field during the last 30 years offering last generation treatments for ischemic disease.



VALVE DISEASE (TAVI, MITRACLIP...)

The treatment of cardiac structures other than coronary arteries has experienced a major development within the last 10 years. Transcatheter aortic valve implantation (TAVI), Mitral repair (Mitraclip), closure of residual para-valvular leaks after cardiac surgery and other interventions can be currently performed through catheters. Once again, our institution has led this field in Europe and offers all available techniques with a highly experience medical team.



LEFT ATRIAL APPENDAGE OCCLUSION

Left atrial appendage occlusion is probably one of the interventional techniques with a higher expansion worldwide. This technique is mostly oriented to patients with atrial fibrillation in whom oral anticoagulation might produce or has already produced a health problem (mostly bleedings).



ADULT CONGENITAL DISORDERS

Our hospital has created a strategic alliance with the reference kids hospital Sant Joan de Déu. All congenital patients over 18 years are followed and treated in our institution. Medical cooperation between adult and pediatric interventionalists is a pivotal factor to achieve the excellence in this kind of procedures.



TEACHING /RESEARCH

- Course organization, International fellowship, Invited lectures.
- The Hospital Clinic of Barcelona has always shown by a major interest in research projects. Our medical staff has contributed and published in several national and international medical journals in all aforementioned fields.
- >100 research manuscripts published in national/international journals per year.

Equipment



HOSPITAL ROOMS



DAY HOSPITAL



SPECIFICALLY
ORIENTED INTENSIVE
CARE UNIT



HIGHLY TRAINED
INTERVENTIONAL
CARDIOLOGY TEAM



LAST GENERATION
CATHETERIZATION
LABS



STATE OF THE ART
IMAGING MODALITIES:
3D echocardiography,
cardiac tomography and
magnetic resonance.



24 HOURS HEART
TEAM:
Surgeons, anesthesiologists,
imaging experts and clinical
cardiologists.



Process

- A Clinical Evaluation
- B Complete pre-procedural test/ imaging
- C Non-invasive cardiac intervention
- D Strict post-operative follow-up with the safest surveillance protocols depending on the type of intervention

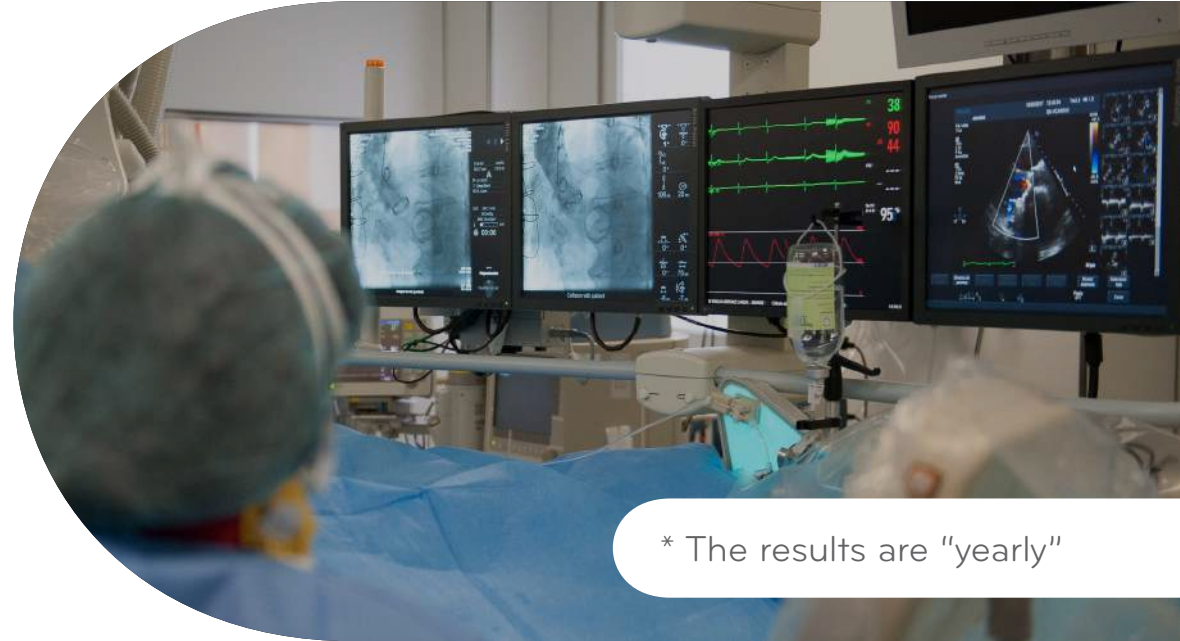
Outcomes/ Our results

Coronary Artery Disease:



