

A history of surgery for congenital heart disease in Papua New Guinea

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SUMMARY

Cardiothoracic surgery in Papua New Guinea (PNG) was somewhat ad hoc prior to 1956 but later settled into an arrangement in which visiting teams from overseas selected mostly adult patients for a limited range of closed heart operations to be done locally or overseas. In 1978 the late Professor John Biddulph was instrumental in facilitating a more formal arrangement with the Royal Prince Alfred Hospital whereby patients were selected by a visiting cardiologist on an annual basis to be transferred to Sydney for cardiac surgery. This subsequently developed into a predominantly paediatric program based at the Royal Alexandra Hospital for Children in Sydney, which successfully ran until 1992. In 1993 a program began, based at the Sydney Adventist Hospital, in which a voluntary cardiac team has been visiting annually to perform both open and closed heart surgery. This program has proved to be very successful with a high output and a low mortality. Despite this long history of surgery for congenital heart disease in PNG, no definite long-term plans have eventuated. Because the financial situation of the country does not allow for a major cardiothoracic unit, the current arrangement whereby noninvasive investigation and some closed surgery are performed at Port Moresby General Hospital is appropriate for the foreseeable future.

Pre-Independence

Dr S. Wigley, then head of the Tuberculosis Unit in the Territory Health Service, documented the early history of thoracic surgery in PNG. "Prior to 1956, a minor foray into thoracic surgery had been made in Port Moresby by an intrepid and strong-willed general surgeon who operated on TB patients without specialist anaesthesia, physiotherapy, skilled nursing, adequate blood transfusion services, or much judgement" (1).

Wigley goes on to describe how in 1955 the then Director for Health, Dr John T. Gunther, invited Dr H. W. Wunderly, the Commonwealth Director of Tuberculosis, and Mr C. J. Officer Brown to visit the Territory of Papua and New Guinea and investigate the

feasibility of starting a thoracic surgical program in Port Moresby. They proposed that the Australian Thoracic Surgical Society should arrange visits of teams from around Australia to perform thoracic surgery in Port Moresby. Each team was to be self-contained in anaesthesia, physiotherapy, instruments, theatre and ward staff.

By the end of 1956, 3 teams had visited; each stayed 6 weeks. The first team was from Perth, Western Australia led by the surgeon Mr F. J. Clark. The teams performed a total of 81 operations with no deaths.

By 1966, 20 teams had visited Papua New Guinea (PNG), mainly to Port Moresby with Lae and Rabaul being included in the later years. They performed 716 thoracic operations

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on a total of 623 patients seen. These included 515 TB patients (83%) (lobectomies, pneumonectomies etc), 37 non-tuberculous thoracic surgery and 71 heart operations. The latter included 32 mitral valvotomies, 21 patent ductus arteriosus (PDA) ligations, 5 constrictive pericarditis releases, 6 atrial septal defect (ASD) repairs, 6 Blalock-Taussig shunts for tetralogy of Fallot, and 1 repair of aortic coarctation. There were 28 deaths, a surgical mortality of 4.5%. The cost was Australian Dollars (AUD) 300,000 over the 10 years, covering the visiting cardiologists' and the cardiothoracic surgeons' expenses including travel and accommodation (1).

The last cardiothoracic team visit in June 1966 was by cardiologist Dr Stuckey and surgeon Mr J. H. Brown. They examined 179 selected patients and from these 31 patients had surgery in Lae and 7 patients were to have their surgery in Australia. Dr Stuckey in his report included two important recommendations: firstly, the need to find alternative ways of detecting heart disease and secondly, the use of penicillin prophylaxis for rheumatic fever (2).

From the beginning of 1967 regular cardiologist visits continued and patients were selected for heart surgery in Australia. In September 1972 a small Cardiothoracic Unit was established in Lae under Mr Derek Berg (specialist surgeon) and Dr Colin Mathews (specialist physician). A total of 30 closed heart operations were performed there over a three-year period (1971-1974). 24 of them were PDA repairs of which 2 died and 2 failed; from the 4 mitral valvotomies, 1 patient died from postoperative cerebral embolism. 2 patients who had pericardectomy died (3).

In August 1973 a visiting cardiologist, Professor K. Somers, a World Health Organization consultant, selected a total of 30 cases out of 218 cardiac patients for surgery, 7 to be done at the Lae Cardiothoracic Unit and 23 for surgery at the Prince Charles Hospital in Brisbane (4).

Post-Independence

During the years 1974-1977 which spanned Independence there were no further cardiology visits and the Cardiothoracic Unit in Lae was

closed down. Arrangements were then made on an ad hoc basis and a few patients were sent to Prince Charles Hospital.

In 1978 Professor John Biddulph, on behalf of the Health Department, requested help from the Royal Prince Alfred Hospital in Sydney to select a cardiologist to visit Papua New Guinea annually. Professor David Kelly, who was the Director of the Hallstrom Institute of Cardiology, Royal Prince Alfred Hospital, was appointed to carry out these visits. He formulated the initial criteria for transfer of patients to Australia.

For the years 1978-1985 Professor Kelly paid his own annual return airfares to PNG and the PNG Government paid for his internal travel and accommodation. It was not until 1986 that the Australian International Development Assistance Bureau (AIDAB – now AusAID) through its Medical Officers Training Program (MOTP – now MONAHP) began to fund a cardiologist's annual visit to PNG.

