# Cuban Paediatric Urology and Radiology

## A Report for 1st November - 8th November 2004

**Professor Paddy Dewan and Dr Padma Rao**

**A project of the Cuban Department of Health,**
**And**
**Kind Cuts for Kids Foundation**

# Overview

The initial visit to Cuba was stimulated by contact between the Cuban Children's fund of APHEDA, and motivated by the late Tas Bull. Two visits were undertaken in 2003, with a focus on major Paediatric Urology, particularly bladder exstrophy patients requiring redo surgery. The funding has been provided by a combination of Northcote Rotary Club, the Cuban Children's fund committee and the generous donations from various companies, orchestrated through the Kind Cuts for Kids Foundation. The accommodation was provided by the Cuban Government, as was transport in Cuba, in addition to the flight costs for the second visit in 2003. Part of the costs for the third visit has been reduced by funding for the trip to Chile by the Chilean Urological Society, in return for participation in their annual meeting.

Communication difficulties, resulting from cyclone activity in Cuba in late October, caused problems in finalizing the arrangements for the 2004 visit. Never-the-less, a very productive combine surgical and radiological visit was achieved, with 44 patients being reviewed and investigations either planned or conducted. Subsequently, 10 patients had a total of 16 procedures, and 15 major cases were planned for an already planned visit for 2005, and funding for additional equipment has been provided by a generous donation from the Preston Rotary Club.

# Consultations

The team was met at the airport by Dr Rosario Calveat, Head of the Paediatric Urology Unit at the William Soler Hospital, and Amarilis Santfiel, a Plastic Surgeon who has acted as interpreter on each of the visits. Plans for the visit were discussed during that meeting, leading to a clinic the following day that went from 10 am till 8 pm, and followed a meeting with the William Soler, Hospital Director. Most of the 44 patients were seen during that clinic, and many had investigations planned that were subsequently performed with the involvement of Dr Rao, and many patients are to have surgery performed in 2005. Many patients seen during the first two visits were reviewed during the week. Of the 44 patients, 17 of the children and young adults had bladder exstrophy, most of who had been previously successfully treated. Ten patients went on to have Surgery, and 17 patients were unable to have surgery, but plans were made for their care on a subsequent visit.

The joy at being involved in the Paediatric Urology visit is reflected in the faces of the four surgeons above, particularly Dr Rosario Calviat, the head of the Urology Unit (front right).

In addition those in the photo (Maria Del Carmen Castro, Marlen Guerra-Rodriguez, Fermen Fernandez and Amarilis Santfiel – centre), Ilset Vela and Emelio Jackson participated in the clinics, lectures and operations. A number of medical staff and students also attended the lectures and Radiology sessions.

# Consultations (cont'd)

A number of noteworthy cases were reviewed, two of which have been described in detail below.

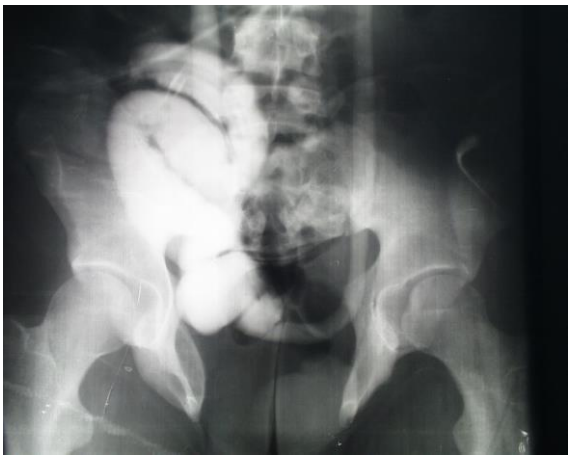
## *Case Description 1*

Daniel was seen for the third time. He was the case that resulted in the first trip to Cuba. Prior to the first Australian visit he had previously had surgery for Hirschsprung's, for which he two attempts at definitive repair had been undertaken. Misadventure during the surgery resulted in an obstructed left ureter, and faecal incontinence, with the need to re-establish the colostomy. He was found to have a huge rectum filled with a large amount of faeces, and he had lived with a nephrostomy tube in his kidney for four years. During an eight-hour operation in April he had the left ureter connected to the right, to allow for drainage of urine into the bladder, and he had an abdominoperineal operation, with the outcome being that the colostomy was joined to the anus. Postoperatively he has had good bowel control, but because of a stone in his kidney the nephrostomy had remained in situ. During this visit the stone was removed via a percutaneous nephroscopy and stone basket extraction. Thus an open operation was avoided. To the delight of all, the nephrostomy tube was removed on December 4th 2003, and he has remained well with no significant urinary infections, with good bowel and bladder control. Daniel remains well and continent of urine and faeces.


