

国家心血管病中心
中国医学科学院阜外医院
外科年度报告



FUWAI HOSPITAL, CAMS
NATIONAL CENTER FOR CARDIOVASCULAR
DISEASES, CHINA

CARDIOVASCULAR
SURGERY
OUTCOMES
2017

连续8年位居

“中国医院最佳专科声誉排行榜”

心外科第一！

Ranked #1 in **Cardiovascular Surgery**
on “China Best Hospital Leaderboard”

BEIJING, P. R. CHINA

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国家心血管病中心 中国医学科学院阜外医院

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序言 PRESIDENT'S ADDRESS

The surgical department of Fuwai Hospital has released outcomes reports each year since 2007. These reports are important not only to better inform our patients but also to facilitate self-monitoring and self-improvement.

“Quality and Innovation” is the eternal philosophy of our surgical team. In 2017, as with every year, the Fuwai surgical team worked hard and heartedly to provide more patients with better service and better medical solutions. As the national leader in the field of cardiovascular disease, we continued to focus on the application of the latest technologies and quality improvement to maximize the efficacy of our treatments. Outcomes 2017 includes highlights of the past productive year and provides a comprehensive summary of our work ushering in a new era of better medical service.

Fuwai Yunnan Cardiovascular Hospital and Fuwai Central China Cardiovascular Hospital/Central China Subcenter of National Center for Cardiovascular Diseases opened successively in 2017. The success of these projects is an important step in expanding access to medical resources throughout China. Since the establishment of Fuwai Hospital in 1956, generations of physicians have worked conscientiously for the prevention and treatment of heart disease, building the hospital into today's national center and a leader in cardiovascular disease prevention, treatment, and scientific research in China.

Thank you to all my colleagues at Fuwai Hospital for your hard work and dedication during 2017. I would also like to acknowledge those who have provided constructive feedback on the annual outcomes reports; we sincerely appreciate your concern and the assistance.

自2007年起，阜外医院外科每年都对大众公布年度业绩报告。年度报告的回顾总结，不仅能使患者获得了我们团队医疗质量的信息，也受到了同行和卫生工作者们的关注，成为医院督促自身提升高效和优质医疗服务的途径。

“品质与创新”是阜外外科团队永恒的目标。2017年，秉承着对这一目标的不懈追求，阜外心脏外科团队一如既往的通过努力和奉献，救治了更多的患者，提供了更好的医疗服务。

《阜外医院外科年度报告2017》对阜外外科团队过去一年里卓有成效的工作进行了总结。我们深知报告中所展示的业绩，并非是我们团队努力的终点；相反，那只是我们在为患者提供更好服务的长远征程中的新起点。

2017年对于阜外医院而言，是新时代开启新征程的关键一年。在这一年，云南阜外心血管病医院和阜外华中心血管病医院、国家心血管病中心华中分中心相继开业，这是阜外医院贯彻“以预防为主，以基层为重点”的国家卫生健康事业总方针，努力使优势医疗资源下沉的重要举措。自1956年建院以来，一代代阜外人，秉承着对“用心守护健康”这一目标的不懈追求，兢兢业业，甘于奉献，救治了无数心脏病患者，铸就了“敬业、仁爱、求实、攀登”的“阜外”精神，将阜外建设成为了我国心血管疾病预防、治疗和科研的领导团队。阜外医院将继续遵循践行以病人为中心，创新关键医疗技术，加强心血管疾病防治工作，制定适合我国国情和病人特点的治疗及预防指南与标准，培养合格优秀的心血管病领域的人才，为打造心血管病医学技术知识传播、生产、转化与应用的国际一流的心血管医学中心而努力奋斗！

再次感谢阜外团队的每位成员在过去一年的辛勤付出，感谢所有帮助阜外发展的同行与朋友的支持！



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2017年数读阜外
SERVICE CAPACITY OF FUWAI

41



病房
Wards

1,238



床位
Beds

26



手术室
Operation Room

13



导管室
Catheter Lab

14,899



2017外科手术量
Surgical Volume
in 2017

47,489



2017介入诊疗量
Intervention
Procedures in 2017

703,488



门诊量
Outpatient Visit

66,762



住院人数
Admissions

发展历程 History

In 1956, the predecessor of Fuwai Hospital, the Chest Hospital of the Chinese People's Liberation Army (PLA), was founded in the Heishanhu area of Beijing.

1956年，医院的前身中国人民解放军胸科医院于黑山扈成立。



1956



In 1962, Fuwai Hospital was designated as an Institute for Cardiovascular Diseases, identifying it as a hospital specializing in cardiovascular diseases that integrates both patient care and medical research.

1962年，医院兼称心脏血管系统疾病研究所，形成院所一体化的心血管病专科医院。

1962

In 2004, the Cardiovascular Disease Prevention, Treatment and Research Center affiliated to the Ministry of Health was established, marking the official recognition of our hospital as a national institution specializing in cardiovascular disease and integrating medical care, scientific research, medical education, and disease prevention.

2004年，卫生部心血管病防治研究中心成立，标志着我院成为集医疗、科研、教学、预防为一体的国家级心血管病专科医院。

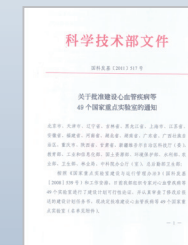


2004



In 2011, the State Key Laboratory of Cardiovascular Diseases joined Fuwai Hospital.

2011年，心血管病国家重点实验室落户阜外医院。



2011



In 2014, Fuwai Cardiovascular Hospital, Chinese Academy of Medical Sciences was renamed Fuwai Hospital, Chinese Academy of Medical Sciences, National Center for Cardiovascular Disease. The hospital began operating under the dual integrated operation model, which is based on the "two independent legal persons, one administration system."

2014年，中国医学科学院阜外心血管病医院更名为中国医学科学院阜外医院。国家心血管病中心，中国医学科学院阜外医院正式进入“两个独立法人，一套行政机构”两位一体的运行模式。

2014

1958

In 1958, responsibility for the Chest Hospital of Chinese PLA was transferred to the local government. The hospital was subsequently relocated to Fuchengmenwai Street, became affiliated with the Chinese Academy of Medical Sciences, and was renamed Fuchengmenwai Hospital Affiliated to the Chinese Academy of Medical Sciences, or Fuwai Hospital for short.

1958年，中国人民解放军胸科医院移交地方，迁至阜成门外，归属中国医学科学院，定名为“中国医学科学院阜成门外医院”，简称“阜外医院”。



1994

In 1994, Fuwai Hospital Affiliated to the Chinese Academy of Medical Sciences was renamed Fuwai Cardiovascular Hospital, Chinese Academy of Medical Sciences.

1994年，中国医学科学院阜外医院更名为中国医学科学院阜外心血管病医院。



2013

In 2013, the Xishan scientific research base was fully launched.

2013年，阜外医院西山科研基地全面启用。



In 2013, the National Clinical Research Center for Cardiovascular Diseases joined Fuwai Hospital.

2013年，国家心血管疾病临床医学研究中心落户阜外医院。



2015



In 2015, the new medical building opened, integrating the clinic, emergency, and surgical systems to efficiently serve an even greater number of patients. The center has become the world's largest cardiovascular center as well as a national cardiovascular center for treatment, prevention, and medical research and education.

2015年，正式启用了集门诊、急诊、住院、手术等为一体的综合大楼，目前已成为世界上最大的心血管疾病诊治中心和集医疗、科研、预防和人才培养于一体的国家级医学研究与教育中心。

概述 Overview



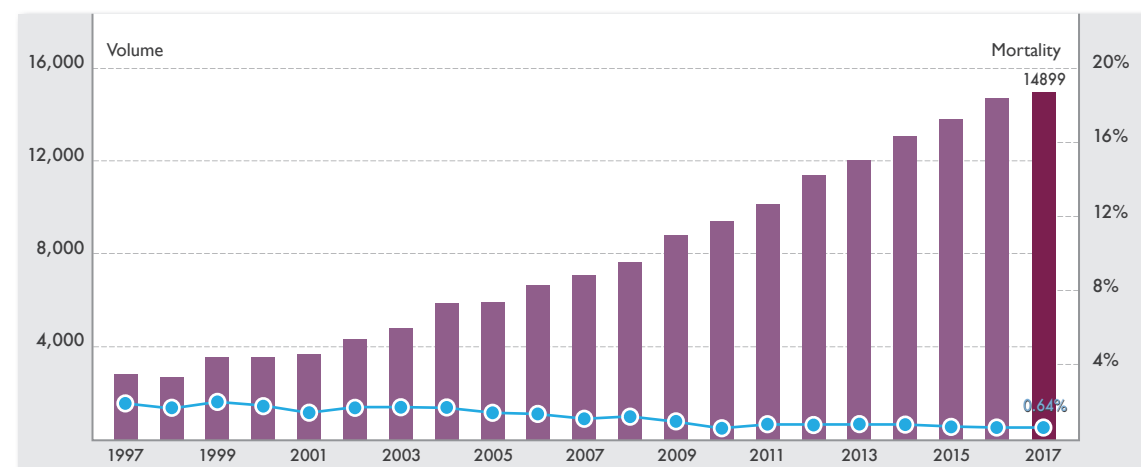
14899

CASE No. OF CARDIOVASCULAR SURGERY 2017

心血管外科手术量 SURGICAL VOLUME

In 2017, the surgical volume of Fuwai Hospital reached 14,899. This was a new milestone for Fuwai Hospital. Thirty-day mortality, which has been below 1% for the past nine years, remained stable.

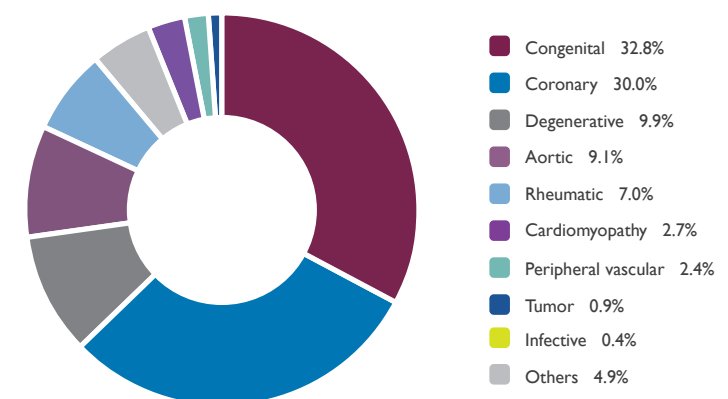
2017年，阜外医院外科手术量达到14899例（不含分院及协作点手术量），居世界各心脏中心前列。在手术量逐年增长的同时，30天死亡率连续9年低于1%。



病因分布 ETIOLOGIC DISTRIBUTION

Fuwai Hospital treated a large number of patients with a variety of cardiovascular diseases, demonstrating the etiologic distribution of cardiovascular surgery in mainland China. Although congenital heart disease has remained the most commonly treated diagnosis at the hospital for years, the number of coronary heart disease patients has increased dramatically.

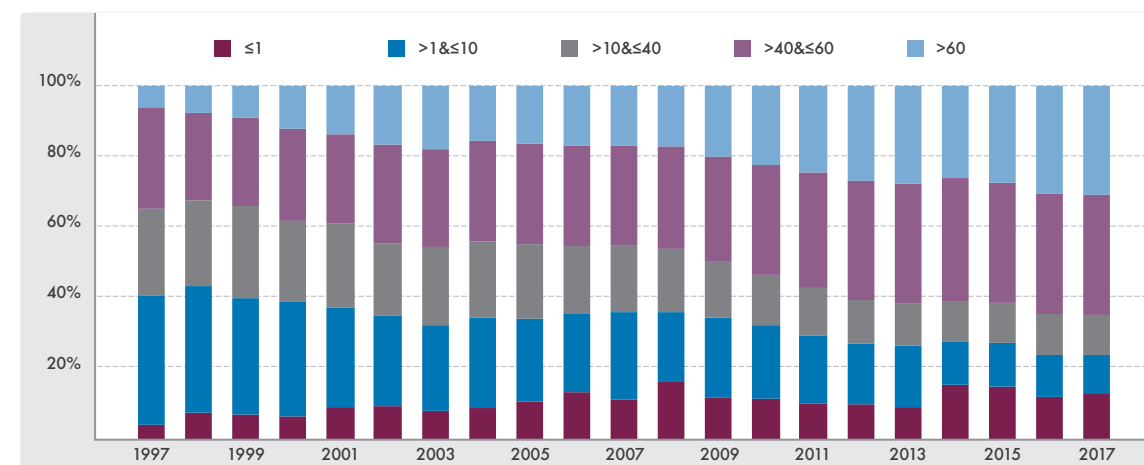
阜外医院心血管外科是全国收治心血管疾病种类最齐全的中心。医院收治患者的病因学分类基本反映出我国大陆地区心血管外科疾病治疗谱。虽然先天性心脏病在外科手术中的占比居于首位，但有下降趋势。冠心病所占比重呈逐年上升趋势。



患者年龄分布 AGE DISTRIBUTION

With the improved healthcare conditions and longer life expectancy in China, there has been an increase in the percentage of patients who are either very young or elderly. The Fuwai surgical team has been dedicated to improving surgical techniques and achieving better clinical outcomes for these patients at increased operative risk.

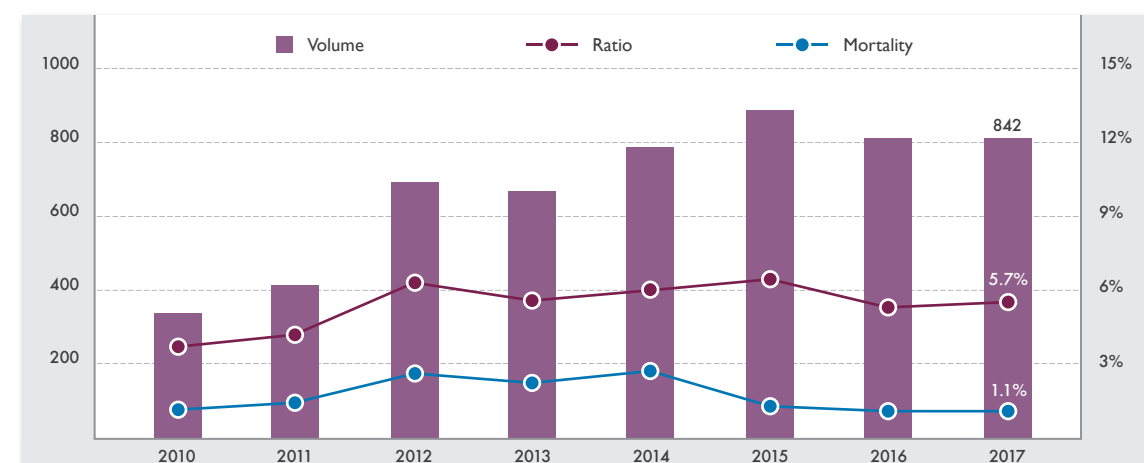
随着我国居民健康水平的不断提高和平均寿命的延长，低龄患者的早期诊治和高龄患者就医条件的改善促使患者年龄分布呈现两极分化的趋势，患者手术风险的增高对手术技术水平提出了更高的要求。



急诊手术 EMERGENCY SURGERY

Over the past eight years, the fast track system for emergency surgery has consistently improved, with concomitant increases in surgical volume and decreases in mortality.

近8年来，医院不断优化急诊手术诊疗流程，在急诊手术接诊量呈现总体攀升的趋势下，保证了高水准的医疗质量。



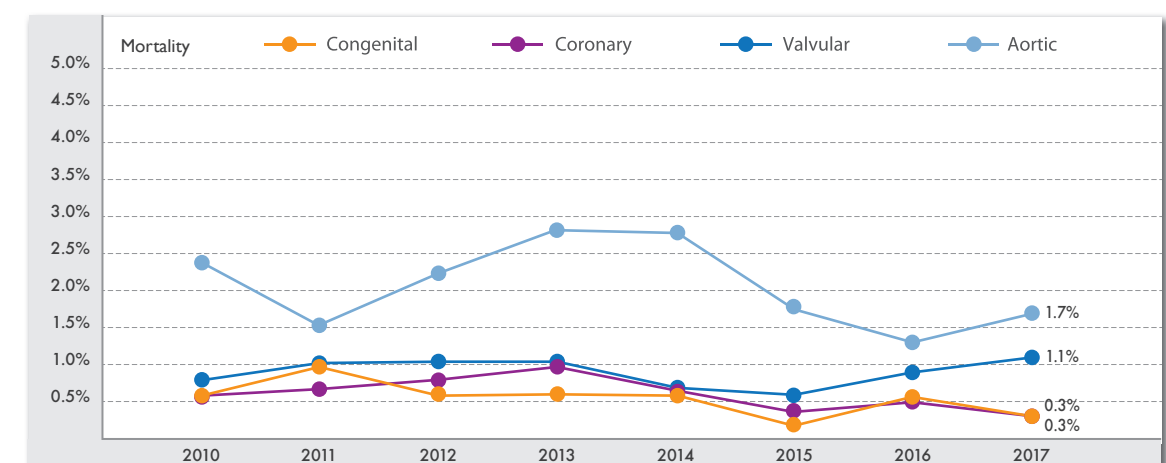
质量控制 Quality & Safety



术种分组死亡率 MORTALITY RATE

With an increased focus on surgical quality control and adjustment of individualized surgical strategies for high risk patients, Fuwai Hospital has achieved clinical outcomes comparable to those of leading cardiac centers worldwide. Thirty-day mortality of isolated CABG in 2017 decreased to 0.3%.

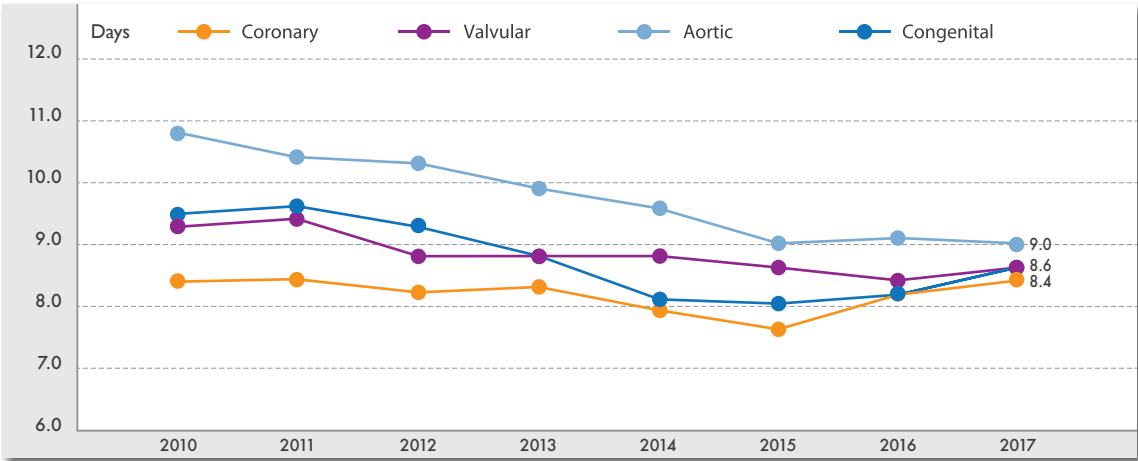
医院加强外科质量控制，努力实现高风险患者的个体化手术策略管理，不同种类心血管手术质量达到世界先进水平，如2017年单纯冠状动脉旁路移植术术后30天死亡率已降至0.3%。



术后住院时长
LENGTH OF POST-OPERATIVE STAY

Adopting advanced techniques can improve the efficiency of clinical practice and help to ensure patient safety and effective use of medical resources. With the focus on surgical advancement and quality, the post-operative hospital length of stay for our patients has gradually decreased in recent years.

