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## **HISTORICAL DEVELOPMENT OF CARDIAC SURGERY**

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### **Annotation**

This article presents a comprehensive historical overview of the development of cardiac surgery, from its early experimental stages to modern high-technology interventions. It traces key global milestones—beginning with pioneering operations by Daniel Hale Williams and Ludwig Rehn—and highlights groundbreaking innovations such as the heart-lung machine, heart transplantation, and minimally invasive surgical techniques. Special attention is given to the evolution of cardiac surgery in Uzbekistan, profiling leading national specialists and institutions that have contributed to the field's regional development. The article underscores the collaborative, international nature of cardiac surgery and its continuing advancement through scientific research, technological innovation, and strategic healthcare investment.

### **Аннотация**

В данной статье представлен всесторонний исторический обзор развития кардиохирургии — от её ранних экспериментальных этапов до современных высокотехнологичных вмешательств. Рассматриваются ключевые мировые вехи, начиная с новаторских операций Даниэля Хейла Уильямса и Людвига Рейна, а также освещаются прорывные достижения, такие как создание аппарата искусственного кровообращения, пересадка сердца и малоинвазивные хирургические методы. Особое внимание уделяется развитию кардиохирургии в Узбекистане, включая описание ведущих национальных специалистов и учреждений, внесших вклад в становление отрасли в регионе. Статья подчёркивает международный и коллективный характер кардиохирургии, а также её постоянное развитие благодаря научным исследованиям, технологическим инновациям и стратегическим инвестициям в здравоохранение.



### Annotatsiya

Ushbu maqolada yurak jarrohlighining ilk tajriba bosqichlaridan tortib, zamonaviy yuqori texnologiyali muolajalargacha bo'lgan tarixiy rivojlanishi keng qamrovli tarzda ko'rib chiqiladi. Maqolada Daniel Hale Williams va Ludwig Rehn kabi kashshof jarrohlarning muvaffaqiyatli amaliyotlaridan boshlab, yurak-o'pka apparati, yurak transplantatsiyasi hamda kam invaziv (kam shikastlovchi) jarrohlik usullarining yaratilishiga oid muhim global bosqichlar yoritib beriladi. Shuningdek, O'zbekistonda yurak jarrohlighining shakllanishi va rivojlanishiga alohida e'tibor qaratilib, bu borada yetakchi mutaxassislar va tibbiyot muassasalari faoliyati tahlil qilinadi. Maqola yurak jarrohlighining xalqaro va hamkorlikka asoslangan xususiyatini hamda uning ilmiy tadqiqotlar, texnologik innovatsiyalar va sog'liqni saqlash tizimidagi strategik investitsiyalar orqali doimiy rivojlanishini ta'kidlaydi.

**Keywords:** Cardiac, surgical procedures, education, history, methods, trends, cardiovascular, diseases, mortality, surgery, heart, artificial, heart transplantation history, trends, heart.

Cardiac surgery's historical development has seen a transition from being considered impossible to a field with significant advancements. Initially, the heart was deemed untouchable, but pioneering surgeons like Ludwig Rehn and Daniel Hale Williams challenged this notion by successfully operating on heart wounds. The development of the heart-lung machine in the mid-20th century revolutionized the field, enabling surgeons to operate within the heart chambers with greater precision and safety. This, along with the emergence of minimally invasive techniques and transcatheter procedures, has propelled cardiac surgery to where it is today, with ongoing advancements in areas like heart transplantation and artificial hearts.

Early Developments (Pre-20th Century):

- **1893:**

Daniel Hale Williams performed what is considered the first successful open-heart surgery, repairing a stab wound in the pericardium and heart.

- **1896:**

Ludwig Rehn successfully sutured a stab wound to the right ventricle, demonstrating the possibility of operating on the heart.



- **Early 20th Century:**

The work of Alexis Carrel on vascular anastomosis paved the way for more complex procedures.

Mid-20th Century Advancements:

- **1938:**

The first extracardiac procedure, ligation of a persistent patent ductus arteriosus, was performed by Robert E. Gross.

- **1940s:**

Clarence Crafoord performed the repair of aortic coarctation and the Blalock-Taussig shunt procedure for tetralogy of Fallot.

- **1950s:**

The development of the heart-lung machine by John H. Gibbon Jr. revolutionized cardiac surgery by allowing surgeons to operate on a still heart.

Later Developments:

- **1960s:**

The first heart transplant was performed by Christiaan Barnard in South Africa.

- **1970s-1990s:**

Continued advancements in valve repair and replacement, including the development of mechanical heart valves.

- **Late 20th and Early 21st Century:**

The rise of minimally invasive techniques, including robotic-assisted surgery, and transcatheter procedures.

- **Present:**

Ongoing research and development in areas like artificial hearts, ventricular assist devices, and advanced valve repair techniques.

This historical journey demonstrates a progression from limited, experimental procedures to complex, life-saving surgeries. Each step forward has been built upon previous knowledge and technological advancements, highlighting the collaborative and innovative nature of cardiac surgery.



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## **Cardiac Surgery in Uzbekistan was also developed by different scientists**

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