The top two pictures show the preoperative bladder study indicating the indentation from the faeces in Daniel's pelvis, and the colostomy that was in place prior to his operation in April. The lower left shows the nephrostomy tube present for 4 years prior to the happy day shown in the bottom right photo.

## *Case Description 2*

Adrian is now well and continent, draining his bladder by inserting a catheter into his abdomen four times each day. He is one of two boys who had an epispadias report in April 2003, and who had a major operation during the last visit. At that time he was noted to have had both his bladder and his appendix removed. A continent diversion was planned for the second visit, which was achieved during a five-hour operation. His ileal conduit was converted to an ileal reservoir, with the two ureters anastomosed to make available the left lower ureter, which was then joined to a tube of skin to form a catheterisable stoma. The change has allowed him to be dry and happy.



Adrian's ileostomy stoma is shown prior to his continent diversion operation, along with the contrast study of his ileal conduit, which was converted into a continent reservoir.

# Operative Surgery

During approximately 40 hours of operating, 10 patients had a total of 16 procedures. Most of the patients had long and complex surgery, with the most difficult cases taking over 6 hours. Although, the operative times were relatively quick as a result of the improved communication and teamwork that had developed earlier in the year. A total of six surgeons scrubbed for the operations, and again, as for the visits last year, Dr Amarilis assisting with most operations because of her dedication, availability and skill as an interpreter.

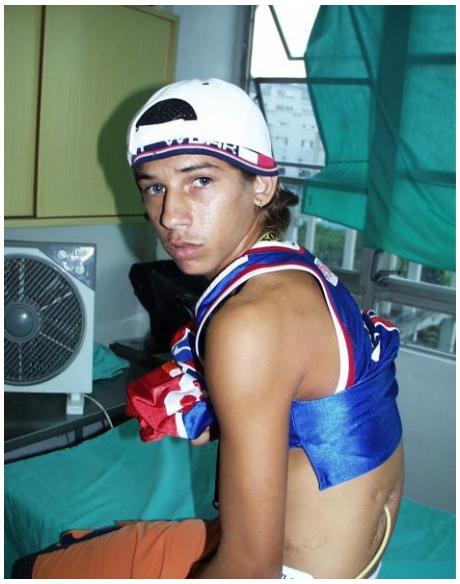
Surgery performed included bladder augmentation, hypospadias surgery, inguinal herniotomies, and the particularly significant case was the lad who underwent an undiversion. Bladder exstrophy was again a major part of the work load, but not a major part of the surgery. Fortunately no major complications or any minor problems occurred.

# Major Operative Cases

## *Operative Case 1*

Lenier had undergone previous major surgery for his bladder exstrophy, with both a poor cosmetic and functional outcome. He was left with a loop of bowel attached to his small bladder with both kidneys draining into the bowel loop. Plastic tubes had been placed through the skin of his back on each side to drain the urine, and for eleven years, when the tubes were clamped to test his bladder he was constantly wet. Dr Rao performed Xrays to confirm the anatomy, and an operation was performed that will enable Lenier to be continent, and to have the catheters removed from his back, needing for both kidneys to be draining into his new reservoir through the one ureter, while the other was used to come up to the skin to allow access for intermittent catheter drainage. The final anatomy and function was similar to the teenager in case 2.