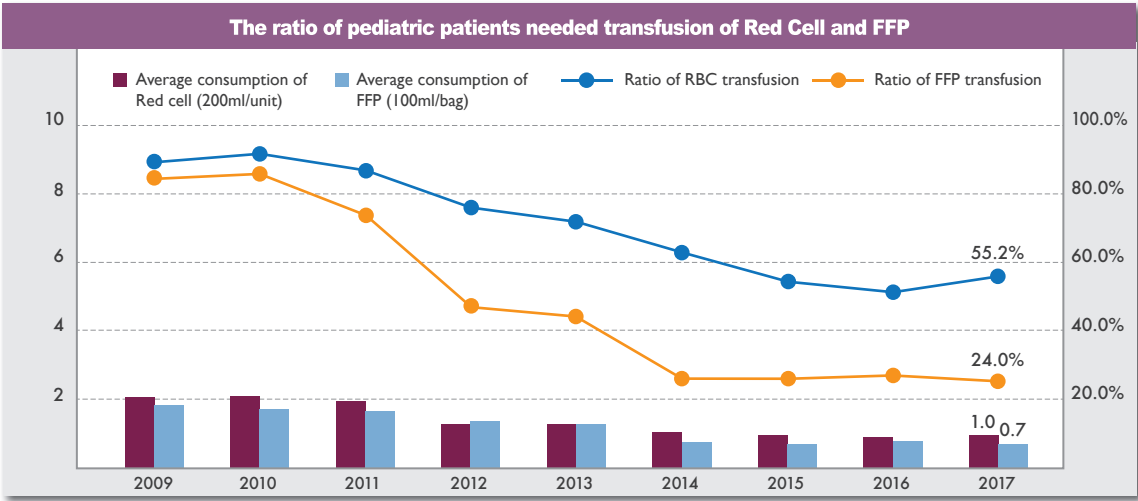
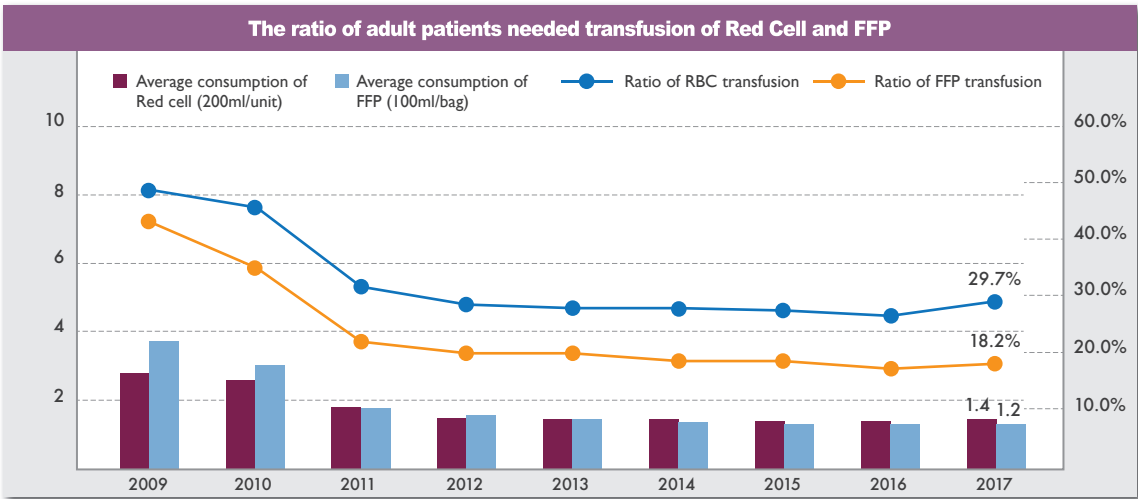
医院力争提高诊疗效率，有效节约医疗资源。近年来各种术后住院时长均呈现总体下降趋势。



手术用血比率及用量
BLOOD PRODUCT USAGE

The average consumption of blood product has noticeably decreased over time and stabilized in recent years, reflecting our improvements in healthcare quality and service.

医院严格把控用血指征，血制品使用比例、人均红细胞及血浆用量呈持续下降，目前已趋于稳定。



信息化途径定期发布医疗质量报告
ROUTINE PUBLISHING OF OUTCOMES REPORTS BY INFORMATION CENTER

Since 2015, the information center of our hospital has pioneered the use of Internet technologies (e.g., the social media software Wechat and Fuwai employee APP) for distributing medical quality reports to every surgeon and ward director. This information alerts teams to the status of their surgical quality and can facilitate timely improvements in medical quality. The reports provide an overview of all surgeries and outcomes of each type of surgery, with performance evaluated according to surgical volume, consumption of blood product, post-operative stay, mortality, complications, etc. With the implementation of this measure, the surgical team can improve the quality of medical care provided at our hospital.

为了外科手术团队能够及时、准确、全面的掌握自身医疗质量情况、不断提升医疗质量水平，自2015年以来，我院信息中心充分利用互联网等信息化手段，率先采用微信、阜外员工APP的方式为每位外科医师和病区主任定期推送医疗质量报告。报告内容分为全部手术情况及单病种手术情况两部分，从手术量、手术用血、术后天数、术后并发症及死亡率等维度为临床提供全方位质控分析及综合评价。此举措实施以来，不仅促进了外科手术团队巩固优势、改善不足，更推动了我院医疗质量水平的持续提高。



先天性心脏病 Congenital Heart Disease



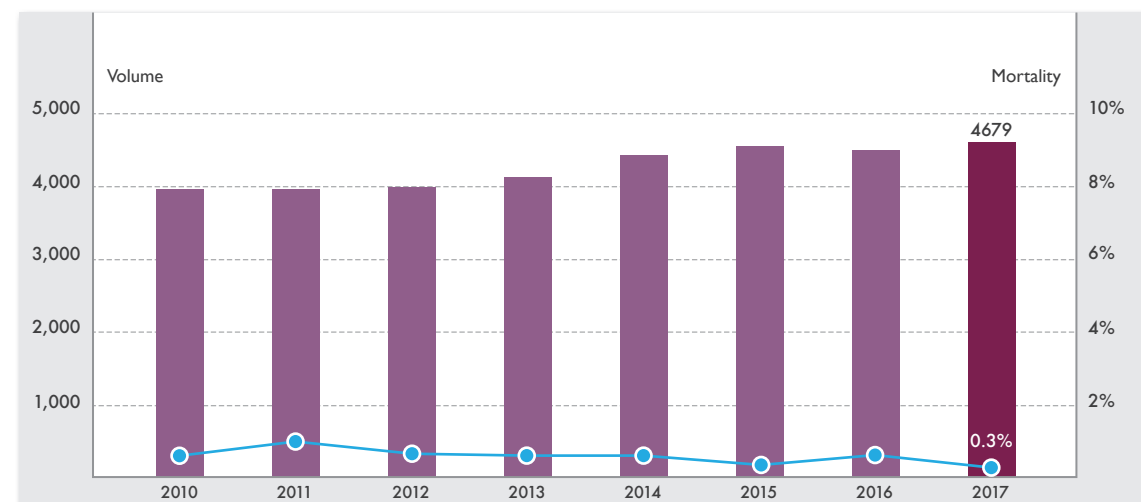
4679

CASE No. OF CONGENITAL HEART SURGERY 2017

先天性心脏病手术 CONGENITAL HEART SURGERY

Congenital heart defect is the most common anomaly of the neonates in mainland China. There are 150,000 to 180,000 newborns diagnosed with congenital heart defects every year in the nation. In 2017, the number of congenital heart surgeries reached 4,679, with an extremely low mortality of 0.3%.

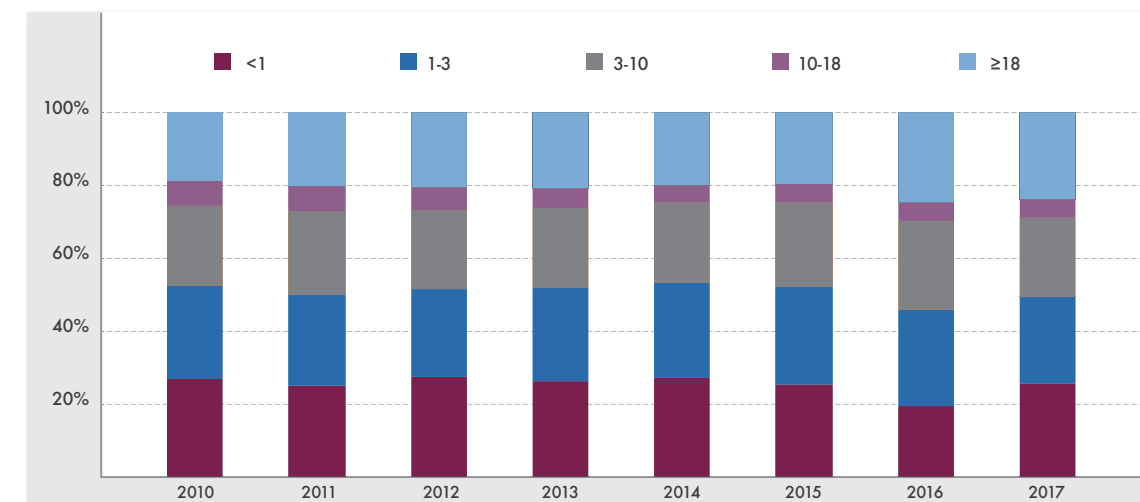
先天性心脏病是中国大陆新生儿最常见的先天性缺陷，全国每年约出生15-18万先天性心脏病患儿。在2017年，阜外医院先天性心脏病手术例数再创新高，达到4679台，而死亡率仅为0.3%。



手术患者年龄分布 AGE DISTRIBUTION

As the number of patients with congenital heart anomaly surviving to adulthood increases, secondary adult congenital heart surgery has become more important and a new trend in congenital heart therapy.

随着手术后的先心病患者数量逐年累积，成人二次先天性心脏病手术所占比例进一步增加，反映了全球先心病外科治疗的新趋势。

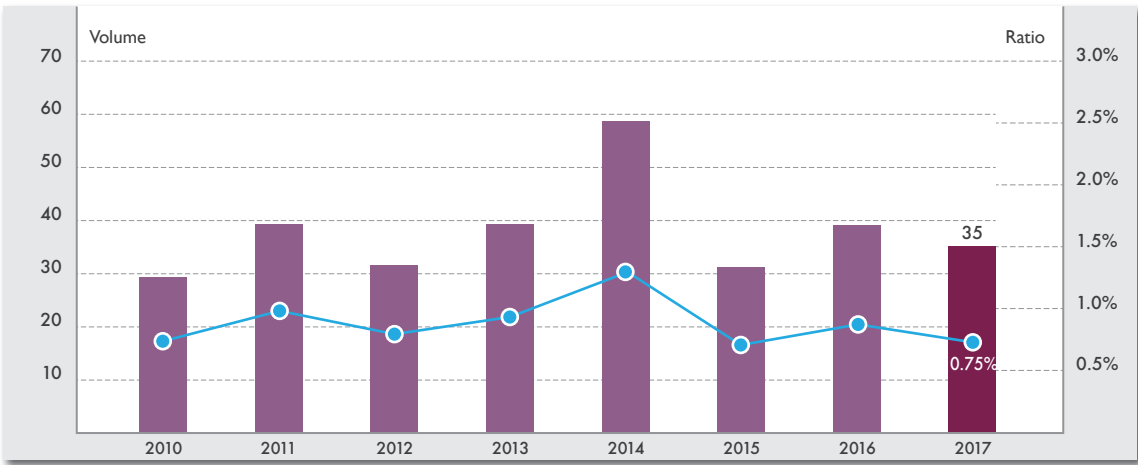


新生儿（年龄≤28天）手术及比率

SURGICAL VOLUME OF NEONATES (≤28D) AND RATIO OF CONGENITAL SURGERIES

Corrective surgery for neonatal patients (≤28d) with complicated congenital heart disease presents a major challenge. The Fuwai surgical team continues to make progress.

新生儿复杂先天性心脏病矫治术无疑是极富挑战性的工作，阜外医院外科团队在这方面取得了很大的进步。

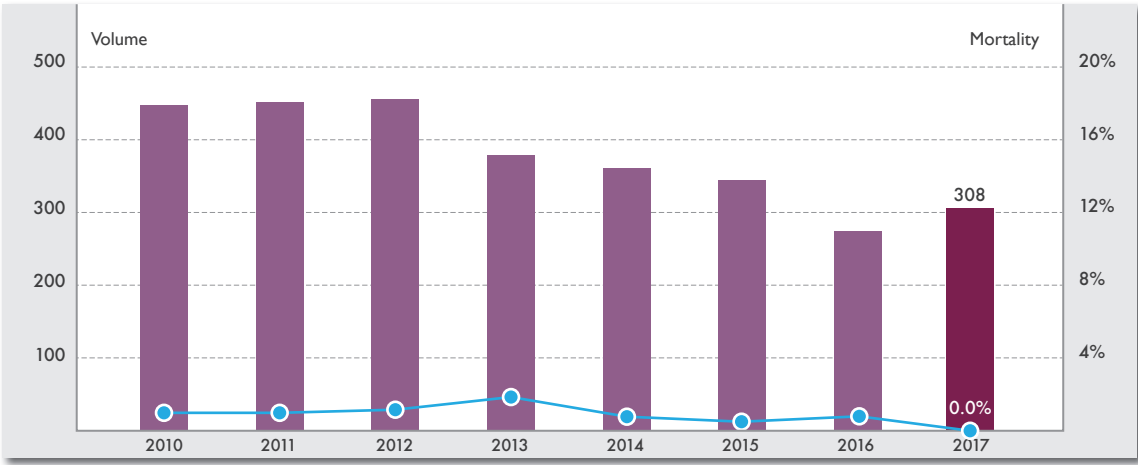


法洛四联症手术

SURGERY OF TETRALOGY OF FALLOT

Tetralogy of Fallot is the most common cyanotic congenital heart disease. The Department of Cardiac Surgery at Fuwai Hospital has broad experience with treating this condition and has produced excellent outcomes. In 2017, the median age of anatomical repair was <1 year, and there was zero perioperative mortality.

法洛四联症是紫绀类先天性心脏病发病率最高的疾病。阜外医院外科在根治法洛四联症方面积累了丰富的经验，并取得了居国际先进水平的治疗结果。2017年接受根治术患者年龄中位数已小于1岁，未有围术期死亡。

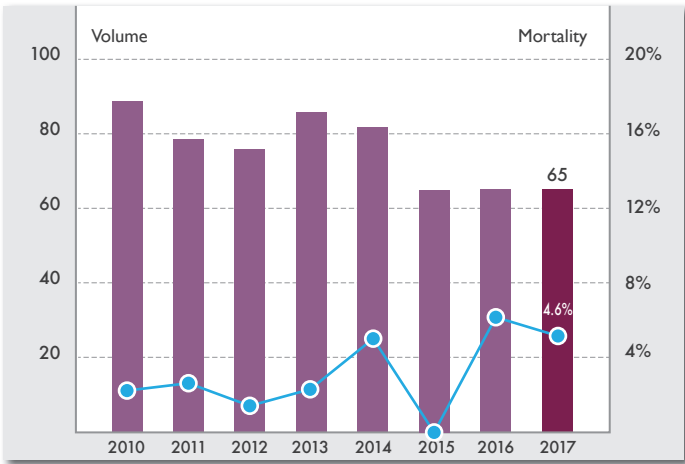


动脉调转手术

ARTERIAL SWITCH OPERATIONS

Arterial switch operation for transposition of the great arteries/ double outlet right ventricle is considered one of the most successful landmark congenital heart surgeries. The Fuwai team has had great success with this procedure and is recognized as one of the best centers performing arterial switch in the world.

动脉调转手术治疗完全性大动脉转位、右室双出口等畸形是先天性心脏病外科治疗中重要的组成部分，是先天性心脏病外科诊治中心成熟的标志。阜外医院在这方面成绩斐然，目前手术效果已居全球领先水平。

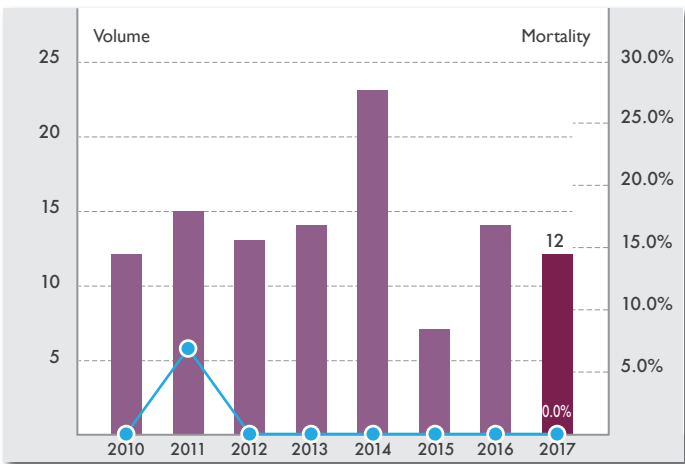


双根部调转手术

DOUBLE ROOT TRANSLOCATION

The double root translocation (DRT) procedure was invented by surgeons at Fuwai Hospital for anatomical correction of complex complete transposition of great arteries (TGA; combined with left ventricular outflow tract obstruction [LVOTO]) and double outlet of right ventricle (DORV; TGA type combined with right ventricular outflow tract obstruction). More than 150 patients have now undergone DRT procedure; Thirty-day and long term follow up results were significantly better than traditional Rastelli procedure.

阜外外科团队原创双根部调转手术，解剖矫治合并左室流出道狭窄的大动脉转位以及大动脉转位类右室双出口（合并右室流出道狭窄）。截止至2017年，已经完成150余例手术，术后30天和远期随访结果明显优于Rastelli手术。

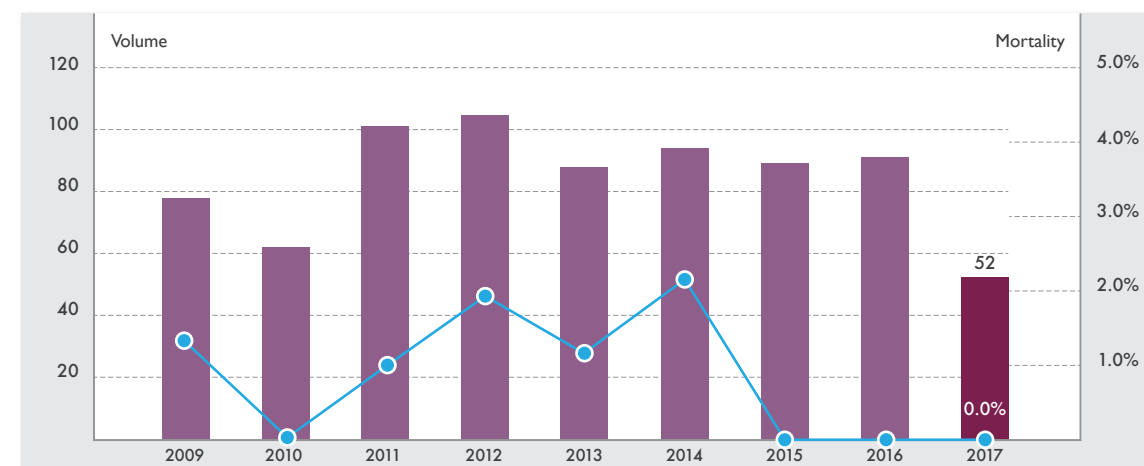


	DRT	Rastelli	Rev.
Case No.	155	67	22
Follow up (month)	72	70	72
In hospital mortality	7(4.5%)	7(10.4%)	3(13.6%)
Follow up mortality	13(8.4%)	9(13.4%)	3(13.6%)
Reoperation rate	13(8.4%)	17(25.4%)	3(13.6%)
Reintervention rate	3(1.9%)	2(3.0%)	3(13.6%)

双向Glenn手术 BIDIRECTIONAL GLENN SHUNT

The Glenn shunt has been regularly used in Fuwai Hospital for certain types of congenital heart disease. However, the indication for single ventricular palliation has changed over time, leading to more anatomical repairs. Hence, the number of Glenn shunts decreased in 2017. A total of 52 cases were successfully performed with zero perioperative mortality.

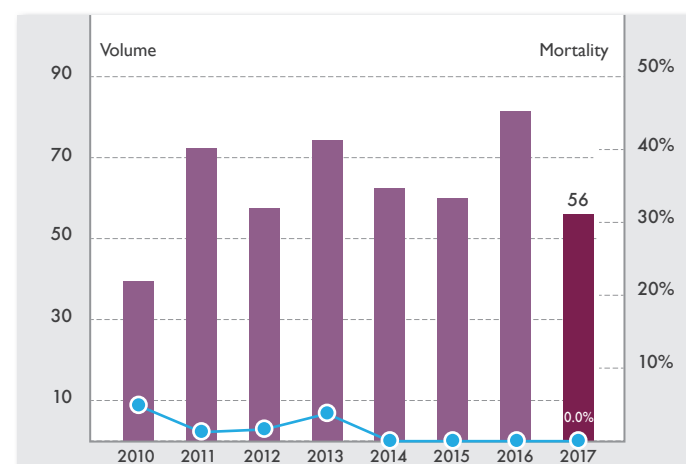
作为复杂先心病姑息手术治疗的重要术式，Glenn手术在阜外一直常规开展，但阜外医院近年来一直致力于严格把控姑息手术适应症，尽力对患儿进行解剖根治，避免Glenn及全腔手术，因而2017年阜外医院Glenn手术例数较前下降，共完成52例，无围术期死亡。



Fontan类手术 FONTAN OPERATION

As the most popular procedure for single ventricular palliation, the Fontan operation has been regularly used for several decades. In 2017, the outcomes of the Fontan procedure were favorable.