3.500

Diagnostic catheterizations



* The results are "yearly"



1.500

percutaneous coronary interventions

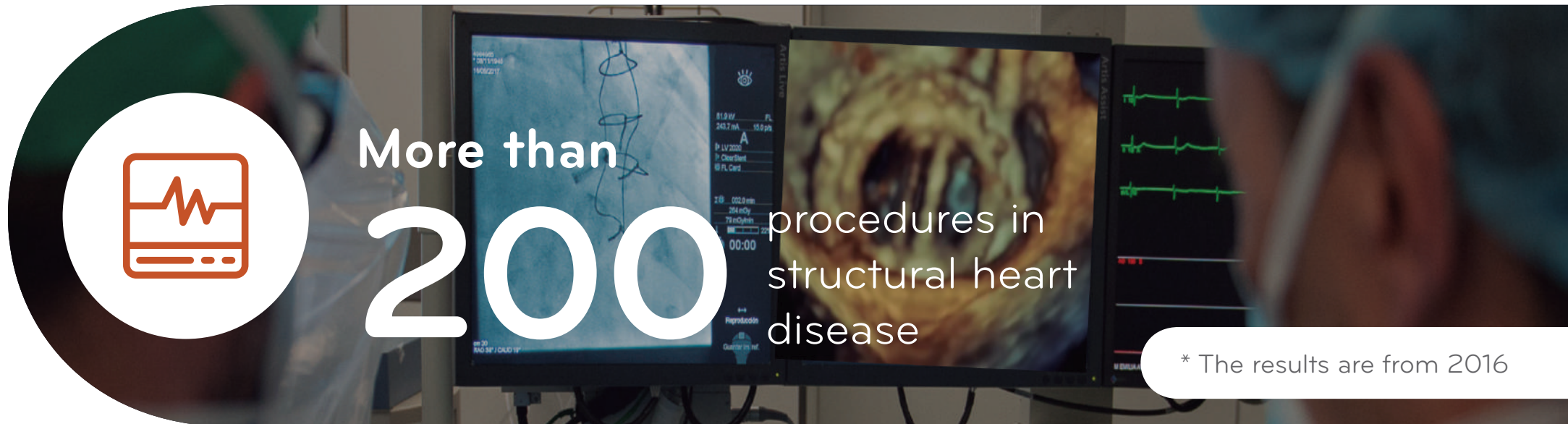


550

primary angioplasties in acute myocardial infarction

Outcomes/ Our results

Structural Heart Disease:



1st

Percutaneous tricuspid valve repair in Spain



1st

Mitraclip implantation in Catalonia



Leading

structural program in Spain

Outcomes/ Our results

Left atrial appendage occlusion:

More than

100

procedures, including
international proctorship



100%

of procedural
success



<1%

pericardial
effusion



0%

in-hospital
mortality

Outcomes/ Our results

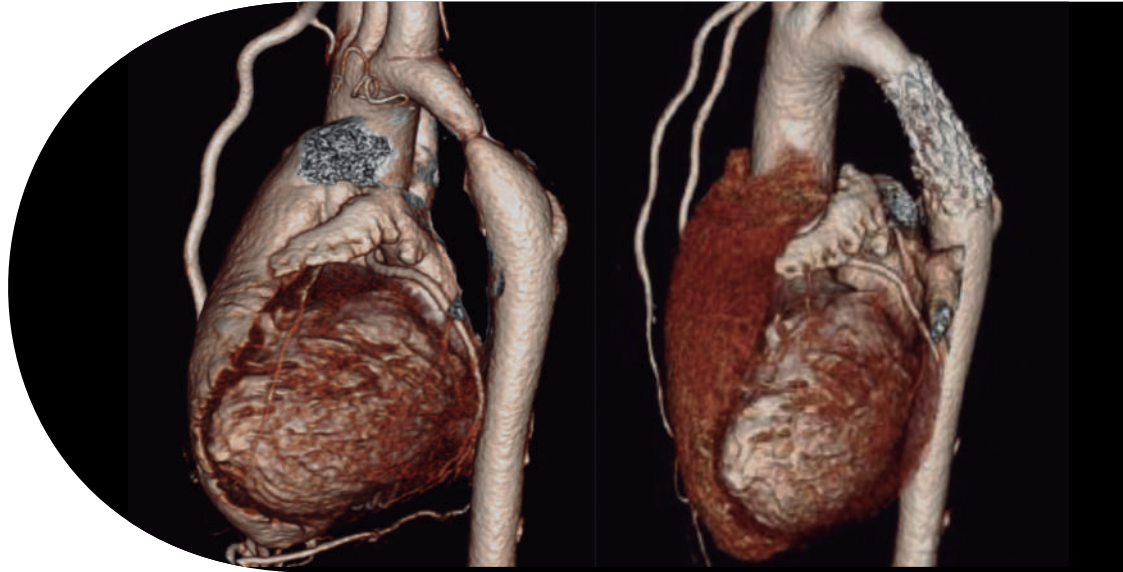
Adult Congenital Disorders

More than

50



procedures last year



* The results are "yearly"