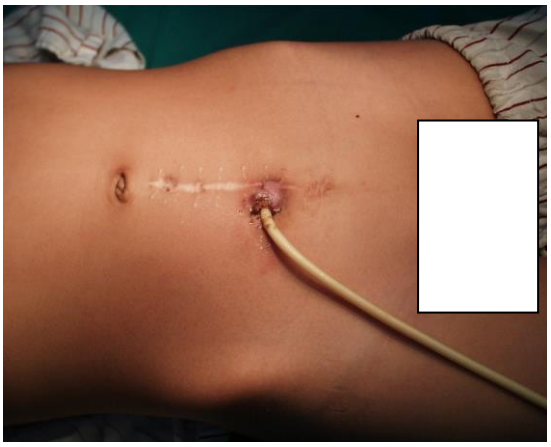
Lenier now catheterizes via a continent stoma on his abdomen, no longer needing the tubes in his back. Adrian and Lenier had a similar continent diversion operation.



## *Operative Case 2*

Alejandro had been involved in an accident that resulted in compete disruption of his posterior urethra, leaving his urethra attached to the back of his symphysis pubis. A surgical solution had not been available for a number of years. Using an approach used for the management of the imperforate anus, the bulbous portion of the urethra was able to be mobilized and anastomosed to the upper posterior urethra, with Alejandro hopefully being continent. Certainly, he no longer needs to have a suprapubic catheter in place. See over for pictures.

## *Operative Case 2 (cont'd)*



Alejandro is show with his suprapubic catheter, in the "jack-knife position ready for the exploration that identified the two ends of his urethra, which were anastomosed. The post operative appearance shows the little cosmetic consequence of the successful repair.

## *Bladder Exstrophy Group Description*

The bladder exstrophy patients, seen by the visiting team in Cuba, now consist of 17 children and young adults, most of who had an operation. The majority of these patients were seen during this visit. The series of patients has allowed for the demonstration of primary closure in the newborn period through to the treatment for incontinence with continent division. In addition, one patient has had the incorporation of a segment of bowel; another had a bladder neck reconstruction. The importance of the cosmetic outcome was highlighted by the wound revision, omphaloplasty and perineoplasty that were concurrently performed. The role of the combination of anterior and posterior osteotomies in bringing the pelvic muscle together in the midline, while facilitating a

## *Bladder Exstrophy Group Description (cont'd)*

secure closure and a good cosmetic result was highlighted in six cases. Also, an important part of the care of these children was shown to be the post-operative care of the catheters, particularly the sequence of events for the removal of multiple urinary tract catheters. A detailed discussion on the last working day ensured a written plan was in place for all those requiring ongoing treatment.

The cosmetic outcome for a boy with bladder exstrophy is shown.

Also, the cosmetic benefit of an omphaloplasty, perineoplasty and abdominal wall repair were highlighted.

# Radiology

## *Introduction*

This was the first visit that incorporated Paediatric Radiology, with the main aims being:

- Evaluate the present status of equipment.
- Assess the Radiological staff arrangements, including radiologists and technicians.
- Evaluate areas in which service, staffing or equipment improvements would be desirable.
- To teach Paediatric Radiology to surgical, technical and Radiological staff.
- To participate in the evaluation of Urological cases.

Radiological input during the outpatient clinics, both pre- and post-operatively, and in-depth discussion of the surgical perspective gave a greater understanding and appreciation of what was required Radiologically, and facilitated education of surgeons about the Radiological investigations. The main investigations were ultrasounds, micturating cystourethrograms, and intravenous urograms.

## *Radiological Staff*

Five Radiologists work in the Radiology Department at the William Soler Hospital. All five have carried out their Radiology training in Cuba. Within Havana itself, there are five training hospitals for Radiologists, and other training schemes exist in provinces outside Havana.

After gaining the basic medical degree, there is a period of approximately 3-5 years internship where the junior doctors are classified as “family doctors”, following which doctors can elect to specialize. The Radiology training is for three years, with an annual examination that is to be passed before proceeding to the next year. There is no specific subspecialty training in Paediatric Radiology.

There are approximately ten radiographers/technicians and one nurse in the department at William Soler. The radiographers train through the School of Radiography and the William Soler Hospital is one of the training hospitals. The training course is over three years.

## *Postgraduate Radiological Training*

The radiologists have limited access to post graduate conferences or overseas Fellowships, of which they are aware. Applications are directed to the Ministry, which then adjudicates as to who can attend, but most do not apply because of the high failure rate.

## *Radiological Equipment*

The Radiology Department is sparsely equipped, with only three plain radiography machines, three ultrasound machines and fluoroscopy equipment: there is no CT or MRI machine in the hospital.