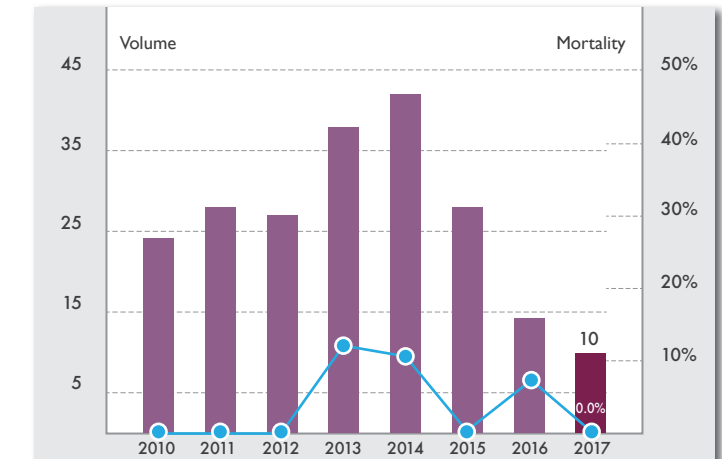
作为通用的单心室类姑息手术，Fontan手术已经在阜外医院常规开展多年。2017年Fontan类手术结果满意，同时数量较前下降，更多的患儿得到了解剖矫治。



室间隔完整肺动脉闭锁经胸球囊扩张手术 TRANS-STERNOTOMY BALLON PULMONARY VALVULOPLASTY FOR PA/IVS

Pulmonary atresia with intact ventricular septum is one of the critical congenital heart diseases with high surgical mortality. Outcomes of trans-ventricular balloon valvuloplasty via sternotomy were excellent at Fuwai hospital. Mortality was low, and more patients received biventricular repair.

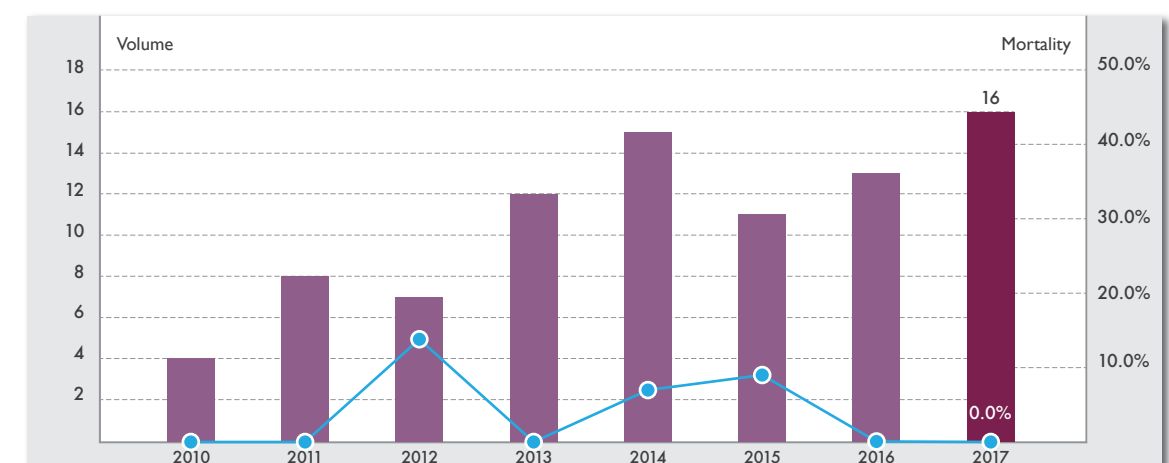
室间隔完整的肺动脉闭锁病情危重，传统外科手术死亡率高。阜外医院通过经胸球囊扩张术，治疗最重要的病变，显著降低了围术期死亡率，更多患儿得到根治。



Rastelli手术 RASTELLI SURGERY

Despite the high risk for reoperation, the Rastelli procedure remains one of the most important procedures for reconstructing the right ventricular outflow tract.

即使面临再次手术风险，Rastelli手术仍是重建右室流出道的重要术式。



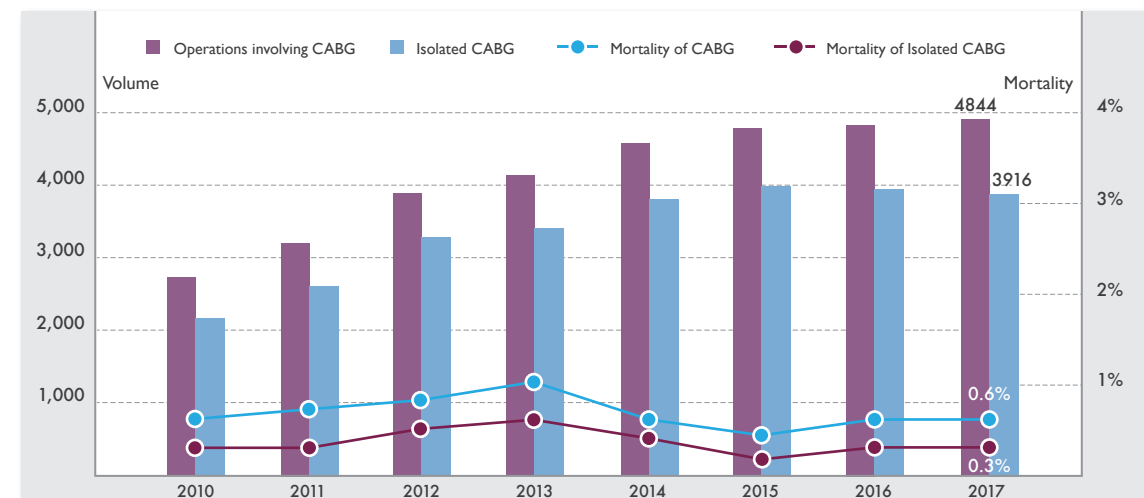
冠状动脉 粥样硬化性心脏病 Coronary Disease



冠状动脉旁路移植术 CABG

In mainland China, Fuwai Hospital is the pioneer of the CABG operation. In 1974, Fuwai surgeons performed the first CABG in the mainland. Beating heart bypass surgery (Off-pump CABG) through sternotomy was also first performed in China at Fuwai Hospital in 1996. The first case of hybrid CABG in China was successfully completed in 1999 at our hospital as well. In 2017, 4,844 patients received CABG at Fuwai Hospital, with 3,916 receiving isolated CABG. Thirty-day mortality has remained stable over the past 13 years at a level of less than 1%.

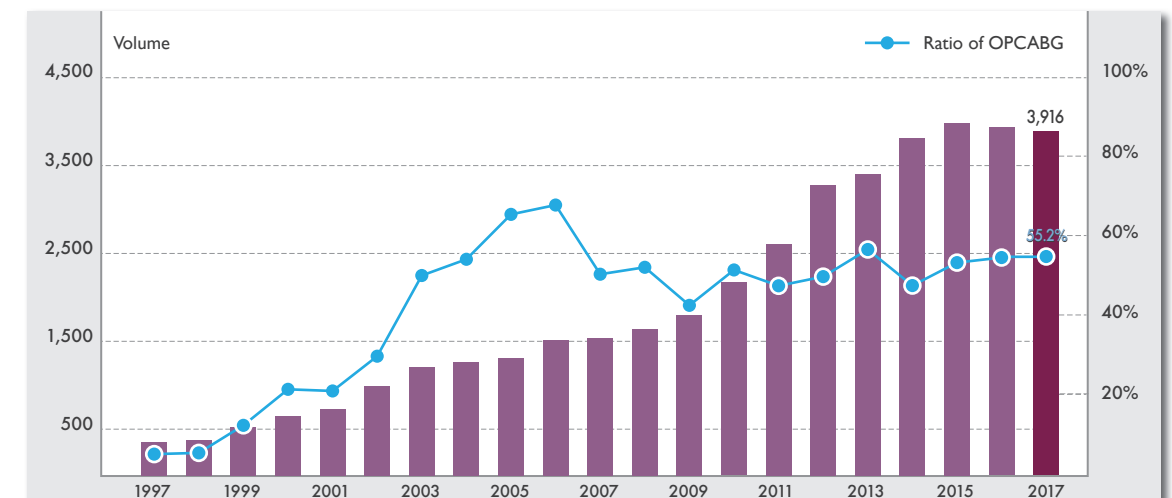
1974年阜外医院心血管外科实施了中国大陆首例冠状动脉旁路移植术。1996年在国内最早开展胸骨正中切口非体外循环下冠状动脉旁路移植术。1999年完成中国大陆首例杂交冠状动脉旁路移植术。2017年全院完成冠状动脉旁路移植术4844例，其中单纯冠状动脉旁路移植术3916例。单纯冠状动脉旁路移植术后30天死亡率连续13年低于1%。



非体外循环冠状动脉旁路移植术 OFF-PUMP CABG

Recent clinical trials have challenged the safety and efficacy of off-pump CABG, prompting our review of the application of this technique. The proportion of off-pump CABG decreased in the past decade at our institute, and individualized use of this technique has been occurring since 2006.

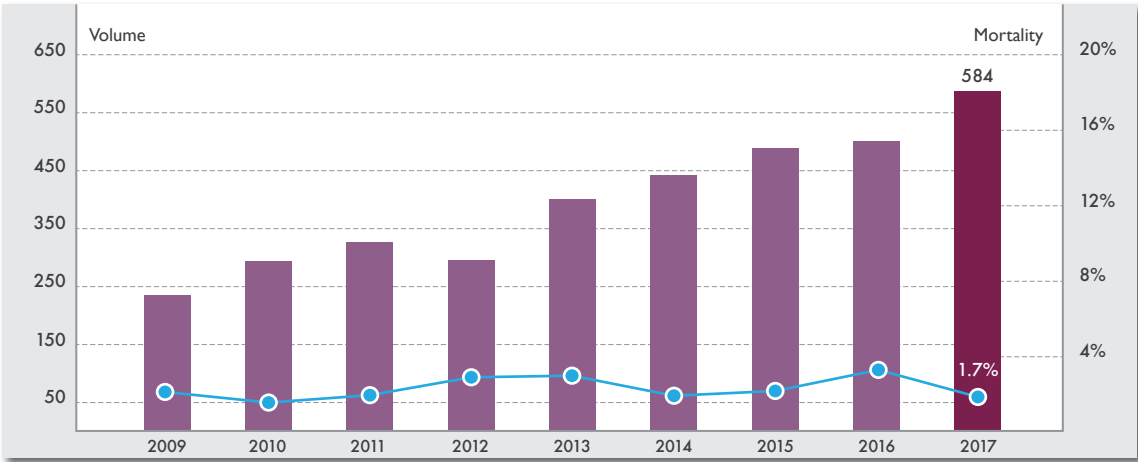
近年来，国际临床指南对非体外循环冠状动脉旁路移植术临床效果的评价趋于审慎。阜外医院心血管外科从患者获益的角度出发，适时调整技术策略应用，严格把控非体外循环冠状动脉旁路移植术手术指征，近10年来总体比例下降，目前已趋于稳定。



冠状动脉旁路移植术合并瓣膜类手术
CABG COMBINED WITH VALVULAR SURGERY

In Fuwai Hospital, coronary CT or angiogram is routinely performed for patients over 50 years old to increase the perioperative safety of cardiovascular surgery. Performing coronary surgery simultaneously with valvular surgery increases complexity. In recent years, perioperative mortality for this combined surgery has stabilized at a relatively low level and volume has increased dramatically.

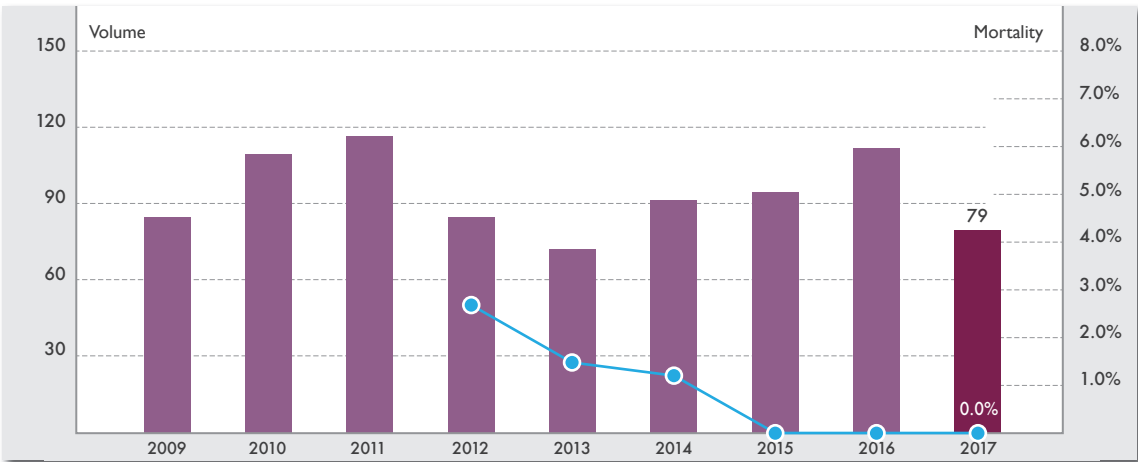
阜外医院对于50岁以上患者，术前均常规行冠状动脉CT或造影，明确是否合并冠脉疾病，最大程度提高患者行心血管手术的安全性。同期施行冠状动脉搭桥和心脏瓣膜手术，手术难度及复杂性显著增加。阜外医院在该类手术量逐年增加的情况下，始终将围术期死亡率控制在较低水准。



室壁瘤手术
SURGERY FOR VENTRICULAR ANEURYSM

Surgical approaches could significantly improve the long-term outcomes for patients with ventricular aneurysm. However, the complexity and risk of such surgeries are higher than those of surgeries for other cardiac conditions, requiring higher standards for the surgeons and the heart team. In the most recent three years, such surgeries have been successfully performed with zero surgical mortality.

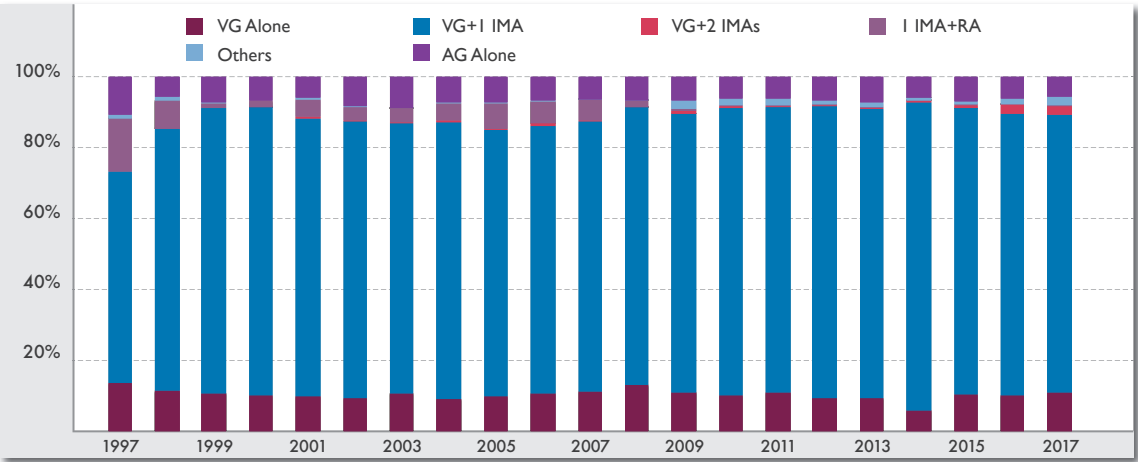
外科手术可显著改善室壁瘤患者远期预后，但该手术难度及风险均较高，对术者及其心脏团队水平提出了更高的要求。阜外医院团队已连续三年室壁瘤手术未有围术期死亡。



旁路材料选择
CONDUITS IN CABG

The surgical team of Fuwai Hospital intended to provide individualized revascularization strategies for patients. Left internal thoracic artery plus great saphenous vein graft is the standard in current clinical practice. Newer approaches, such as bilateral internal thoracic artery, total arterial graft, “no touch” technique for great saphenous vein harvest, are also routinely performed at our institution.

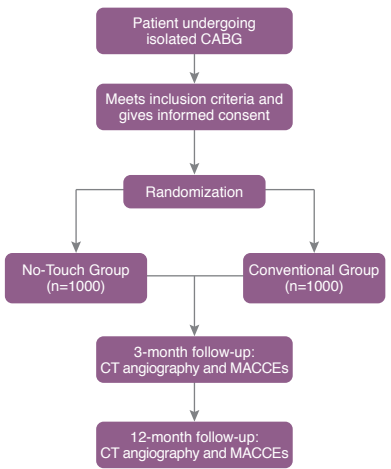
阜外医院外科团队根据不同患者情况制定个性化的再血管化治疗策略。当前，左胸廓内动脉+大隐静脉仍是外科搭桥手术的主流选择。同时，双侧胸廓内动脉的应用、全动脉化技术、“no touch”获取大隐静脉等技术均已常规开展。



No-Touch技术获取静脉移植血管
NO-TOUCH STUDY FOR VEIN GRAFT HARVEST

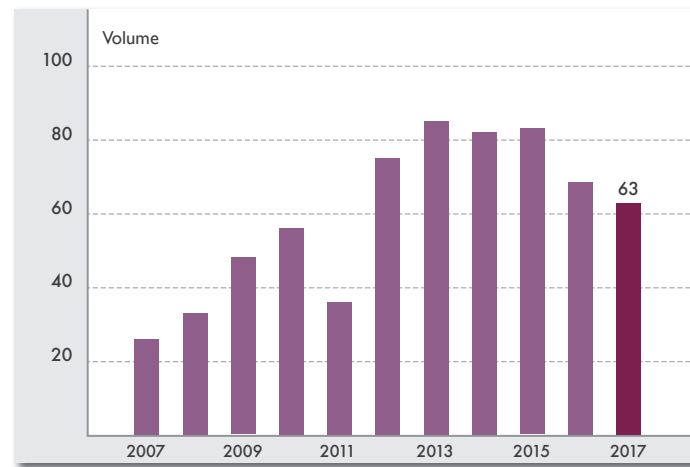
The No-Touch study is a multi-center randomized clinical trial aiming to evaluate the short- and long-term efficacy of the No-Touch saphenous vein harvesting technique after CABG, compared with that of the conventional approach. Led by Professor Shengshou Hu at Fuwai Hospital, a professional team of CABG surgeons, vein-harvesting residents, full-time study coordinators, and case registration network staff has been established. Patient enrollment and post-operative follow-up are currently underway and the trial is proceeding as anticipated.

No-Touch（不接触）技术获取静脉移植血管效果评价研究是一项由阜外医院牵头的多中心前瞻性随机对照临床研究，旨在探索No-Touch技术获取静脉移植血管在国内冠状动脉旁路移植术患者中的安全性及近、远期效果，制定符合中国实际情况的技术应用规范和指南。在首席研究者胡盛寿院士领导下，组建了包括冠状动脉旁路移植手术的术者、静脉获取者、专职研究助理以及病例登记网络系统技术人员在内的研究团队，患者入组及随访工作正稳步推进中。



一站式杂交技术治疗冠状动脉多支病变 ONE-STOP HYBRID REVASCULARIZATION FOR MULTIVESSEL DISEASE

One-stop hybrid coronary revascularization, which combines LIMA-LAD graft with DES on the remaining lesions to achieve complete revascularization, represents an attractive alternative to conventional bypass surgeries in selected patients. Since 2007, over 500 patients have undergone one-stop hybrid coronary revascularization at Fuwai Hospital. A series of articles published in JACC and JTCVS discuss the indication, antiplatelet strategies, and outcomes for this procedure compared with conventional CABG. One-stop hybrid revascularization provides favorable mid- and long-term outcomes for selected patients with multivessel coronary artery disease in each risk tertile. For patients with conventional risk factors, the new procedure might provide a promising alternative to CABG and PCI.