0%

in-hospital mortality



Reference center

for adult congenital disorders
for all Spain (CSUR)



0%

complications



Enhanced safety

Combined staff of adult and pe-
diatric interventional cardiologists



SPORTS CARDIOLOGY

Since the creation of the Group of sports cardiology at the Hospital Clinic in 2009 to present, its clinical, teaching and re-search activity has become one of the European references and opinion leader in this area. The approach of a joint evaluation by a multidisciplinary team makes our experience unique. The multidisciplinary team include sports physicians, non-invasive cardiologists mastering the area of cardiac imaging and invasive cardiologists with internationally renowned expertise in the field of arrhythmia. Additionally, the back of the whole team at the Cardiovascular Institute provides all the potential therapies currently available such as percutaneous or minimally invasive surgery for congenital heart disease, arrhythmia ablation or valve disease treatment.

Our team addresses not only the prevention of heart disease in athletes by our preparticipative screening programmes but also, the personalized treatment of cardiac disease in athletes, a subset of subject who deserve and specific and tailored approach adapted to their needs.





Activity

Our group has evaluated more than 6,000 competitive and amateur athletes during the last 6 years, from all nationalities and etnies. Our partnership with the **Catalan Council for Sports** (Catalan Government) and **FC Barcelona** has provided the opportunity to quickly be imbedded in the world of high performance sport.

A regular and routine screening is perfromred at the corresponding sportive centers and whenever an abnormality is detected, the subject is transferred to our Cardiobvascular Institute where a second line of tests and specific treatments can be provided.



Personnel

The medical team is 100% dedicated to the hospital. Athletes are always evaluated by the same team of doctors, all members of the Group of Sports Cardiology are sub-specialized and have extensive experience in alterations that are associated with high-level athletes.



Lines of care



PRE-PARTICIPATION SCREENING

The assessment of each athlete by a cardiac evaluation including interview, physical exam, 12-lead ECG, echocardiogram and stress test; this comprehensive evaluation rules out most of the diseases that cause sudden death in athletes. Our group has extensive experience in this area.



TREATMENT OF HEART DISEASE IN ATHLETES

Our Unit has extensive experience in the treatment of heart diseases in athletes taking into account the special characteristics of this group and always considering the equilibrium between willingness of continuing sport practice and the safety of the athlete:

- Arrhythmias
- Valve Disease
- Congenital heart Disease
- Cardiomyopathy



TEACHING

- Course organization
- Fellowship
- Dissemination activities among sports physician and exercise physicist



RESEARCH

- Adaptation of the heart to exercise
- Pre-participation screening; utility, teaching and safety
- Potential harm on the heart:
 - Atrial fibrillation pathogenesis; research in animal model (marathon rat) and athletes
 - Ventricular fibrosis

Equipment



ECHOCARDIOGRAPHY
WITH STATE OF THE
ART MODALITIES: 3D,
strain imaging, Tissue
Doppler Imaging



EXERCISE
ECHOCARDIOGRAPHY



TREADMILL STRESS
TEST
CARDIAC
MAGNETIC RESONANCE



CARDIAC TOMOGRAPHY
Non invasive
coronariography



ELECTROPHYSIOLOGICAL
STUDY
Diagnosis & treatment
arrhythmias



AMBULATORY
CONTINUOUS
ECG
MONITORING



CORONARY
ANGIOGRAPHY



CARDIAC SURGERY
AND PERCUTANEOUS
THERAPY OR



Process

A

ONE STOP CLINIC FOR PRE-PARTICIPATIVE SCREENING - **1 HOUR EVALUATION**

- Focused clinical interview and physical examination
- 12-lead ECG
- Echocardiography
- Stress test

B

2ND LINE (WHENEVER ABNORMALITIES ARE FOUND IN STEP 1) - **1 WEEK**

- Cardiac magnetic resonance
- Cardiac Tomography
- Electrophysiological study
- Ambulatory continuous ECG monitoring

C

EXPERT OPINION

Our results

Screening in

+6.000

Athletes



10 % International elite

ABNORMAL
FINDINGS



10%
athletes

GLOBALLY



1 of 40

Requires 2° line of investigation



1 of 160

Requires specific treatment for continuing sport practice



1 of 350

Had a severe heart disease and was disqualified for sport practice



barnaclínica+

GRUP HOSPITAL CLÍNICA



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