During this period the former Director of the Adolf Bassler Institute of Cardiology, Dr John Celermajer, visited PNG twice as a Lecturer in Cardiology at the Medical Faculty, University of Papua New Guinea (1978 and 1983). Professor David Kelly and Dr Celermajer selected suitable cardiac patients for further investigation and possible surgery at the Royal Alexandra Hospital for Children (RAHC) in Camperdown, Sydney.

As almost all patients selected were children and all were operated on at the RAHC, in 1988 the responsibility for the selection of cardiac patients was given to the Director of Cardiology, RAHC or his nominee.

Since 1988 a cardiologist from the RAHC has been visiting PNG each year, going to regional centres to select children in urgent need of heart surgery within the following year. Dr John Celermajer visited Papua New Guinea from 1988 to 1989 and one of us (Dr Richard Hawker) visited from 1990 up to the present time. Between 5 and 24 children were selected each year.

The selection was based on assessment of probable outcome with the aim that only one

operation would be necessary. The hope was for a successful outcome with full restoration of function so that these children would become normal healthy citizens instead of dying or being left cardiac cripples.

This program was funded in part by AIDAB, the RAHC and the PNG Health Department. The Royal Alexandra Hospital for Children did not charge for the children's admissions, investigations and operations. The PNG Health Department paid for the airfares with some concessions from Air Niugini; hotel accommodation for each child and guardian was also paid by the Papua New Guinea Department of Health.

Due to an AUD7 million cut to the PNG Health Department Budget in 1990, no funds were available for travel and accommodation expenses for these children and their guardians. Fortunately, in that year the Australian High Commission, Lions and Rotary Clubs and Ok Tedi Mining Limited (OTML) were able to sponsor most of these children. Some of these organizations, particularly the OTML, continued to sponsor selected children until 1992.

In 1993 this program ceased because all the donor organizations withdrew their funding. The Royal Alexandra Hospital for Children had also withdrawn free services for admissions, investigations and operations, but still kept their costs to a minimum in 1992. At the same time social support services proceeded through the hospital Mothers' Union coordinated by Sister Sylvia Palmer.

Currently the minimum cost of sending a child for cardiac surgery is between AUD25,000 and 26,000. Because of the enormous expenses involved, only a small number of patients with congenital heart disease have been sent for cardiac surgery since 1993. These were either sponsored individually or by the newly formed National Heart Foundation. It was clear that the nation could not afford such expenses given other more important health priorities.

'The Operation Open Heart' Program, 1993-1998

Fortunately for PNG an organization called the Operation Open Heart Program was willing

to assist. This group is based at the Sydney Adventist Hospital and it serves other developing nations, working in conjunction with the Adventist Development and Relief Agency (ADRA) (5). The team consists of members recruited from hospitals throughout Australia on a voluntary basis. This team has visited PNG annually since 1993 except for 1997 (due to the National Election) as part of an ongoing project.

The team consists of specialist medical, nursing and technical Australian professionals. They fund their own travel to and from PNG. They are supported from various sources including Australian businesses and AusAID through its Pacific Islands Project (PIP) and Medical Officer, Nursing and Allied Health Professionals (MONAHP) program. The Royal Australian Air Force assists with the transportation of personnel and equipment (5). From inside PNG, financial support is provided by several sources including the Health Department, local Hospital Medical Boards, the National Heart Foundation, Rotary Clubs, the Red Cross and some local businesses. This support fulfils PNG's commitment to this Program by providing the team members with accommodation, meals and local transport.

Operation Open Heart aims to provide cardiac surgery to developing countries, in particular populations that are not served by indigenous programs. In addition it aims to provide education to local medical and nursing staff with the intention that, over time, local teams will learn the operative and intensive care techniques required to provide a service for their own populations.

The Program has previously operated from Port Moresby General Hospital (PMGH) and the Goroka Base Hospital (GBH). The original plan was that they stay 2 weeks each year in PNG, operating for 1 week from each hospital. Due to unforeseeable circumstances this has not been the case for every year they have visited. Although the 1993 and 1994 visits took place as principally planned, in 1995 and 1996 all patients had surgery in Goroka. Since 1998 the visits have centred on PMGH.

One of us (RH) visits a week before the team's visit and normally selects children for surgery. This visit is in conjunction with the

national pre-screening of cardiac cases by Dr M. Tovilu and the first author (NT), both paediatricians who have had cardiology training in Sydney.

Overall surgical results

Since the Program's inception, a total of 184 patients have had surgery, 20 in 1993, 26 in 1994, 31 in 1995, 39 in 1996, 26 in 1998, 16 in 1999 and 26 in 2000. The total number of cases include 67 open cases (36%) and 117 closed cases (64%). Their ages ranged from less than a year to 42 years with a mean of 10 years. Of the 26 operated on this year, more than half, 14 (54%), had open heart surgery.

37% of patients were from the National Capital District (NCD) and Papuan Region, 28% were from the Highlands Region, 21% from the Islands Region and 14% from the Momase Region. 60% were females and 40% were males. 70% of the patients were less than 12 years of age. The mortality was low at 2%.

In addition some adult patients have been operated on on a private basis overseas.

Conclusion

Surgery for congenital heart disease in PNG is unlikely to change in the foreseeable future. Due to other more pressing priorities in child

health, the establishment of a major cardiothoracic unit in this country is neither feasible nor practical. However, the success of past and ongoing programs and the obvious results in which many young people after one operation have gone on to live useful lives rather than die prematurely, or be invalids, presents a strong case for these programs to continue. The bulk of funding would continue to be from nonbudgeted external sources. There is a need for one centre that is equipped to perform noninvasive cardiac investigations and some closed cardiac surgery, as well as select open heart cases by visiting teams.

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