一站式杂交技术治疗冠状动脉多支病变，目前已成为阜外医院外科的特色治疗技术之一。目前阜外医院已累计建成5个杂交手术室，通过一站式杂交技术治疗冠状动脉多支病变，总目已超过500例，并开展了系列临床研究，相关结果发表在JACC、JTCVS等心血管领域主流杂志上，明确了手术指征和抗凝策略，并与常规再血管化治疗方式效果做了对比研究，结果证实一站式杂交技术治疗冠状动脉多支病变，在不同风险层次的患者中均可取得良好中远期预后，对于合并传统再血管化治疗方式高危因素的患者，一站式杂交技术提供了另一种安全、有效的治疗方式选择。



CLINICAL TRIALS AND OUTCOMES RESEARCH 2017

LANCET: >>>

THE PRIMARY HEALTH-CARE SYSTEM IN CHINA.

Authors: Xi Li, Jiapeng Lu, Shuang Hu, KK Cheng, Jan De Maeseneer, Qingyue Meng, Elias Mossialos, Dong Roman Xu, Winnie Yip, Hongzhao Zhang, Harlan M Krumholz, Lixin Jiang, Shengshou Hu.

In 2017, Professor Shengshou Hu from Fuwai Hospital, National Center for Cardiovascular Diseases and his colleagues published a systematic review of the primary healthcare system in China. The review analyzed the challenges and opportunities faced by China's primary healthcare system through systematic analysis of the human resources, information system, funds investment, insurance policies, and several other aspects. The government's Healthy China 2030 plan envisions the primary healthcare system as the gatekeeper of disease prevention and the cornerstone of public health. This review provided a foundation for policy and practice improvements to ensure efficient delivery of high-quality primary health care.

2017年，《柳叶刀》杂志刊发了国家心血管病中心，中国医学科学院阜外医院胡盛寿院士团队关于我国基层医疗卫生体系的大型综述性文章。该文章从人力资源、信息系统、经费投入和医保政策等方面系统分析了我国基层医疗卫生体系面临的挑战和机遇，为在“健康中国”宏伟目标指引下发挥好疾病防控“守门人”和民众健康“奠基石”的作用提供了重要支撑。

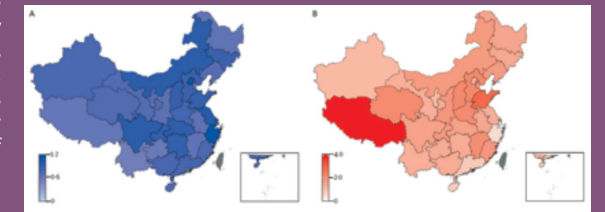


Figure 1: Number of primary healthcare doctors in China in 2015. (A) Number of licensed or assistant licensed doctors per 1000 population. (B) Number of village doctors per 1000 rural population.

图1 2015年中国的基层医生数量和分布

(A. 每千人基层医师和助理医师人数; B. 每千人乡村医师和助理医师人数)

JACC: >>>

DIAGNOSTIC ACCURACY OF ANGIOGRAPHY-BASED QUANTITATIVE FLOW RATIO MEASUREMENTS FOR ONLINE ASSESSMENT OF CORONARY STENOSIS.

Authors: Bo Xu, Shengxian Tu, Shubin Qiao, Xinkai Qu, Yundai Chen, Junqing Yang, Lijun Guo, Zhongwei Sun, Zehang Li, Feng Tian, Weiye Fang, Jiyan Chen, Wei Li, Changdong Guan, Niels R. Holm, William Wijns, Shengshou Hu.

In 2017, the FAVOR II China study, a prospective multicenter clinical study led by Fuwai Hospital, was published in JACC and recognized in the JACC Highlights of the Year. In recent years, many centers have adopted a fractional flow reserve (FFR)-based management strategy for functional evaluation of coronary stenosis; however, the need for interrogating the stenosis with a pressure wire, the cost of the wire, and the limitations associated with induction of hyperemia have restricted its widespread adoption. Quantitative flow ratio (QFR) is a novel angiography-based method derived from FFR that can be performed during standard invasive coronary angiography without expensive pressure wire or induction of hyperemia; it offers advantages in operability, safety, and economy. The FAVOR II China study demonstrated high feasibility and accuracy of QFR in identifying hemodynamically significant coronary stenosis, and it offered solid evidence to support wider adoption of QFR. Use of QFR will lead to a more standardized approach to PCI and ultimately benefit patients with coronary heart disease.

2017年，阜外医院牵头组织的前瞻性多中心临床研究FAVOR II China的研究结果在JACC杂志上发布，并入选JACC 2017年度亮点研究，引起了国内外专家学者的极大关注。近年来，基于压力导丝的有介入测量冠状动脉血流功能的血流储备分数（FFR）技术被很多中心采用。然而，FFR属于有创检查，且存在操作复杂、一次性耗材价格昂贵、需要注射微循环扩张药等问题，临床应用非常受限。而定量血流分数（QFR）技术可以在常规冠脉造影过程中获得数据，实时评估冠脉供血情况，不使用压力导丝，无需诱导充血状态，在可操作性、安全性和经济花费等方面具有诸多优势。FAVOR II China 研究科学地证实了QFR技术的可操作性和有效性，为QFR的广泛应用提供了有力证据，这将引导经皮冠状动脉介入治疗向更健康的方向发展，最终使广大冠心病患者获益。

In recent several years, Fuwai hospital has published series of articles on surgical coronary revascularization on Circulation and JACC. Some important articles have been

cited by AHA/ACC or ESC guidelines for coronary revascularization.

近年来，阜外医院在冠心病再血管化领域的系列研究结果发表在Circulation JACC等权威杂志上，部分被AHA/ACC和ESC的再血管治疗指南引用。

1. Perioperative Rosuvastatin in Cardiac Surgery. The New England journal of medicine 2016;374:1744-53.
2. Coronary Artery Bypass Graft Surgery and Percutaneous Coronary Interventions in Patients With Unprotected Left Main Coronary Artery Disease. JACC Cardiovascular interventions 2016;9:1102-11.
3. Efficacy of Long-Term β -Blocker Therapy for Secondary Prevention of Long-Term Outcomes After Coronary Artery Bypass Grafting Surgery. Circulation 2015, 131(25):2194-201.
4. One-Stop Hybrid Coronary Revascularization versus Coronary Artery Bypass Graft and Percutaneous Coronary Intervention for the Treatment of Multivessel Coronary Artery Disease. J Am Coll Cardiol 2013;61:2525-33.
5. Isolated coronary artery bypass graft combined with bone marrow mononuclear cells delivered through a graft vessel for patients with previous myocardial infarction and chronic heart failure: a

single-center, randomized, double-blind, placebo-controlled clinical trial. J Am Coll Cardiol. 2011; 14; 57(24):2409-15.

6. Increasing Long-Term Major Vascular Events and Resource Consumption in Patients Receiving Off-Pump Coronary Artery Bypass. Circulation. 2010;121:1800-1808.

7. Aspirin Plus Clopidogrel Therapy Increases Early Venous Graft Patency After Coronary Artery Bypass Surgery: A Single-Center, Randomized, Controlled Trial. J Am Coll Cardiol. 2010; 56:1639-1643.

8. Alteration of Parasympathetic/Sympathetic ratio in the infarcted myocardium after Schwann cell transplantation modified electrophysiological function of heart: a novel antiarrhythmic therapy. Circulation. 2010; 122(11 Suppl): S193-200.

9. Comparison of drug-eluting stents and coronary artery bypass surgery for the treatment of multivessel coronary disease: Three-year follow-up results from a single institution. Circulation. 2009; 119: 2040-2050.

瓣膜性心脏病 Valve Disease



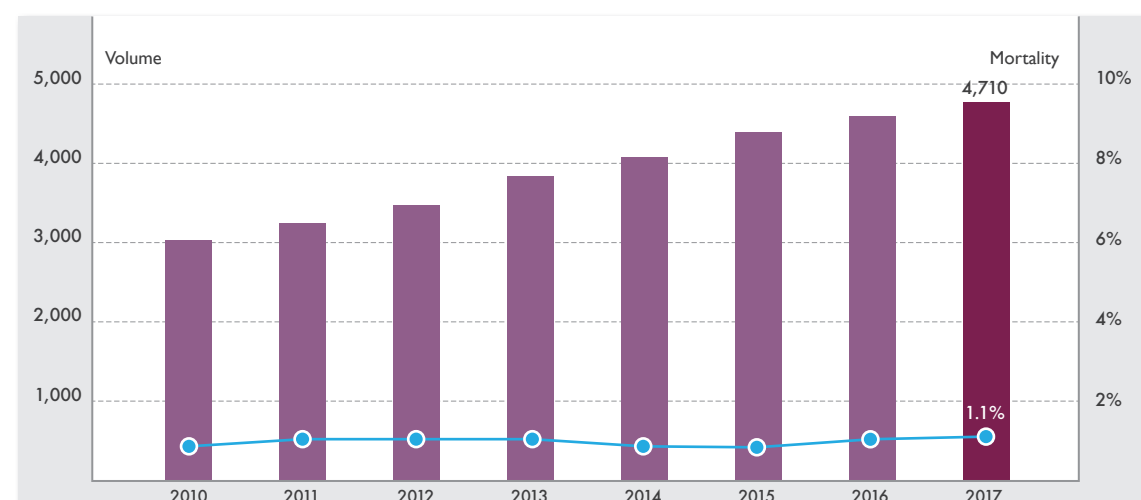
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CASE No. OF VALVULAR SURGERY 2017

心脏瓣膜手术量及死亡率 VALVULAR SURGERY

Fuwai Hospital performs the largest number of valvular procedures in China. In 2017, 4,710 patients received valvular operation at our institution with a thirty-day mortality of 1.1%.

阜外医院是中国最大的瓣膜外科中心，2017年完成心脏瓣膜手术4710例，在手术量持续增长的同时，死亡率始终保持在较低水平，2017年术后30天死亡率为1.1%。

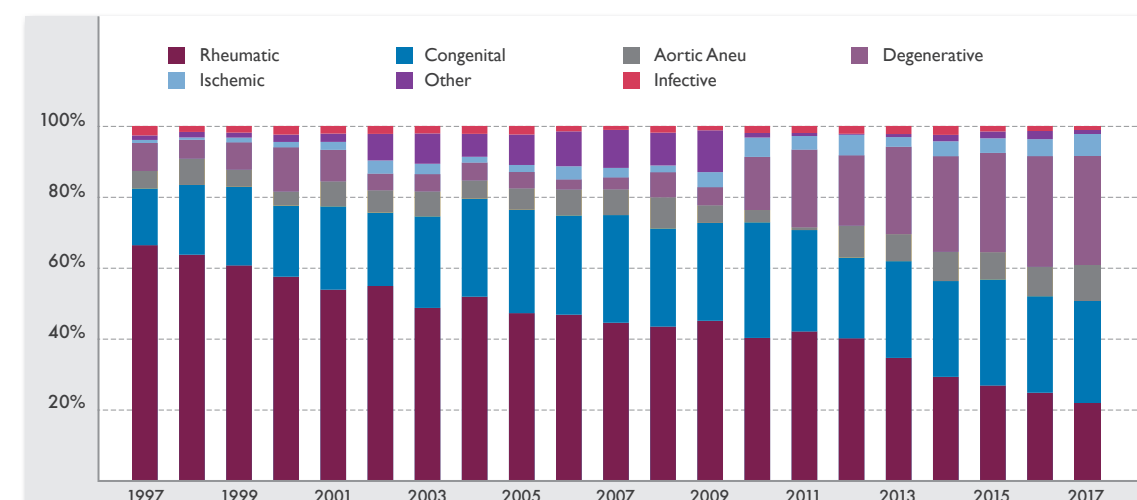


心脏瓣膜手术病因构成

ETIOLOGIC DISTRIBUTION OF VALVULAR DISEASE

Rheumatic disease was the major cause of valve disease in China, though the number of cases has been declining. In recent years, degenerative valvular disease has increased dramatically. Analysis of the Fuwai surgical database demonstrated that the percentage of valvular disease patients with degenerative valvular disease exceeded the percentage with rheumatic valvular disease in 2017.

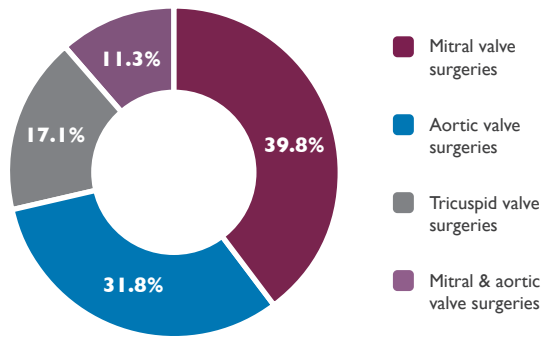
阜外医院收治患者的病因分类基本反映出我国瓣膜病外科的疾病变化谱。一直以来，风湿性病变是我国瓣膜类疾病的主要病因，同时退行性病变比例呈现逐年上升趋势。阜外医院单中心数据显示，当前退行性病变比例已超过风湿性病变，成为目前瓣膜类疾病的主要病因。



手术种类构成
COMPOSITION OF VALVULAR SURGERIES

Mitral valve replacement represented the major proportion of all valvar surgeries in 2017. However, the rate of aortic and mitral valve replacement continued to decline while the volume of tricuspid valvuloplasty increased. Isolated pulmonary valve surgeries were not considered in this chart.

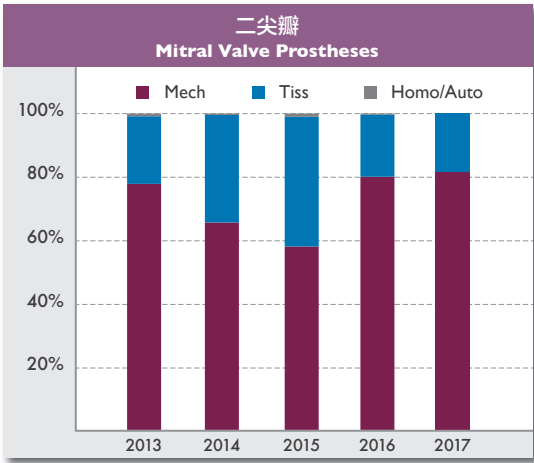
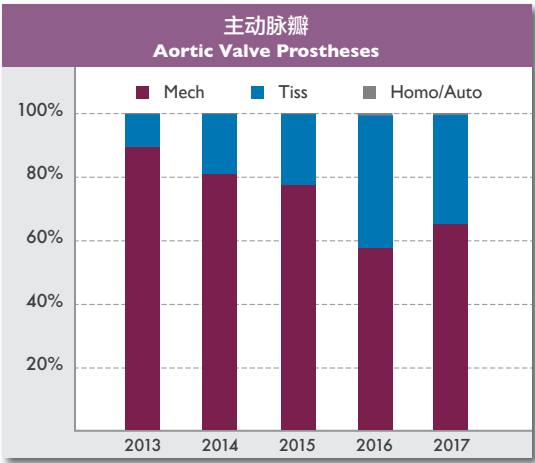
近年来，二尖瓣置换术始终在心脏瓣膜手术中占据首位。同时，主动脉瓣联合二尖瓣置换术的比例呈下降趋势，而三尖瓣成形术的比例有所增加。单纯肺动脉瓣手术未纳入统计。



人工瓣膜种类
COMPOSITION OF VALVE PROSTHESES

Mechanical valve accounted for the major type of artificial valve. However, in recent years, the proportion of bioprosthetic aortic valve increased significantly.

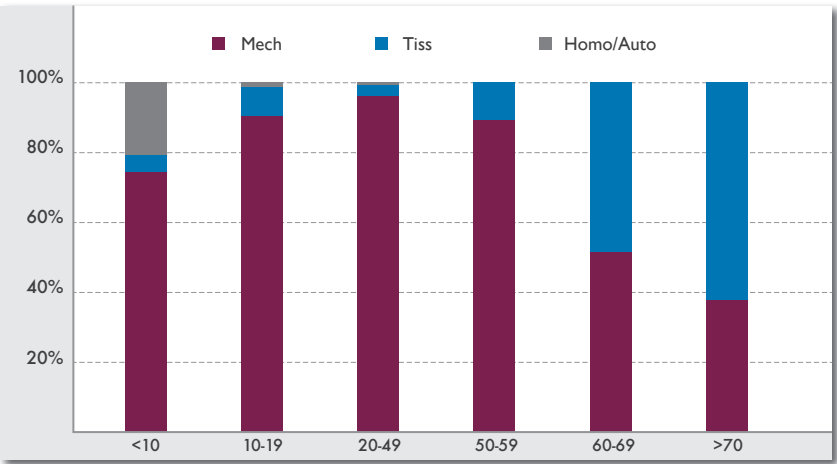
人工机械瓣膜始终占据主导地位。主动脉瓣手术中生物瓣膜的使用比例增长迅速。



不同年龄患者所用人工瓣膜种类
DISTRIBUTION OF VALVE PROSTHESES BY AGE

Despite of the overall predominance of mechanical valves, elderly patients tended to receive bioprosthetic valves.

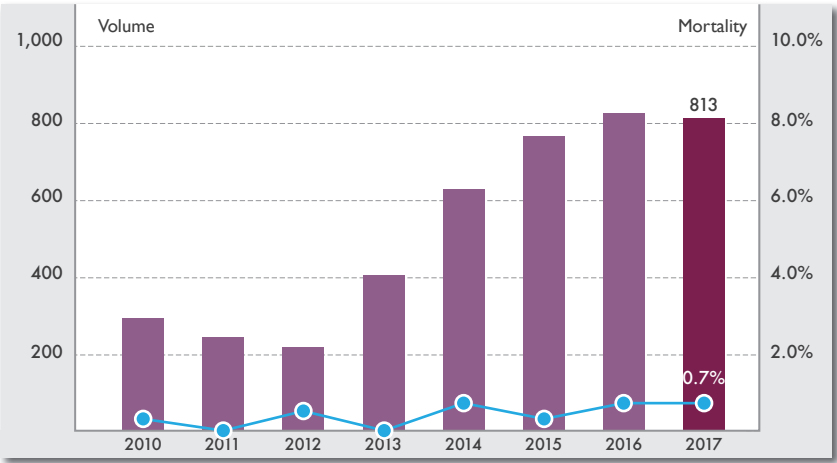
接受心脏瓣膜手术的成年患者，年龄越大使用生物瓣膜的比例越高。



二尖瓣瓣膜成形术
MITRAL VALVE REPAIR

For the Fuwai surgical team, the mitral valve repair technique has become the main treatment for patients with mitral valve insufficiency. There were 813 such repairs performed in 2017.

在阜外医院，二尖瓣瓣膜成形术已成为治疗二尖瓣瓣膜关闭不全的主要术式，2017年共完成813例二尖瓣成形术。



主动脉外科 Aortic Surgery



The vascular center of Fuwai Hospital has focused more on aortic diseases than peripheral diseases during the past half a century. The first aorta operation was performed at the hospital in 1958. The Vascular Surgery Center of Fuwai has subsequently become one of the largest aortic surgery centers worldwide.

A new vascular team was established at the hospital in November 2015. This team uses open, endovascular, and one-stop hybrid procedures to treat patients with a range of vascular diseases, including aortic, peripheral artery, and venous diseases. The Vascular Surgery Center of Fuwai Hospital currently has 3 clinical wards and a total of 140 beds. In 2017, the Fuwai vascular team performed 1,357 aortic procedures, 1,688 peripheral vascular procedures, and 965 cardiac surgeries.

1958年，阜外医院血管外科中心在国内率先开展主动脉外科手术。历经几代人的奋斗，已积累丰富的临床经验，并为中国的主动脉外科领域培养了一批又一批的领军人才和技术骨干。近年来，阜外医院建立了“主动脉急诊绿色通道”，为病患实现实时就医、保证高质量医疗服务提供了切实有效的制度保障。

2015年11月，阜外医院顺势而为，组扩建全新的血管外科中心，已全面开展额外几乎所有血管疾病的腔内、外科及杂交手术。目前，拥有三个整建制病房的阜外医院血管外科不仅成为了国内最大规模的血管外科中心，而且在心脏、主动脉及外周血管领域，已基本实现“无诊治盲区”、“无技术短板”，并朝着建设国际顶级血管外科中心的目标稳步迈进。

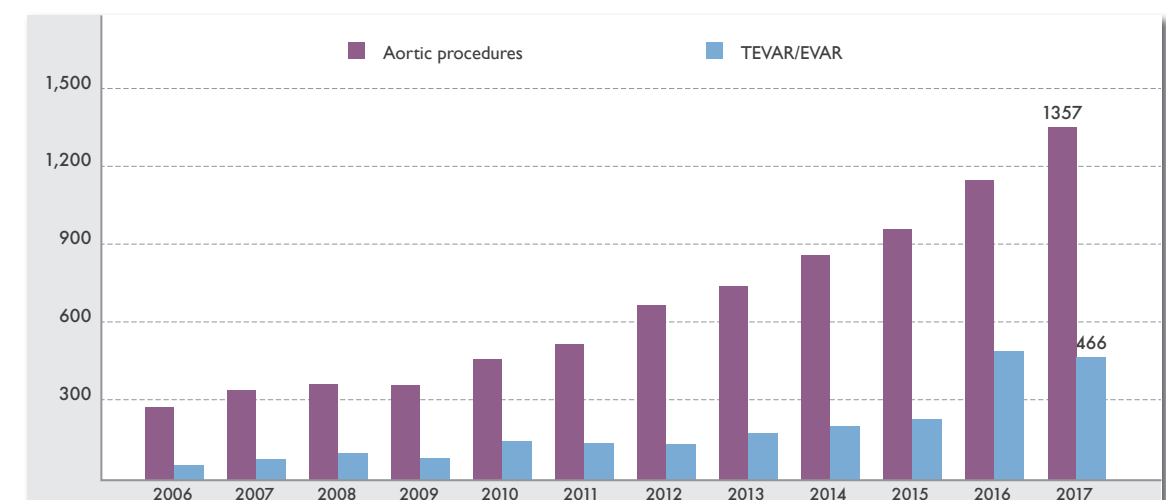
2017年，阜外医院血管外科中心完成各类主动脉手术1357台，各类外周血管手术1688台，在手术数量和质量上都达到了国际先进水平。此外，血管中心专家还实施了965例常规心脏外科手术。

主动脉疾病 AORTIC DISEASES

主动脉疾病手术量 VOLUME OF AORTIC SURGERIES

The Vascular Surgery Center of Fuwai Hospital is considered the first choice for patients with aortic aneurysms and dissections throughout China. In 2017, there were 1,357 aortic procedures performed at the center; this represents an increase of 18.7% from the previous year. Among these procedures, 466 were endovascular aortic repairs and 108 were one-stop hybrid procedures. Our data do not include the aortic operations performed at the Pediatric Cardiac Surgical Center.

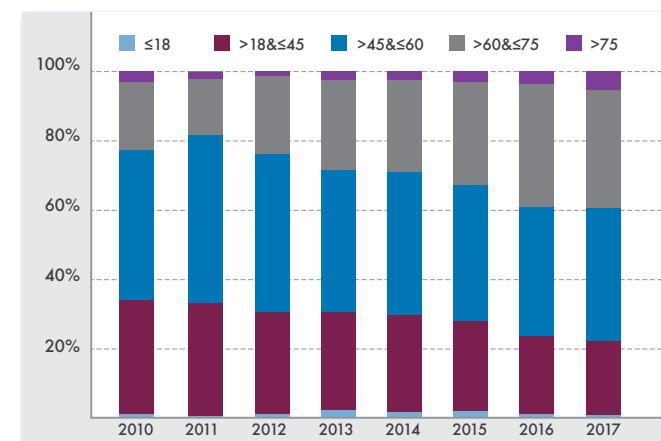
2017年完成主动脉病变的手术治疗1357例，较2016年增长18.7%，其中主动脉腔内覆膜支架修复术466例，各型主动脉杂交手术108例。本数据不包括小儿外科中心专家完成的小儿主动脉手术。



主动脉手术患者的年龄分布 AGE DISTRIBUTION

In recent years, the proportion of elderly patients over 75 years of age who underwent open, endovascular, or hybrid aortic procedures at Fuwai Hospital increased significantly.

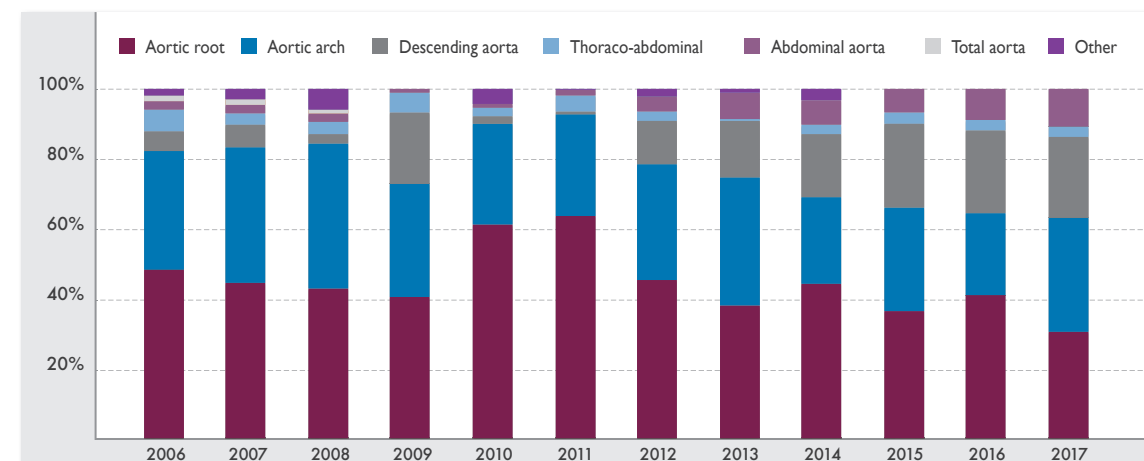
近年来接受主动脉外科、腔内和杂交手术的患者中，75岁以上高龄患者比例明显增加。



主动脉手术治疗部位构成图 COMPOSITION OF AORTIC SURGERIES

These figures show the composition of open, endovascular, and hybrid aortic procedures at Fuwai Hospital over the past several years. In 2017, 39.4% of procedures were on the aortic root and ascending aorta, 24.5% aortic arch, 23.1% descending aorta, and 10.3% abdominal aorta.

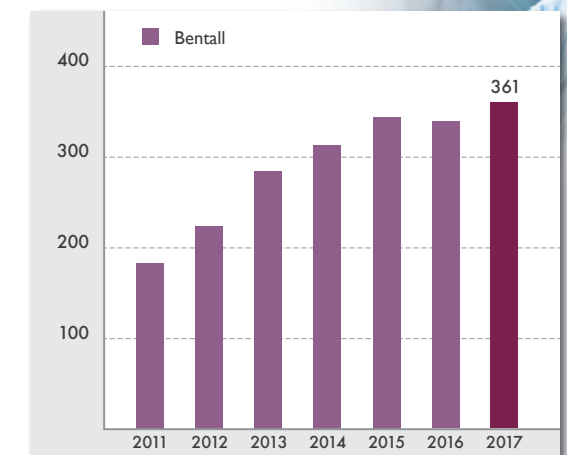
这张图显示了阜外医院血管外科历年以及2017年主动脉手术部位的构成情况。2017年，主动脉根部和升主动脉病变占39.4%，主动脉弓病变占24.5%，降主动脉病变占23.1%，腹主动脉病变占10.3%。



主动脉根部手术 AORTIC ROOT SURGERIES

In 2017, surgeons at the Vascular Surgery Center performed 524 aortic root operations, including 361 Bentall's procedures, 142 Wheat's procedures, 20 David's procedures, and 1 Cabrol procedure.

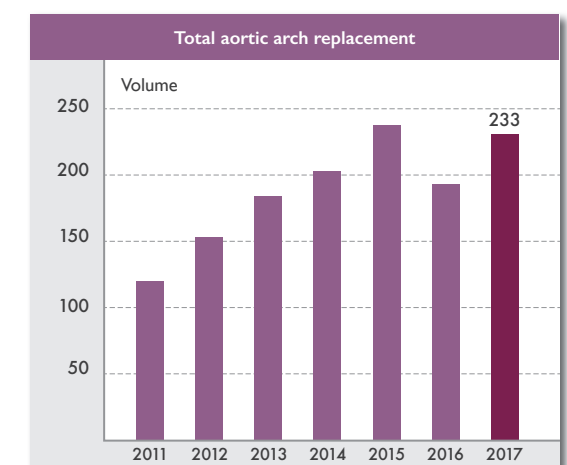
2017年，阜外医院血管外科中心完成主动脉根部手术共计524例，其中Bentall's手术361例，Wheat's手术142例，David's手术20例，Cabrol手术1例，同时实施了其他心血管手术的患者也计算在内（如Bentall's+全主动脉弓替换术）。



主动脉弓开放手术 OPEN AORTIC ARCH OPERATIONS

In 2017, surgeons at the Vascular Surgery Center performed 345 open aortic arch operations, including 233 total aortic arch replacement, 12 subtotal aortic arch replacement, and 100 partial aortic arch replacement procedures. The data do not include hybrid arch replacement operations.

The proportion of open aortic arch replacement procedures has decreased since 2016. The primary reason for this change is the increase in the number of patients with arch pathologies managed by total endovascular procedures such as triple or double chimney technique, fenestration technique, and hybrid procedures.



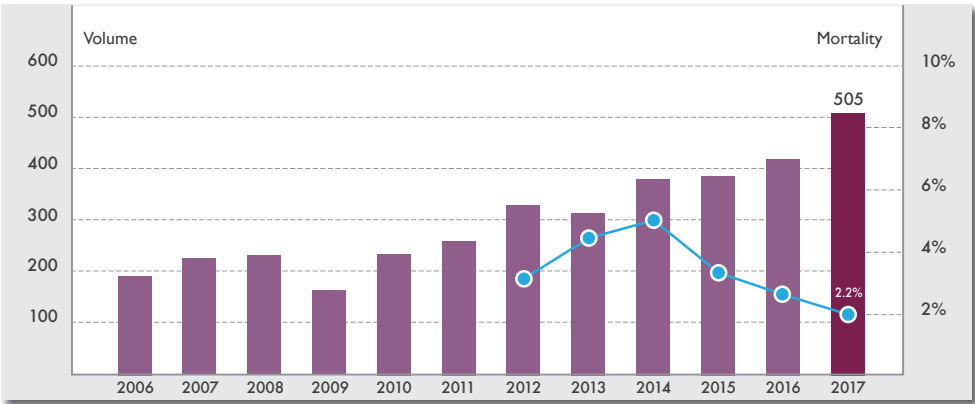
（全主动脉弓替换手术量，不包括次全弓和部分弓）

2017年，阜外医院血管外科中心完成主动脉弓部外科手术345例（同时进行了主动脉根部或升主动脉手术的患者也计算在内），其中深低温停循环下的全主动脉弓替换手术233例（不包括杂交手术），次全弓替换手术12例，部分弓替换手术100例。近两年，主动脉弓外科手术在主动脉手术总量中所占权重较2015年前下降，这与更大比例的主动脉弓部病变患者接受了全腔内修复手术和杂交手术有关，其中包括“双烟囱”技术、“三烟囱”技术、“预开窗”技术、“原位开窗”技术等腔内微创技术在锚定区不足的患者群中的运用。

主动脉夹层
AORTIC DISSECTION

In mainland China, there is a relatively high incidence of aortic dissection in young and middle-aged men with hypertension; the average age is lower than that of the USA and European countries. Lifesaving emergency surgery to repair the dissected aorta is frequently performed by the Fuwai vascular team. In 2017, we performed a total of 505 open, endovascular, and hybrid aortic procedures with a 30-day postoperative mortality of 2.2%.

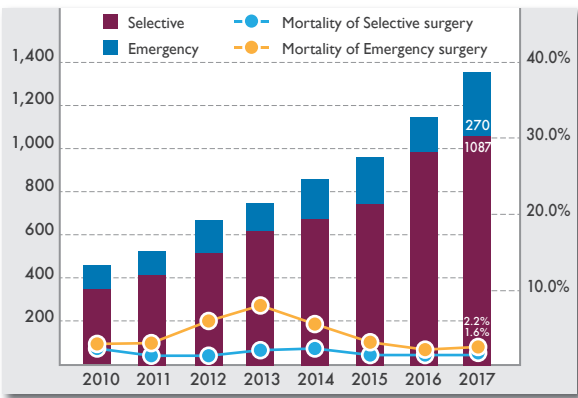
中国高血压病人群约有2.6亿，但由于控制率偏低等原因，主动脉夹层发病率偏高，而且患者的平均年龄低于欧美发达国家。阜外医院血管外科团队每年为许多这样的患者实施紧急手术治疗，以挽救他们的生命。2017年，完成主动脉夹层手术505例，术后30天死亡率降至2.2%，达世界顶级水平。



主动脉急诊和择期手术的比例和术后30天死亡率
SELECTIVE AND EMERGENCY AORTIC SURGERY

Aortic emergencies, including acute aortic syndrome and aortic rupture, are usually life-threatening, sudden onset catastrophes of the aorta that present immense surgical technique challenges and have high associated risk. The Aortic Emergency Green Channel policy of Fuwai Hospital has been in place for several years and has helped ensure that the majority of emergent aortic patients are treated in an efficient manner. The hospital continues to have one of the highest technical success rates for emergent aortic operations in the world. In 2017, surgeons at the Vascular Surgery Center performed 1087 scheduled surgeries and 270 emergent aortic surgeries, with thirty-day mortality of 1.6% and 2.2%, respectively (deaths prior to hospital admission and during surgical preparation in the emergency room were excluded from calculations).

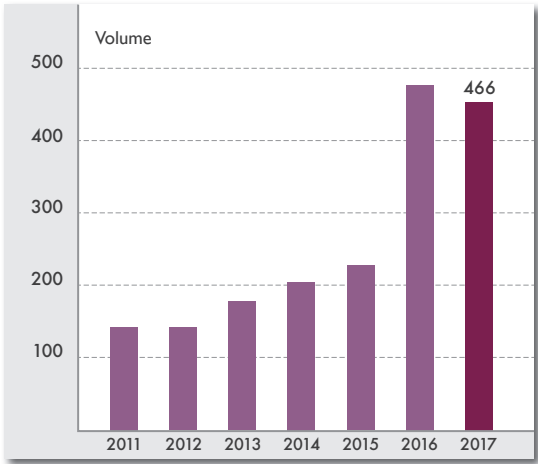
以急性主动脉综合征、主动脉瘤破裂为代表的主动脉急症往往需要紧急手术，技术难度大，手术风险高。阜外医院集全院优势力量，从制度层面入手，建立了“胸痛中心”和“主动脉急诊绿色通道”，在主动脉急诊患者的救治效率和救治成功率方面，均已成为中国医院救治主动脉疾病的典范。2017年，阜外医院血管外科中心为1087例主动脉疾病患者实施了择期手术，为270例患者实施了急诊手术，术后30天死亡率分别低至1.6%和2.2%（院前死亡和急诊准备期间的术前死亡未统计在内）。



主动脉微创腔内修复术
ENDOVASCULAR AORTIC REPAIR

In 2017, surgeons at the Vascular Surgery Center performed 466 endovascular operations, including 313 TEVAR, 133 EVAR, 6 TEVAR+EVAR simultaneously, and 14 balloon-expandable stent implantations for coarctation of the aorta. Among these cases, 105 patients without enough landing zones for endografts were treated successfully by usage of the chimney, double/triple chimney, snorkel, and fenestration techniques.

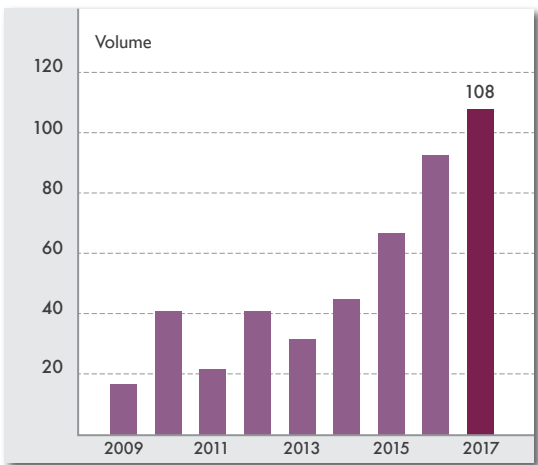
2017年，阜外医院血管外科中心完成主动脉覆膜支架腔内修复术466例，其中单纯胸主动脉覆膜支架腔内修复术313例，单纯腹主动脉覆膜支架腔内修复术133例，同期进行胸主动脉和腹主动脉腔内修复手术6例，主动脉缩窄介入支架（球扩式）植入术14例。其中，采取烟囱技术、潜望镜技术、开窗技术等辅助技术为105名锚定区不足的主动脉病变患者实施了腔内修复（大部分患者为主动脉弓部病变）。



主动脉杂交手术
HYBRID AORTIC SURGERIES

Since Fuwai Hospital established its first one-stop hybrid operation room in 2006, an additional four advanced hybrid operating rooms have been added. The number of hybrid operations performed at Fuwai Hospital continues to increase annually. In 2017, surgeons at the Vascular Surgery Center performed 108 hybrid operations for arch pathologies. Additionally, hundreds of patients with multiple cardiovascular diseases were treated in the one-stop style in the hybrid operating rooms using procedures such as CABG+EVAR and ASD repair +TEVAR.

阜外医院自2006年建立亚洲第一家杂交手术室以来，目前拥有世界最先进的杂交手术室5间，开展了大量“一站式”杂交手术。2017年，阜外医院血管外科中心完成各型主动脉杂交手术108例。此外，阜外医院血管外科专家充分利用国际顶尖的杂交手术室平台优势，为同一患者“一站式”处理多种心血管疾病，如房缺修补术联合胸主动脉支架术、冠脉旁路移植术联合腹主动脉覆膜支架腔内修复术等，此类广义的杂交手术未计入本年报杂交手术总量。



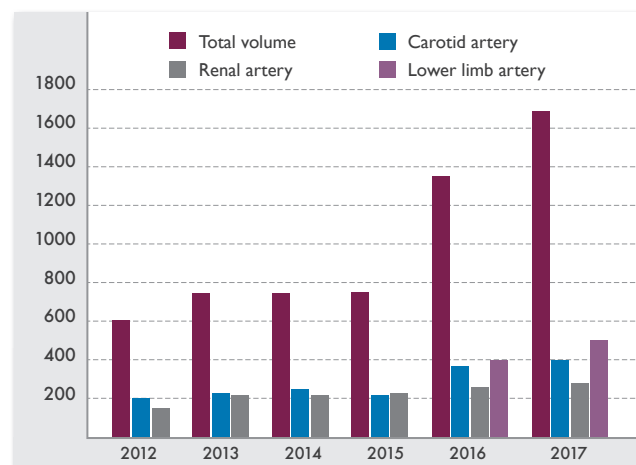
周围血管疾病 Peripheral Vascular Diseases

1688

CASE No. OF PERIPHERAL VASCULAR PROCEDURE 2017

A dedicated peripheral vascular ward was established at Fuwai Hospital in November 2015. Ward staff include Team A vascular surgeons and Team B interventional cardiologists. In 2017, the two teams performed 1,688 interventional and open procedures on patients with peripheral vascular diseases such as carotid, vertebral, lower limb and renal artery stenosis. The procedures performed by Team B were not included in the annual surgical volume of Fuwai Hospital.

2015年底，阜外医院新设外周血管疾病病房，由血管外科医师和心血管介入医师两个团队组成，主要以外周动脉疾病的介入和外科治疗作为主攻方向。2017年两个团队共实施颈动脉、肾动脉、内脏动脉、下肢血管、锁骨下动脉介入和外科手术1688例。其中，心血管介入医师团队实施的外周血管介入手术量将在阜外医院内科年报中体现，而不计入阜外医院外科手术治疗总量。



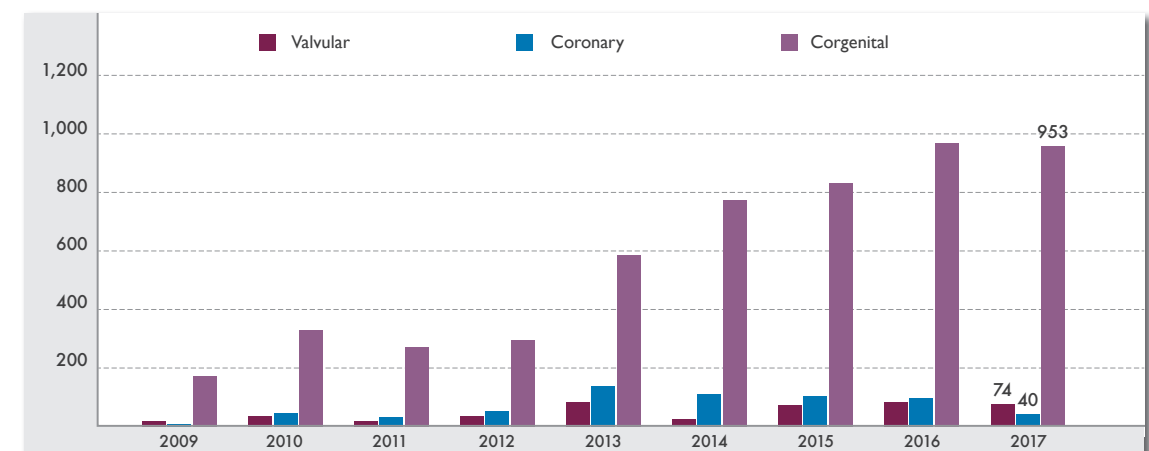
微创心脏外科 Minimally Invasive Cardiac Surgery



小切口心脏手术 MINIMALLY INVASIVE SURGERIES

The Fuwai surgical team is devoted to reducing surgical trauma for patients by using minimally invasive surgical techniques. The volume of these techniques, which include limited sternotomy, right subaxillary minithoractomy, and the parasternal approach, has steadily increased in recent years.

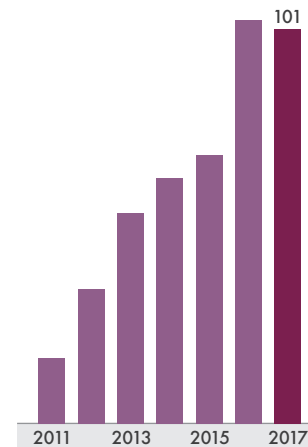
小切口心脏手术是减少患者手术创伤的微创手术技术手段，包括部分胸骨切口、右侧腋下小切口、胸骨旁切口及胸腔镜手术等，手术量持续、稳定增长。



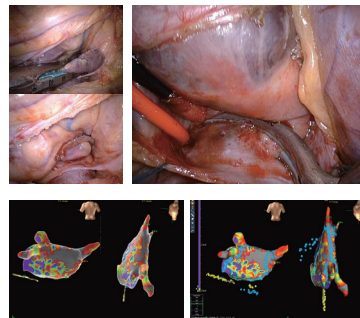
胸腔镜辅助心脏手术 VIDEO-ASSISTED THORACOSCOPIC CARDIAC SURGERIES

Video thoracoscope-assisted cardiac surgeries are routinely performed at Fuwai Hospital for congenital heart disease, mitral valve repair or replacement, and minimally invasive coronary artery bypass surgeries. Favorable outcomes were achieved for persistent atrial fibrillation by using hybrid thoracoscopic and catheter ablation.

阜外医院常规开展胸腔镜辅助的系列心脏手术，其领域涵盖常见的先天性心脏病矫治、二尖瓣成形、置换及微创搭桥等。尤其是针对持续性房颤，开展了全胸腔镜下心外膜消融+心内膜联合消融的复合治疗技术。



房颤的复合治疗技术 HYBRID APPROACH FOR ATRIAL FIBRILLATION



A total of 172 cases of atrial fibrillation were treated via video-assisted thoracoscopic surgical ablation. After box-lesion and a mean follow-up of 3 years, the maintenance rate of sinus rhythm was 88.9% in patients with paroxysmal atrial fibrillation who had a normal left atrial size and no previous catheter ablation. For persistent atrial fibrillation, the maintenance rate of sinus rhythm was 61.3%. In 2017, to improve the efficacy of treatment for persistent atrial fibrillation, a modified bi-atrial maze lesion was performed

in a select group of patients. Early results showed that postoperative freedom from atrial fibrillation was 90%. For patients with longstanding persistent atrial fibrillation of less than 5 years, the maintenance rate of sinus rhythm was 92.8% at 1 year after hybrid endocardial-epicardial ablation.

目前已完成胸腔镜外科治疗房颤172例。采用单纯胸腔镜下盒状消融策略，平均随访3年，对于非导管消融复发且左房大小正常的阵发性房颤患者，窦性心律维持率达88.9%；对于持续性房颤，窦性心律维持率达61.3%。2017年，为了进一步提高持续性房颤的疗效，采用改良双房迷宫线路消融策略进行胸腔镜下心外膜消融，早期的结果显示房颤免除率为90%。对于长程持续性房颤患者，复合内外科联合消融随访1年结果显示，房颤持续发作时间小于5年患者，窦性心律维持率92.8%。



结构性心脏病中心 Center for Structural Heart Disease



经外科途径介入治疗结构性心脏病 INTERVENTIONAL THERAPY VIA SURGICAL APPROACH FOR STRUCTURAL HEART DISEASE

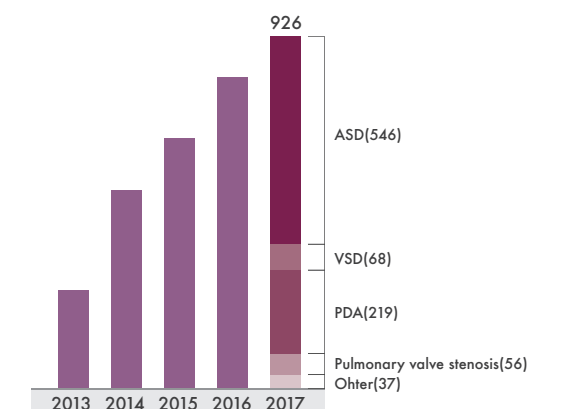
Since 2013, a series of interventional surgical approaches have been widely used for the treatment of structural heart disease, including ultrasound-guided interventional occlusion via minimal access, balloon dilation of the aortic valve through the ascending aorta, and pulmonary valve stent implantation.

自2013年起，阜外医院复合技术团队开始大量采用经外科途径介入治疗结构性心脏病。超声引导介入系列技术，经胸主动脉瓣球囊扩张术和肺动脉瓣支架植入术等多项技术处于国际领先地位。

单纯超声引导经皮介入技术 ECHOCARDIOGRAPHY-GUIDED PERCUTANEOUS INTERVENTION TECHNOLOGY



The original echocardiography-guided percutaneous intervention technology at the National Center for Cardiovascular Disease was the start of “no surgery, no radiation, and no general anesthesia” for the treatment of common heart diseases. A total of seven new technologies have been created at the center. The technical team, led by Professor Xiangbin Pan, was invited to live broadcast their operations for international conferences and has trained more than 300 new hybrid doctors at home and abroad, including Europe, North America, Asia, and Africa. Professor Xiangbin Pan has traveled to more than 20 countries and regions to teach the technology and spread the Chinese approach to the world.

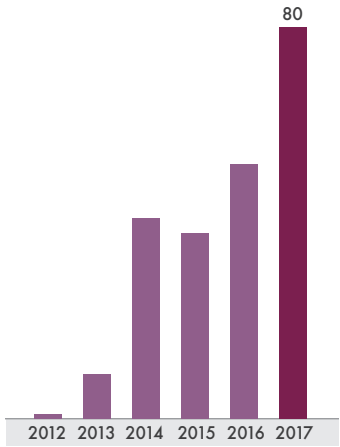


国家心血管病中心原创的单纯超声引导经皮介入系列技术率先实现了“不开刀、无射线、不全麻”治疗常见心脏病，共7项新技术查新为世界首创。潘湘斌教授带领的技术团队多次受邀为国际会议直播示教手术，培训了包括欧美、亚洲、非洲等国内外新型复合技术人才300余人次，并赴二十余个国家及地区现场传授技术，用中国方案填补了世界空白。

经导管主动脉瓣置入术
TRANSCATHETER AORTIC VALVE IMPLANTATION

Since 2010, Fuwai Hospital has explored the clinical practice of transcatheter aortic valve implantation (TAVI). In September 2012, the first TAVI procedure with a domestic valve was successfully performed. Fuwai Hospital has been committed to promoting the first clinical trial for TAVI in China. In July 2014, the Fuwai surgical team pioneered the use of the domestically-produced J • Valve™ to perform transapical aortic valve implantation. Because of the unique design of J • Valve™, our team was the first in the world to successfully apply the TAVI technique on a patient with aortic insufficiency alone. In 2017, 80 patients with high risk of severe aortic valve disease successfully received this minimally invasive procedure.

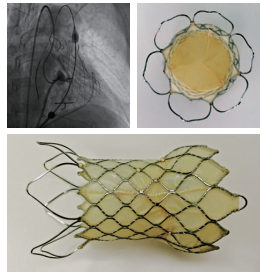
自2010年起，阜外医院开始探索经导管主动脉瓣置入术。2012年9月，中国第一例国产经导管主动脉瓣在中国医学科学院阜外医院置入成功。阜外医院也首先开展了我国第一个TAVI临床试验。2014年7月，阜外外科团队运用我国自主研发的J • Valve™瓣膜，在国内率先开展了经心尖入路的TAVI手术，不同于国际上TAVI技术仅用于主动脉瓣狭窄患者，阜外外科团队还在国际上首次为单纯主动脉瓣关闭不全患者成功实施了介入瓣膜的植入。2017年共完成该类手术80例。（由内科介入医师完成的TAVI，未纳入外科手术量统计）



经皮肺动脉瓣支架植入术
PERCUTANEOUS PULMONARY VALVE IMPLANTATION

The innovative self-expandable pulmonary valve stent (Venus-P valve) was developed in China according to the anatomical characteristics of severe pulmonary regurgitation and right ventricular outflow tract enlargement after TOF transannular patch. A total of 32 patients have successfully received percutaneous pulmonary valve implantation at Fuwai Hospital with satisfactory results. The chief designer of the technology was invited to give an academic report on the Chinese experiences with the technology at the 98th annual meeting of the American Association for Thoracic Surgery (AATS).

国产新型自膨式肺动脉瓣支架（Venus-P瓣膜）是根据国人法洛四联症跨环补片术后肺动脉瓣大量返流合并右室流出道扩大的解剖特点而研制的。截至目前，共32例患者在阜外医院接受了经皮肺动脉瓣支架植入术，取得了良好的效果，受邀在第98届美国胸外科学会年会做学术报告，介绍该技术的中国经验。



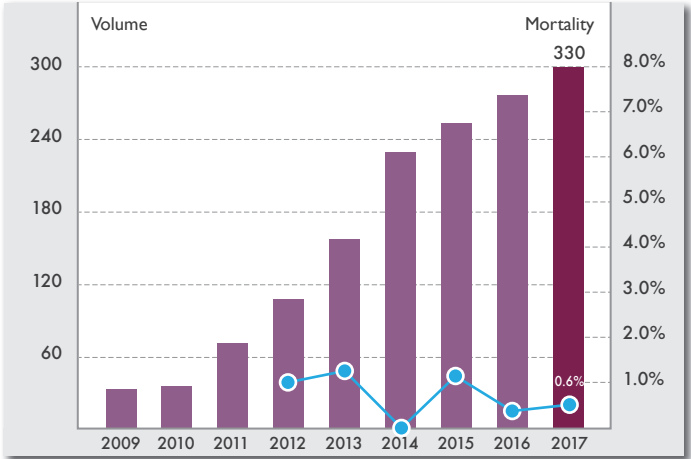
肥厚梗阻性心肌病
Hypertrophic Obstructive
Cardiomyopathy



改良Morrow手术
MODIFIED MORROW PROCEDURE

The volume of the modified Morrow procedure at Fuwai Hospital is increasing. A total of 330 procedures have been successfully performed with thirty-day mortality of 0.6%.

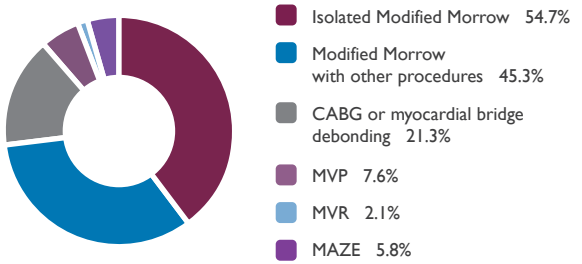
近年来，阜外医院实施该手术的手术量持续增长并取得良好治疗效果。2017年累计完成330例，术后30天死亡率为0.6%。



术种分布
DISTRIBUTION OF OPERATION

The modified Morrow technique is often combined with other cardiac procedures (e.g., CABG or myocardial bridge debonding). Such combined procedures accounted for over 40% of the total morrow procedures.

Morrow联合其他手术的术式在所有肥厚梗阻性心肌病手术中占比超过40%，其中最主要的类型为Morrow合并CABG或肌桥松解。

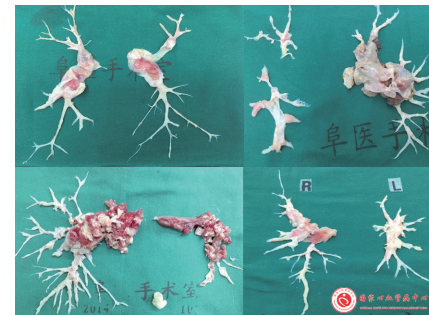


肺动脉内膜剥脱术 Pulmonary Endarterectomy Surgery

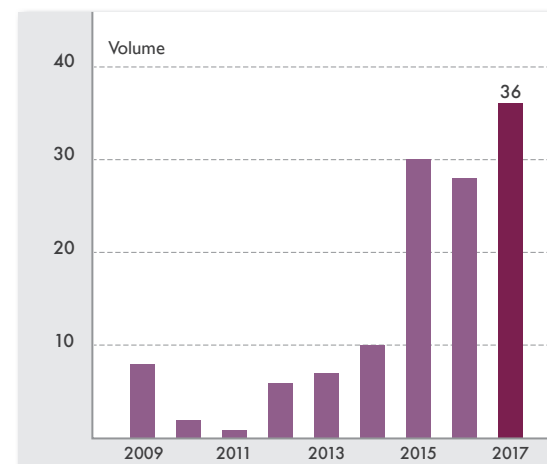
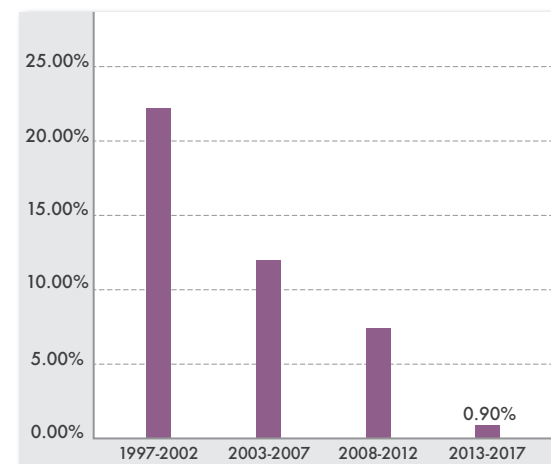


From 1997 to 2017, 177 pulmonary endarterectomy (PEA) procedures were performed at Fuwai Hospital; 87 cases were accomplished before 2015, and another 30, 28, 36 cases in 2015, 2016, 2017, respectively. Perioperative mortality has been maintained at 0.9% since 2013.

本中心自1997年至2017年12月共开展181例肺动脉内膜剥脱术手术，其中2015年之前完成手术例数87例，2015年30例，2016年28例，2017年完成36例。自2013年起，围术期死亡率已降至0.9%。



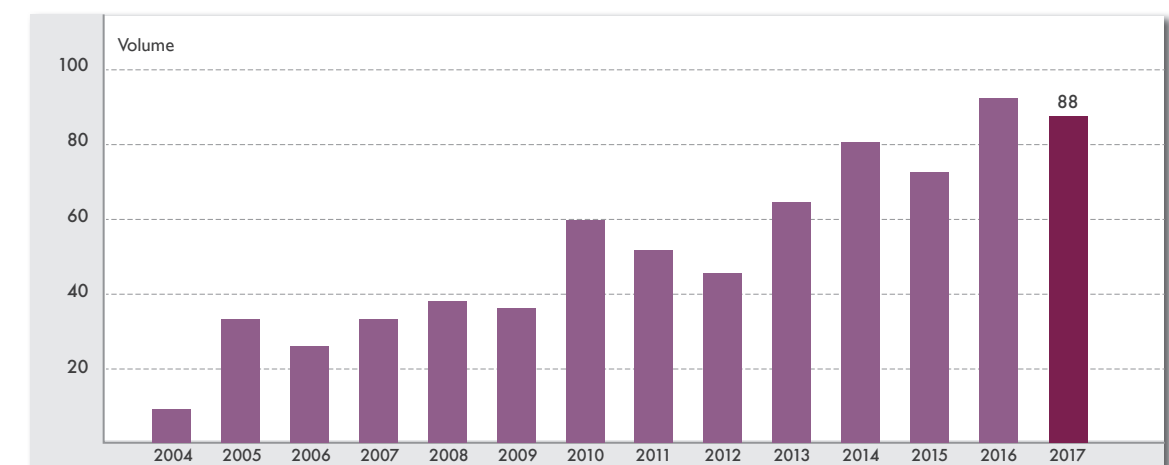
分时间段死亡率
MORTALITY IN DIFFERENT PERIODS



心衰及移植 Heart Failure and Transplantation



心脏移植手术量 HEART TRANSPLANTATION



Since June 2004, 733 patients have undergone heart transplantation at Fuwai Hospital; 88 of these transplantations were in 2017.

自2004年6月至今，阜外医院外科团队在院内完成心脏移植733例，其中2017年完成88例。

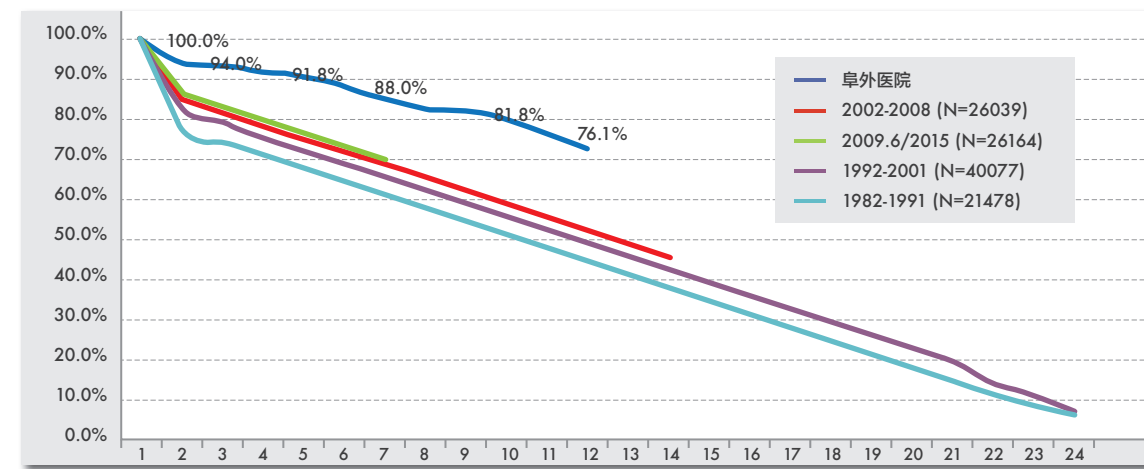


心脏移植生存率图

KAPLAN-MEIER SURVIVAL CURVE FOR HTX PATIENTS IN ISHLT AND FUWAI HOSPITAL

The one-year survival rate after heart transplantation was 94.0% at Fuwai Hospital. Five-year survival was 88.0%, and ten-year survival was 76.1%; these rates are higher than those of ISHLT.

阜外医院移植后患者1年生存率为94.0%，3年生存率91.8%，5年生存率88.0%，10年生存率达76.1%；明显高于国际心肺移植协会（ISHLT）统计的同期生存率。

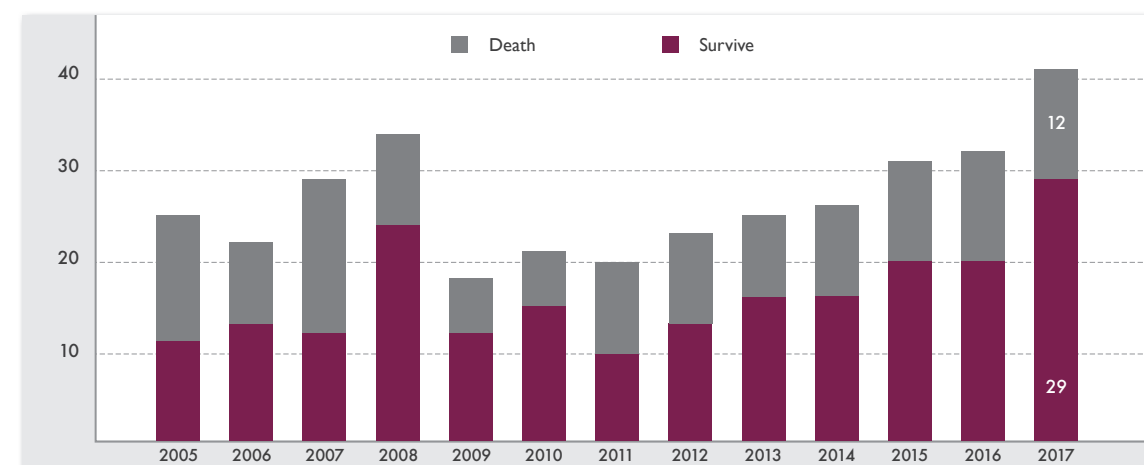


ECMO的应用

APPLICATION OF ECMO

ECMO is regularly used at Fuwai Hospital for patients with acute cardiogenic shock, and ECMO+IABP is routinely used for short-term ventricular assistance. Both applications have achieved excellent outcomes.

在阜外医院，ECMO广泛应用于救治急性心源性休克患者，ECMO+IABP已成为短期心室辅助常规，并取得良好效果。



第三代磁悬浮心室辅助装置首次应用

APPLICATION OF THE THIRD GENERATION VENTRICULAR ASSISTING DEVICE

The third generation ventricular assisting device (VAD) includes magnetic levitation and contactless bearings, and it has the advantages of small size and good biocompatibility. The device is one of the world's most advanced artificial hearts. From June 2017 to October 2017, Professor Shengshou Hu and his team completed three third-generation magnetic levitation VAD implantations. Postoperative cardiac function and hemodynamic parameters significantly improved in all patients. One patient underwent heart transplantation at 192 days after operation, and the other two patients were discharged with the device and survived for 112 and 225 days, respectively. Fuwai Hospital plays a key role in the optimization of this new technology, including operation of the device tools, blood compatibility, electric knife anti-interference and surgical procedures, and other aspects of design optimization. This procedure filled an important gap in the artificial heart field in China.

第三代心室辅助装置以磁悬浮无接触轴承为特点，并且具有体积小和生物相容性好的优点，属于世界上最先进的人工心脏之一。自2017.6-2017.10期间，胡盛寿院士团队共完成3例第三代磁悬浮VAD植入术。所有患者术后心功能和血流动力学指标均明显改善，1例患者术后192天行心脏移植术，另外2例患者携带装置出院，且分别带装置生存112和225天。阜外医院对该装置的操作工具、血液相容性、电刀抗干扰和手术流程等设计优化步骤起关键作用，填补国内人工心脏领域空白。



中国第1例接受磁悬浮VAD患者
First case of the third generation VAD

技术协作 Domestic Collaboration Network



In 2017, Fuwai Hospital provided assistance and training to more than 30 training center units. A total of 6,205 cardiovascular surgeries were completed by these units, including 1,265 cases completed under the guidance of Fuwai Hospital.

Under the leadership of the National Health and Family Planning Commission of the People's Republic of China, Fuwai Yunnan Cardiovascular Hospital opened in September 2017 and Fuwai Central China Cardiovascular Hospital and the Central China Subcenter of the National Center for Cardiovascular Diseases opened in December 2017. A total of 4,835 patients have since visited Fuwai Yunnan Cardiovascular Hospital; 856 patients were admitted and 148 cardiovascular surgeries and 377 intervention procedures were performed. Screening for congenital heart disease was conducted for over 350,000 people, and 267 children with congenital heart disease received care. A total of 1,071 patients have visited Fuwai Central China Cardiovascular Hospital/Central China Subcenter of the National Center for Cardiovascular Diseases; 95 cardiovascular surgeries and 439 intervention procedures were performed.

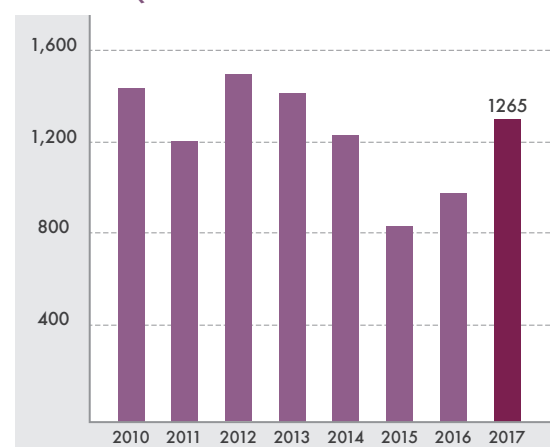
2017年，阜外医院对30余家培训中心单位给予相应的帮扶和培训工作。全年完成各类心血管外科手术6205例，其中阜外医院指导完成1265例。

在国家卫生计生委主导下，云南阜外心血管病医院、阜外华中心血管病医院、国家心血管病中心华中分中心分别于2017年9月及2017年12月开业运营。

云南阜外年内共收治门诊患者4835人，住院患者856人，完成外科手术148例，内科介入377例。启动心血管疾病筛查项目，筛查人数达35万名；联合慈善基金救助贫困先心病患儿，共救助患儿267名。

阜外华中开诊半月，共收治门诊患者1071人，完成外科手术95例，内科介入439例。

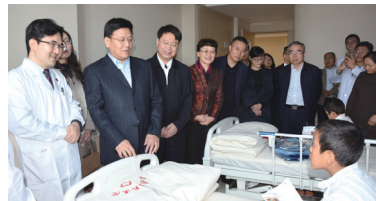
技术协作手术量
CARDIOVASCULAR SURGERIES
PERFORMED BY FUWAI SURGICAL TEAM IN
TECHNIQUE COLLABORATION PROGRAM



心血管技术培训网络覆盖图



云南省阜外心血管病医院 Fuwai Yunnan Cardiovascular Hospital



Fuwai Yunnan Cardiovascular Hospital is a public welfare secondary institution that was jointly established by the Yunnan Provincial Health and Family Planning Commission and Fuwai Hospital. It was founded as a triple A, first-class hospital specializing in cardiovascular diseases. After 4 years in development, on September 19, 2017, the hospital officially began offering medical services to the public, and the hospital president, Academician Shengshou Hu, performed the first surgery. The hospital is outfitted with world-class equipment and has 700 beds, 12 surgical operating rooms (two are hybrid operating rooms), 10 catheterization labs, and 27 medical departments. Since the trial operation, many high-level surgeries have been performed, and a number of leaders in cardiovascular surgery have visited the institution. The hospital seeks to achieve the same high level of medical technique, management philosophy and efficiency, and informatization as Fuwai Hospital, Chinese Academy of Medical Sciences (CAMS).

云南省阜外心血管病医院是按三级甲等心血管病专科医院标准建设的高水平医院，是云南省卫生计生委下属的公益二类事业单位。经过近4年的筹建，2017年9月19日，医院正式对外收治门诊、住院病人，在总院长胡盛寿院士的主刀下，完成首例外科手术。医院设置700张床位，12间百级净化手术室，含两间复合手术室，10间介入导管室和27个临床医技科室，拥有世界级先进医疗设备。试运营以来，医院多次完成高难度、高水平心血管疾病手术治疗，迎接上级领导和部门调研，逐步实现与医科院阜外医院“医疗技术、管理模式、管理理念、信息化建设”四个一致。



阜外华中心血管病医院、 国家心血管病中心华中分中心

Fuwai Central China Cardiovascular Hospital and Central China Subcenter of the National Center for Cardiovascular Diseases



Fuwai Central China Cardiovascular Hospital and Central China Subcenter of the National Center for Cardiovascular Diseases is the result of a collaborative effort between Fuwai Hospital, the National Health and Family Planning Commission, and Henan Provincial Government. It is located in Zhengzhou, Henan Province, which has the largest population in China. This is an ideal location to help prevent and treat cardiovascular diseases in the hugely populated central region of China as well as facilitate further disease research. The hospital was built to serve as a high-level and modern National Cardiovascular Diseases Regional Medical Center.

The hospital covers an area of 200.08 Mu (13.35 hectares), and it provides 1,000 beds, 20 operating rooms (two are hybrid operating rooms), and 15 interventional catheter rooms. The Central China Subcenter covers an area of 50 Mu (3.34 hectares), and it includes Departments of Epidemiology, Clinical Pharmacology, Laboratory Medicine, International Collaboration, and Data Medicine, as well as a Biobank. The medical center has been open for business since December 16, 2017.

阜外华中心血管病医院、国家心血管病中心华中分中心是阜外医院承担的又一委省共建项目。项目位于河南郑州，根据河南人口大省特点，突出了心血管病防治结合、医研融合，在合作共建医院的同时，建立国家心血管病中心华中分中心，开展心血管病防治研究工作。着力建设立足河南、服务中原、辐射华中的高水平现代化国家心血管病区域医学中心。医院占地200.08亩，设置床位1000张，20个手术室（含2个杂交手术室），15个导管室；华中分中心占地50亩，包括流行病学研究部、临床药理部、实验医学部、生物样本库、国际合作部、数据医学部等。该项目已于2017年12月16日开业运营。



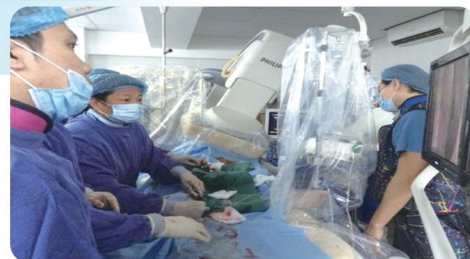
积极融入“一带一路”战略 Integration of “One Belt and One Road” Strategy

In 2017, the National Center for Cardiovascular Diseases, Fuwai Hospital was actively engaged in furthering the influence of the hospital through the national “One Belt and One Road” initiative. The center signed cooperation contracts with nine international medical centers along the line of “One Belt and One Road,” including Indonesia, the Philippines, Burma, Laos, Cambodia, Thailand, Nepal, Pakistan, and Kazakhstan. Additionally, the center supported the integration of Fuwai Yunnan Cardiovascular Hospital into the national strategy of “One Belt and One Road.” With the unique advantage of “two independent administration systems in one hospital,” Fuwai has improved its medical service and capacity in south and southeastern Asia. Various forms of academic exchanges, including international fellow training via master’s degree programs in cardiovascular clinical research, have been successfully conducted in over 30 countries along the line. The goal of these efforts is to optimize medical education and play a leading role in the training of distinguished cardiovascular specialists.

2017年，国家心血管病中心，中国医学科学院阜外医院积极融入国家“一带一路”战略，打造阜外品牌在国际上的影响力。国家心血管病中心已与印尼、菲律宾、缅甸、老挝、柬埔寨、泰国、尼泊尔、巴基斯坦、哈萨克斯坦等9个“一带一路”沿线国家的医学中心签署合作协议。积极推进云阜融入国家“一带一路”战略，利用“一院两制”优势，发挥向南亚、东南亚的健康辐射功能，开设“一带一路”沿线硕士国际班，完成涵盖一带一路超过30个国家的心血管疾病临床医学研究硕士国际班的创建、招收和教学工作。通过不断完善的学科体系建设，为培养顶尖心血管临床医学研究师资力量和人才发挥引领作用。



血管外科舒畅主任在格鲁吉亚实施该国首例主动脉覆膜支架开窗技术



阜外医院医生团队赴越南指导开展TAVR手术



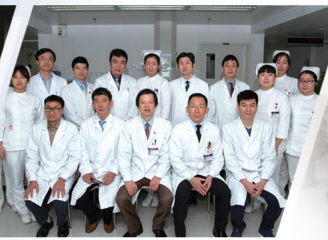
启动心血管疾病筛查项目



印度尼西亚血管外科医师进修结业仪式



印度血管外科医师进修结业仪式



越南血管外科医师进修结业仪式



与印尼国家中心主任签署合作备忘录



交流 Communication



中国心脏大会（CHC）2017 暨第二届中国血管大会（CVC） CHINA HEART CONGRESS (CHC) 2017 IN CONJUNCTION WITH THE 2ND CHINA VASCULAR CONGRESS (CVC)



The China Heart Congress (CHC) 2017 in conjunction with the 2nd China Vascular Congress (CVC) was held in Beijing, August 10-13, 2017. The congress was hosted by the Chinese Medical Association (CMA) and National Center for Cardiovascular Diseases (NCCD), and it had the theme of “Healthy Heart, Better Life: Innovation, Translation and Cooperation.”

Over the years, with strong support from the Chinese government and the active participation of many renowned national and international experts and colleagues, CHC/CVC has become one of the most influential academic events in the field of cardiology, both at home and in the Asia-Pacific region. This year's event was attended by 9,397 colleagues in the field of cardiology who shared their innovative ideas and extensive experience in the Road and Belt Innovation and Cooperation Seminar, Cardiovascular Disease Focus Summit, and more than 50 scientific sessions covering topics such as fundamental research and innovations, epidemiology and prevention, cardiovascular imaging, general and interventional cardiology, cardiovascular surgery, anesthesia, intensive care, and nursing. The CHC/CVC 2017 emphasized the use of big data for cardiovascular disease research, structural heart disease, vascular diseases, innovative technologies, and physician training programs. Fuwai Hospital's world-class information system allowed the global achievements and inspiring ideas in cardiovascular disease precision medicine and other frontier topics to be delivered in a more informative and visible way and contributed to the overall success of the conference. The conference provided an excellent platform for colleagues from around the world to work together to address challenges and problems related to cardiovascular diseases.

2017年8月10-13日，“中国心脏大会（CHC）2017 暨第二届中国血管大会（CVC）”在北京国家会议中心成功召开，本届大会由中华医学会国家心血管病中心主办。大会主题为“健康的心脏、更好的生活 - 创新·转化·合作”。

多年来，在众多伙伴和医界同仁的大力支持和积极参与下，中国心脏大会已经发展成为我国乃至亚太地区心血管界最具影响力的学术盛会。今年大会共有9397名心血管疾病相关领域同道参与其中。本届大会内容丰富，包括心脏和血管全体大会、心血管“一带一路”创新与合作研讨会、心血管疾病热点峰会、50余个分论坛以及卫星会；对心血管疾病基础研究、流行病学和人群预防、心血管疾病影像和检验、心血管内外科治疗、护理等方面均安排了详尽的讨论。今年大会还将重点加强心血管大数据、结构性心脏病、血管疾病、创新技术、基层培训等专题论坛，并将借助阜外医院国际领先的信息化、可视化的多媒体教学系统进一步展示当前国内外心血管疾病精准医学研究的前沿与成果。届时来自我国和世界各地的专家学者将在中国心脏大会上分享最新学术研究成果，讨论实践中的热点问题，交流心血管病医、教、研、防及产业的各种信息，共同应对心血管疾病的国家、地区及全球性挑战。



2017冠心病外科技术国际研讨会 2017 SYMPOSIUM OF ADVANCED SURGICAL TECHNIQUES IN CORONARY ARTERY DISEASE

The 2017 Symposium of Advanced Surgical Techniques in Coronary Artery Disease (SASTCAD) was held May 26-27 in the conference hall of Fuwai Hospital. The meeting focused on the latest developments and issues in the surgical treatment of coronary heart disease. Leading experts from the USA, Europe, Japan, India, Korea, and Australia presented their current data on evolved hybrid and minimally invasive techniques, total arterial grafting, and improving outcome of saphenous vein, among other topics. The latest concepts in treatment and achievements from the most prestigious medical centers in the world were shared between countries. Leading Chiefs from different provinces across China joined the meeting and had great discussions with the international attendees. Using simultaneous interpretation, the audience had the opportunity to communicate with international experts in advanced surgical techniques. Three-hundred surgeons attended the event, and over 500 watched the live stream of the meeting online. The 2017 SASTCAD highlighted tremendous advances in the development of surgical treatments for coronary artery disease.

2017年国内首届冠心病外科技术国际研讨会于5月26日-27日在中国医学科学院阜外医院M层会议厅召开。本次会议涉及冠心病外科治疗的最新进展，邀请了该领域来自美国、欧洲、日本、印度、韩国、澳大利亚等全球顶尖的专家，会议的热点议题包括杂交技术、微创技术、全动脉化、改善静脉通畅率的新技术等等，分享该领域治疗的最新理念和世界高水平医疗中心的最新成果，探讨冠心病外科的未来发展方向，并进行同声翻译为国内广大的同行提供了一个与全球顶尖大师交流的机会。国内来自各个省市大的心脏外科中心的主任参与会议，进行了踊跃探讨，国内注册到现场参会人数近300人，网络线上收看会议直播500余人次，对于国内该学科的发展起到了积极推动作用。





第二届中国血管大会 SECOND CHINA VASCULAR CONGRESS

On August 11, 2017, the second China Vascular Congress (CVC 2017) was successfully held at the China National Convention Center in Beijing. This academic event to discuss the progress of surgical, endovascular, and hybrid treatment for aortic, peripheral arterial, and venous diseases was attended by more than 20 foreign experts from more than 10 countries and more than 1,000 domestic cardiovascular surgeons. One of the features of CVC 2017, was the “Medical Skill & Healing Art Symposium,” which included an exploration of the cross-border integration of medicine and art led by Zhonghao Wang, academican of the Chinese Academy of Sciences, Cunxin Pu, national first-level actor, and Jianfeng Bai, senior reporter from People Daily.

In accordance with the national strategy of “One Belt and One Road,” the National Society of Vascular Surgery signed the Memorandum of Understanding with Asociación Argentina de Angiología y Cirugía Cardiovascular, Colegio Argentino de Cirujanos Cardiovasculares from Argentina, and Sao Paulo Vascular & Endovascular Surgery Institute of Brazil.

2017年8月11日，第二届中国血管大会（China Vascular Congress, CVC）在北京国家会议中心隆重开幕，来自10余个国家20余位外国专家以及来自全国各地1000多位心血管外科同仁参加了此次学术盛会，共同探讨了外科、腔内、杂交治疗主动脉、外周动脉和静脉疾病的最新进展。作为本次大会特色之一，今年CVC2017特别设置“医术·艺术”人文讲坛，邀请中国科学院汪忠镐院士，国家一级演员濮存昕先生、人民日报高级记者白剑峰先生等数位医疗界和文艺界大家，同台探讨医术与艺术的跨界交融。同时，在国家大力提倡“一带一路”战略的时代背景下，秉承“和平合作、开放包容、互学互鉴、互利共赢”的丝绸之路精神，中国国家心血管病专家委员会血管外科专业委员会与巴西圣保罗血管与腔内血管外科学院、阿根廷脉管与心血管外科学会、阿根廷胸心血管外科学会在CVC2017开幕式上签署了学术合作备忘录。

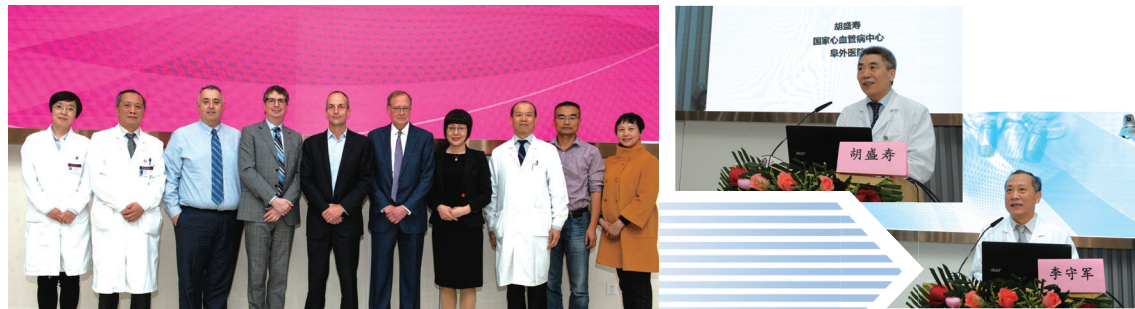


第二届阜外国际复杂先心病高峰论坛 SECOND FUWAI INTERNATIONAL CONFERENCE OF COMPLEX CONGENITAL HEART DISEASES

On December 1-3, 2017, the Second Fuwai International Conference of Complex Congenital Heart Diseases, which is recognized as the best congenital cardiac forum in China, was successfully held in Beijing. Top pediatric cardiac surgeons from Europe and North America joined Professor Hu Shengshou, Professor Li Shoujun, and other domestic experts to share their cutting-edge technologies and report the results of late-breaking trials in the field of complex congenital heart diseases. The conference focused on the Congenital Heart Surgery Database, borderline ventricles, complex right heart anomalies, and pediatric valvular diseases. The world's top surgeons engaged in deep discussion and shared their experiences during the meeting. In addition, attendees enjoyed several surgical videos presented by experts in the field.