- **Fluoroscopy**

  The *fluoroscopy machine* is old, and antiquated, with no static images possible, nor are "Coning" and "shutters", which help to limit the radiation expose. *Lead aprons* for radiation protection are not readily available in the Radiology Department, as is also the case in the operating theatre. The two lead aprons are old, heavy and ripped, and have not been tested for efficacy. Therefore, the radiologist, radiographers and the parents do not gain any protection from radiation exposure, which is dangerous, and should be unacceptable. Also, *thyroid shields*, and *lead screens* and *gonad protection* which are also considered essential in Australia are not available at all. A supply of lead aprons and further education in radiation protect would be appropriate.

For performing a study using xray screen in theatre, there are only two lead aprons to protect the staff. One has many holes, making it virtually useless.

- **Plain Radiographs**

The quality of the plain radiography was very variable, probably related to the quality of the processing and developing equipment, which was not reviewed. However, many of the radiographs of children suffered from problems of a moving child, lack of appropriate coning and lack of dose reduction. With such equipment limitation, like the lack of digital recording, it was not surprising to find wide field and pictures of parent hands on the pictures

Radiation injury to hands is difficult to limit with older equipment.

- **Ultrasound**

There are three Ultrasound (US) machines in the Radiology Department, none of which are purpose built for designed for Paediatric patients.

1. The *Aloka SSD-1100 "Flexus"*, with one 3.5 MHz probe, a probe typically used for adults. A probe usually used for transvaginal scanning was used on children. The machine did not have the facility for colour or pulsed Doppler to evaluate blood vessels, but was linked to a paper printer.

2. The *Siemens Sonoline SL-1* only had a 3.5 MHz probe, and did not have with either a Doppler or print facility.

3. The *Phillips 900* had two probes; a 7.5 MHz linear probe and a 2.5 to 5.0 MHz sector probe, and did have a colour Doppler facility for the examine blood vessels and blood flow.

## *Investigations Performed*

- **Ultrasound of the renal tract**

Thirteen patients underwent ultrasound scans. In twelve, this was of the renal tract and eleven of these were patients who were reviewed in Professor Dewan's clinic. Two patients were follow-up studies of renal abnormalities that had not been reviewed in clinic. One patient underwent an ultrasound of the hepatobiliary system in order to provide a second opinion for the local radiologist.

- **Fluoroscopy Procedures**

Following the outpatient clinics on the 1st and 4th November, several patients underwent cystograms or intravenous urograms (IVU) to aid evaluation of their renal tract status. In this visit, these procedures were carried out by the local radiologists. This was partly due to the time restraints and partly due to the lack of radiation protection equipment available i.e. lead aprons. In future visits, it is hoped that the visiting radiologist will be able to carry out these procedures with appropriate lead protection available and this will provide an opportunity to teach the local radiologists the correct way to perform the procedure.

## *Resource Deficiencies in Radiology*

From discussions with the radiologists, the perceived deficiencies are:

1. Lack of availability and access to radiology books and journal. The only textbooks they have are very old and out of date and are not sufficient.
2. Lack of internet access and access to Medline or other medical sites.
3. Poor equipment which frequently breakdowns.
4. Lack of access to MRI and CT. Neither is available in the William Soler Hospital and they have very limited access to the few that are available within Cuba. There are three MRI scanners in Cuba and two are broken.
5. Lack of ability to further their knowledge, both theoretical and practical, in Paediatric Radiology. All Radiologists have been taught Paediatric Urology "on the job", which would be best supplemented by further training.
6. Lack of ability or funding to travel overseas to radiological conferences / courses or to receive specialist training.
7. No internet access in the Radiology Department.
8. Inadequate radiation protection.

# Surgical Teaching

The teaching during this visit was a combination of clinical teaching during the clinics, (including the participation of medical students) lectures on urinary tract infection, vesicoureteric reflux, ureter reimplant surgery, and understanding of congenital posterior urethral obstruction, plus teaching during the operative sessions, including:

1. Pena approach to posterior urethral strictures
2. Rescue hypospadias repair
3. Neobladder formation
4. Caudal anaesthesia
5. