

# Hugh Henry Bentall

A pioneer in heart-lung surgery

Hugh Henry Bentall, professor of cardiothoracic surgery (b 1920; q 1942 University of London Medical School), died from dementia on 9 September 2012.

In April 1959, at the height of the cold war, a team of specialists from Hammersmith Hospital boarded a container ship and set sail for Moscow. On board the ship was the "heart-lung machine" developed by Denis Melrose and used in 1953 to perform the first successful open heart operation in the UK.

That operation was carried out by a team that included Hugh Bentall, who went on to become the first professor of cardiac surgery at Imperial College. The team's fame had spread, and at a conference Alexander Bakulev, a Russian heart specialist, challenged them to prove that the heart-lung machine worked.

As well as acting as first surgical assistant, Bentall's job was to arrange the complex logistics for the trip and to pack everything that could "conceivably be needed to perform six operations in Moscow."<sup>1</sup> Once he arrived in the Soviet Union he tested the equipment and the on-site blood transfusion facilities by performing a mitral valvotomy, a routine heart operation common at the time. Then the team used the machine to perform five operations on adults and children.

The successful operations were watched by around 200 surgeons, with William Cleland, chief surgeon on the team, reportedly saying, "Well, the good Lord had little else to do in Moscow, so he looked after us."<sup>2</sup> So impressed were the Soviet doctors with the Hammersmith equipment that, according to Bentall, they bought all of it, and the British team returned to London by plane with just their hand luggage.

## In war and peace

Bentall, who was born in 1920, was educated at Seaford College in Sussex. According to family lore his mother chose his career for him, and he studied at the University of Cambridge and St Bartholomew's Hospital in London, graduating in 1942. His first post was in general surgery at North Middlesex Hospital. When British troops were evacuated from Dunkirk in 1940 he told his family how he and his fellow medical students were given an operating list to work through when the wounded soldiers got to London.

He joined the Royal Navy in 1945, serving



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in a naval hospital and then on the hospital ship the *Empire Clyde*, the only hospital ship in the Pacific fleet. He went to Singapore and treated liberated prisoners of war.

After demobilisation in 1947 he returned to London, working first at Charing Cross Hospital and then Hammersmith, where he stayed until his retirement. He worked under Professor Ian Aird, a general surgeon who famously separated conjoined twins in 1953 and who was the driving force behind Melrose and Bentall's early cardiac surgery.

According to Kenneth Taylor, an emeritus professor of cardiac surgery who worked with Bentall in the 1980s, the development of the heart-lung machine was the "key that opened the door to cardiac surgery," as it enabled the patient's circulation and lung function to be maintained.

While Melrose was the brains behind the machine, and Cleland was the senior surgeon, Bentall was recognised as the pioneer on the academic side, says Taylor. Bentall and Melrose worked hard to reduce the death rates from cardiac surgery and operated on retired

greyhounds sent to them from a neighbouring race track.

Bentall also appeared on the first ever episode of the BBC's still running medical programme *Your Life in Their Hands* in 1962, performing an operation to repair a hole in the heart.

Bentall's son Richard, who trained initially as a cardiac surgeon before moving into research, said that his father was a highly technical man and, with Melrose, enjoyed playing around with their new gadgets and kit. Richard says his father was completely dedicated to the job and that as children he and his siblings hardly saw him because he was always working.

## The Bentall procedure

Bentall gained lasting fame through an operation in 1966, which became known as the Bentall procedure, to replace the aortic valve in patients with Marfan syndrome.<sup>3</sup> He devised a combined procedure whereby the valve, aortic root, and ascending aorta were replaced together. Before Bentall's breakthrough, patients generally died before any kind of procedure was carried out.

Stephen Westaby, cardiac surgeon at the John Radcliffe Hospital in Oxford and author of *Landmarks in Cardiac Surgery*, said that the operation was a breakthrough, becoming the standard procedure for treatment of patients with Marfan syndrome.

The procedure has been modified somewhat since Bentall first described it in 1968, but, says Taylor, Bentall was rightly proud of the procedure, which has been used throughout the world.

In his later career he worked on the investigation and treatment of Wolff-Parkinson-White syndrome with diathermy.

In his retirement he became interested in repairing antique clocks, using the technical skills honed throughout his surgical career.

His wife, Jean, who worked as a chest physician, died earlier this year. He leaves three sons and one daughter.

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2 Borst H. Ralph D Alley lecture. The hammer, the sickle and the scalpel: a cardiac surgeon's view of eastern Europe. *Ann Thorac Surg* 2000;69:1655-62.

3 Bentall H, De Bono A. A technique for complete replacement of the ascending aorta. *Thorax* 1968;23:338-9.

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