继第一届阜外国际复杂先心病高峰论坛在2016年成功举办并获得高度好评后，由阜外医院小儿心脏外科中心主办的第二届国际复杂先心病高峰论坛于2017年12月1日至2017年12月3日在北京举行。八位来自世界杰出中心的顶级先心病外科专家和胡盛寿院长、李守军教授等国内专家逐一展示了复杂先心病外科治疗进展，讨论了先心病数据库、复杂先心病边缘心室治疗、右心系统病变的治疗策略及儿童瓣膜病等四个专题。会议期间国内外专家讨论热烈，分享了复杂先心病先进的治疗经验，同时会议期间还播放了国际心脏外科大师手术视频，使参会人员获益良多。





第十届复杂先心病研讨班： 小儿瓣膜病治疗进展暨先心病围术期呼吸系统精细管理 10TH COMPLEX CONGENITAL HEART DISEASE FORUM: PEDIATRIC VALVULAR DISEASE & PRECISE PERIOPERATIVE RESPIRATORY MANAGEMENT

The 10th Complex Congenital Heart Disease Forum: Pediatric Valvular Disease & Precise Perioperative Respiratory Management was successfully held at Fuwai Hospital from March 29 to April 1, 2017. More than 300 surgeons, anesthesiologists, and intensivists from across the country took part in this forum. Several live showings of particularly challenging surgical cases were presented during the conference. The primary focus of the meeting was surgery for pediatric valvular disease and precise perioperative respiratory management.

Because of the need to consider the growth and development of a pediatric patient, valvular issues remain the most challenging in pediatric cardiac surgery. Although significant improvements have been made with valvuloplasty, concerns remain regarding the best strategy and technique for valvular surgery.

Precise perioperative respiratory management is also an important issue and was at the forefront of the conference. Experienced physicians shared their concepts and discussed clinical cases. Senior intensivists from Boston, Toronto, and Melbourne reported on their experiences with perioperative respiratory management and ECMO application.

2017年3月29日至4月1日，“第十届复杂先心病研讨班暨小儿瓣膜病及先心病围术期呼吸系统精细管理研讨会”在北京阜外医院成功举办。来自全国各地的300多名医生参加了会议。沿袭以往学习班的特色，会议还安排了典型病例手术演示。

本次研讨会的主题是小儿瓣膜病及先心病围术期呼吸系统精细管理。由于需要考虑患儿的生长发育，小儿心脏瓣膜病变一直以来是小儿心脏外科中最棘手的领域，尽管瓣膜成形或瓣膜置换技术不断发展，目前小儿瓣膜病变术式选择、手术技术、围术期管理等方面仍存在争议。另外，先心病围术期呼吸系统精细管理已愈发引起重视。会议上专家学者详细介绍了他们的工作经验，同时来自波士顿儿童医院，多伦多儿童医院及墨尔本皇家儿童医院等国际著名先天性心脏病诊治中心的术后监护团队介绍围术期呼吸系统的管理及ECMO使用经验。



第九届阜外主动脉病变治疗研讨会 FUWAI CONFERENCE ON AORTIC SURGERY 2017

More than 200 aortic surgeons from more than 100 Chinese medical centers took part in the Fuwai Conference on Aortic Surgery 2017. The focus of this successful conference was surgical techniques for the treatment of thoracoabdominal diseases. Distinguished specialists presented their strategies for addressing aortic lesions, including open surgery, endovascular repair, and especially hybrid procedures. Dr. Joseph Coselli, the premier surgeon in this area, spoke on this theme at the opening ceremony. More than 30 top vascular experts from China also presented their research. Two live cases of surgical treatment of thoracoabdominal disease were broadcast during the conference. This conference was a lively and informative one that comprehensively addressed progress in the treatment of various types of aortic lesions.

“第九届阜外主动脉病变治疗研讨会”成功举办，来自一百多家医院的200多位主动脉外科专家参加了会议。

本届研讨会继续秉承“小而精”的办会传统，以“胸腹主动脉疾病的外科治疗”为主线举办。特邀专家汇集了中国主动脉外科、腔内和杂交领域的众多顶尖学者，全球著名主动脉专家Joseph Coselli教授在开幕式上作主旨报告。研讨会还特别设计了2台胸腹主动脉替换手术现场直播。

本届研讨会形式生动，议程紧凑，内容丰富，在以胸腹主动脉疾病为研讨重点的同时，还全面讨论了其他主动脉病变的诊治进展。





第六届中国心脏重症大会 SIXTH CHINA CARDIOVASCULAR CRITICAL CARE CONFERENCE

From June 17-18, 2017, the Sixth Conference of Chinese Cardiovascular Critical Care Medicine was successfully held at the China National Convention Center in Beijing. More than 5,000 doctors from across the country attended the meeting. The event was held in parallel with the 2017 Medical Exhibition by the Chinese Academician Forum. Several academicians of the Chinese Academy of Engineering, including Fan Daiming, Gu Xiaosong, Zhan Qimin, and Han Demin, were invited and gave wonderful lectures. The conference demonstrated recent achievements in cardiovascular critical care medicine, and attendees discussed the mission, developmental direction, and concrete implementation of the discipline of cardiovascular critical care in the context of building a healthy China. The theme of this conference was "Healthy China-Year of the Heart," the focus being healthier hearts and a healthier China. The conference was also held in parallel with the Third China and International Conference of Critical Care Medicine and the Chinese Second Conference of Cardiovascular Rehabilitation, with 13 sub-forums on cardiovascular and comprehensive critical care and a platform for cooperation among cardiologists, intensivists, and other medical practitioners and industry professionals. Professor Zhang Haitao served as the chairman of the conference and presided over the opening ceremony and opened the "Chinese Academician Forum." Academician Han Demin and Professor Li Lihuan also gave excellent speeches during the opening ceremony. The conference announced the Chinese Doctors' list of the 11 leading experts in the field of cardiovascular critical care in 2016.

2017年6月17-18日第六届中国心脏重症大会在北京国家会议中心成功举办，来自全国各地的5000多名医生参加了会议。会议同期召开了2017年华夏院士论坛医学博览会。论坛邀请樊代明、顾晓松、詹启敏、韩德民等多位中国工程院院士，并在大会上作了精彩的学术报告。本届大会全面展现了近年来心脏重症学科发展成果，探讨健康中国建设大环境下心脏重症学科的使命、发展方向和具体实践。大会以“健康中国·心脏年”为主题，专注更健康的中国，聚焦更健康的中国。大会同期举办了“第三届中国·国际重症医学大会”与“第二届中国心脏康复大会”以及13个心脏重症、综合重症学术分论坛，为心脏重症、重症医学及相关行业从业人员搭建信息共享、学术讨论、合作交流的平台。大会主席张海涛教授主持了开幕式并开启“院士论坛”，韩德民院士和李立环教授在开幕式上发表了精彩致辞。此次大会揭晓了“华医纵横榜—2016年度心脏重症领军人物”名单，11名心脏重症专家获评2016年度心脏重症领军人物。



2017年阜外外科团队在国际专业学术会议上的发言 PRESENTATIONS AT INTERNATIONAL MEETINGS

7th International Aortic Summit

Aruba, India, January 7

Dr. Chang Shu

1. Challenging Anatomy of EVAR: Techniques and Innovations
2. Chinese Experiences of TEVAR and EVAR for Aortic Diseases

35th Annual International Symposium: Clinical Update in Anesthesiology, Surgery, and Perioperative Medicine

Cancun, Mexico, January 15-20

Dr. Hushan Ao

Management of Patients with Metabolic Syndrome for Cardiac Surgery

LINC (Leipzig International Course) 2017

Leipzig, Germany, January 24-27

Dr. Chenyang Shen

Optimal Surgical Management for Abdominal Aortic Pseudoaneurysm in Behcet's Disease: Open Surgery or EVAR?

TCTAP 2017 22nd Cardiovascular Summit

Seoul, Korea, April 25-27

Dr. Shen Lin

The Accuracy of Subjective Syntax Score Category Assessment and Influence Factors in China

2017 Annual Meeting of American Association for Thoracic Surgery

Boston, USA, April 29-May 3

Dr. Zhongdong Hua

Tricuspid Approach for Doubly Committed Subarterial Ventricular Septal Defect Repair with Right Vertical Subaxillary Mini-Incision: A Matched-Pair Analysis

Society of Vascular Surgery (SVS) 2017 Vascular Annual Meeting

San Diego, USA, May 31-June 3

Dr. Cuntao Yu

Long-term Outcomes of Hybrid Aortic Arch Repair for

Dissecting Aneurysm: A Single Center's Experience

53rd Annual Meeting of Japanese Society of Pediatric Cardiology and Cardiac Surgery

ACT CITY Hamamatsu, Japan, July 7-9

Dr. Shoujun Li

TGA/LVOTO Double Root Translocation

7th World Congress of Pediatric Cardiology and Cardiac Surgery

Barcelona, Spain, July 16-21

Dr. Rui Lu

Clinical Outcome of Contemporary Extracardiac Conduit Total Cavopulmonary Connection: A 15-Year Single-Center Experience

2017 International Coronary Congress

New York, USA, August 18-20

Dr. Zhe Zheng

Current Role of Hybrid Coronary Revascularization: Chinese Perspective

2017 International Coronary Congress

New York, USA, August 18-20

Dr. Dachuan Gu

Appropriateness of Treatment for Complex Coronary Artery Disease in Mainland China

9th Meeting of the International Society for the History of Medicine

Beijing, China, September 6-11

Dr. Yajie Tang

The Past and Present of Hypertrophic Obstructive Cardiomyopathy and Morrow Procedure

2017 Congenital and Structural Interventions - the University of California, San Francisco

San Francisco, USA, September 8-9

Dr. Wei Wang

The Ideal Transapical Heart Valve for Surgeons: A 1-Year Results of the Multi-Center Study of J-Valve System on Patients with Aortic Regurgitation

Improvements & News in Vascular & Endovascular Surgery Thessaloniki

Thessaloniki, Greece, September 16
Dr. Chang Shu
Endovascular Repair for Complicated Aortic Dissection & Aneurysm

2017 Stanford-China Cardiovascular Research Symposium

California, USA, September 21-22
Dr. Zhe Zheng
The Unceasing Battle Against Cardiovascular Disease in China: Fuwai's Mission Now and Beyond

CHORUS Seoul 2017

Seoul, Korea, November 3-5
Dr. Shuiyun Wang
Septal Myectomy after Alcohol Ablation in the Patient with HOCM

16th International Congress of Cardiothoracic and Vascular Anesthesia

Rio de Janeiro, Brazil, October 4-6
Dr. Hushan Ao
Perioperative Cross-Talk Between Inflammation and Hemostasis in Cardiac Surgery

14th Annual Multidisciplinary Cardiovascular and Thoracic Critical Care Conference

Washington D.C., USA, October 5-7
Dr. Hongyan Zhou
Preoperative Thromboelastography Predicts Postoperative Massive Bleeding in Acute Type A Aortic Dissection

2017 31st Annual Meeting of European Association for Cardio-Thoracic Surgery

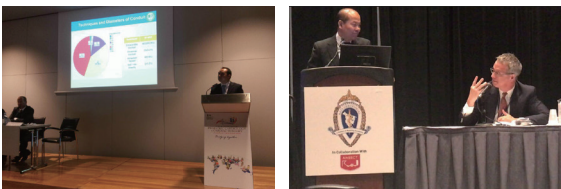
Vienna, Austria, October 7-11
Dr. Bing Tang
Comparison of Outcome After Myectomy in Obstructive Hypertrophic Cardiomyopathy Patients with Different Morphologic Types

2017 31st Annual Meeting of European Association for Cardio-Thoracic Surgery

Vienna, Austria, October 7-11
Dr. Cuntao Yu
Risk Factors of Acute Renal Failure in Patients Undergoing Surgery for Stanford Type A Aortic Dissection: A Retrospective Study of 619 Consecutive Patients

Asia Pacific ELSO (APELSO) Conference 2017

Gold Coast, Australia, October 12-14
Dr. Feilong Hei



ECMO in China

18th Congress of Asian Society for Vascular Surgery

Kuala Lumpur, Malaysia, October 25-28
Dr. Chang Shu
Optimal Choices for Aortic Arch Pathology: Open, Hybrid and Total-Endo Approach

2017 Annual Meeting of the America Heart Association

California, USA, November 9-11
Dr. Yajie Tang
Transaortic Extended Myectomy for HOCM Patients with Midventricular Obstruction (poster presentation)

VEITH Symposium 2017

New York, USA, November 14-18
Dr. Chang Shu
1. Choice of Optimal Treatment for Aortic Arch Lesions: Open, Hybrid, Chimney: Which Is Best and When
2. In All Patients with TBADs Treated by TEVAR An Attempt Should Be Made to Cover All Secondary Tears: How to Do This

9th Annual Congress of Cardiology

Singapore, November 15-17
Dr. Hongyan Zhou
Risk Factors of Perioperative Intra-Aortic Balloon Pump Complications in Cardiac Surgery: A 12-Year Single-Institution Analysis

27th Annual Congress of the Association of Thoracic and Cardiovascular Surgeons of Asia (ATCSA 2017)

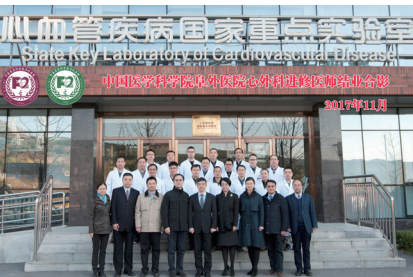
Melbourne, Australia, November 16-19
Dr. Zhe Zheng
1. The Current Status of Coronary Artery Surgery in China: Data from the Chinese Cardiovascular Surgical Registry
2. VATS Bipolar Radiofrequency Ablation with a Modified Box-Lesion Technique

12th Asian Society of Cardiothoracic Anesthesiologist (ASCA) Meeting & Workshops

Hong Kong, November 17-19
Dr. Hushan Ao
Anesthesia for Patients with Congenital Heart Disease Undergoing Non-Cardiac Surgery



教育与培训
Education and Training



Fuwai Hospital promotes the “Leading Talents” concept in its education and training programs. Its programs continue to produce the nation's most qualified cardiovascular professionals, earning the hospital recognition as the “cradle” for cardiovascular talents in the treatment and prevention of cardiovascular diseases in China. Fuwai Hospital has established a comprehensive education training system for doctors and researchers at every level who specialize in cardiovascular diseases. The system includes standardized resident training focused on the basic skills, postgraduate education to foster scientific research abilities, and continuing education with an emphasis on advanced clinical skills training for doctors. This education system has trained a large number of cardiovascular professionals and technical personnel who currently work at medical institutions across the nation.

In 2017, 13 international physicians from Indonesia, Argentina, and the Dominican Republic received training, and 29 postgraduate graduated from the surgical departments of Fuwai Hospital. An additional 72 doctors from domestic centers completed continuing education training programs in our surgical departments. Eight of our cardiovascular surgeons traveled to the USA to attend advanced education and training programs. With future development of hospital facilities and the expansion of the international communication platform, Fuwai Hospital will continue to strengthen exchanges and cooperation between countries and institutions, increasing its worldwide influence in cardiovascular education.

阜外医院一直提倡“大人才观”的教育培训理念，为国家培养合格的心血管专业人才，是国家心血管防治领域的人才培养摇篮。以培养年轻医生基本技能的住院医师规范化培训，到以培养科研能力为主的研究生教育，再到以专注临床技能培训的进修医生教育，阜外医院构建了一套完整立体的，可适应我国各层次血管专业人才需要的教育培养体系，为国家输送了大量的心血管专业技术人才。

2017年，阜外医院外科系统共培养了29名研究生，同期国内共72名医师顺利完成了在阜外医院外科系统的进修课程。

2017年，外科接收了13名来自印度尼西亚、阿根廷、多米尼加共和国等国家的医务工作者来院学习；并通过教育培训项目外送8名外科医生前往美国学习专业知识及技能，未来随着医院硬件设施日趋完善和国际交流平台的扩展，阜外医院也将不断加强与不同国家之间的人才交流与培养合作，扩大我国在世界心血管人才培养方面的影响力。

2017年阜外外科团队举办的专业学习班 TRAINING PROGRAM AND WORKSHOPS 2017

❖ 第十期小儿瓣膜病治疗进展暨先心病围术期呼吸系统精细管理

10th Seminar for Pediatric Heart Valve Disease in
Conjunction with Training Courses for Detailed
Management of Perioperative Respiratory in
Congenital Heart Disease
3月29日-4月1日

❖ 主动脉腔内技术学习班

Training Courses for Endovascular Aortic Repair (EVAR)
第一期：4月17-19日
第二期：5月8-9日
第三期：12月18-20日

❖ 冠状动脉旁路移植术临床学习班

Training Courses for Coronary-Artery Bypass Grafting
第一期：5月25-29日
第二期：6月21-25日
第三期：11月16-18日

❖ 心外科进阶技术研讨会

Advanced Seminar for Cardiac Surgery
5月26-27日

❖ 主动脉夹层阜外分型与注册研究研讨会

Seminar for Fuwai Classification of Aortic Dissection
and Multi-Center Registry Study
6月16日

❖ 心脏瓣膜病外科治疗培训班

Training Courses for Surgical Treatment of Heart Valve
Diseases
第一期：6月29日-7月1日
第二期：12月20-24日

❖ 心脏生物瓣膜移植培训班

Training Courses for Cardiac Bioprosthetic Valve
Replacement
7月5-8日

❖ 第四届中国医学科学院阜外医院心血管外科手 术室专业护士学习班

4th Training Courses for Cardiovascular Theatre Nurses
8月11-13日

❖ 房颤临床学习班

Training Courses for Surgical Treatment of Atrial
Fibrillation
8月11-13日

❖ 重症心脏病患者护理规范高级研讨班

Advanced Seminar for Standard Care of Critical Heart
Disease Patients
8月12日



❖ 国家心血管病专家委员会血管外科专业委员会 国际研修班

International Seminar for National Society of Vascular
Surgery
8月24-25日

❖ 心血管外科微创技术高级培训班

Advanced Training Program for Minimally Invasive
Cardiovascular Surgery
第一期：9月14-16日
第二期：11月25日

❖ 第二届中国体外生命支持年会

2nd Annual Meeting of the Chinese Society of
Extracorporeal Life Support
10月13-15日

❖ 第五届阜外周围血管规范化治疗学习班

5th Training Courses for Standard Management of
Peripheral Artery Disease
10月20日

❖ 中国心胸麻醉学会第二届小儿麻醉分会学术年会

2nd Annual Meeting of Pediatric Anesthesiology, on
Behalf of the Chinese Society of Cardiothoracic and
Vascular Anesthesiology
11月3-7日

❖ 全国心血管麻醉及围术期处理研讨会2017

National Symposium on Cardiac Anesthesia and
Perioperative Management 2017
11月18-19日

❖ 川渝体外生命支持分会成立大会暨川渝体外生 命支持论坛

Founding Congress of Chuan-Yu Regional Branch
of the Society of Extracorporeal Life Support, in
Conjunction with Chuan-Yu Forum of Extracorporeal
Life Support
11月25日

❖ 阜外医院手术室男护士沙龙

Fuwai Hospital Male Theatre Nurse Salon
12月1-3日

❖ 急性心力衰竭综合救治技术普及和提高培训班

Popularization and Improvement Training Courses for
Comprehensive Management of Acute and Chronic
Heart Failure
12月13-17日

❖ 体外循环模拟培训班

Simulation Training Courses for Cardiopulmonary
Bypass
12月17日



科研 Research

During 2017, the Fuwai surgical team published 44 SCI articles and continued to improve its communication of new knowledge in the field of cardiovascular surgery research.

2017年阜外医院外科系统共发表SCI论文44篇，继续在心血管外科临床与科研领域进行着新知识的传播与交流。



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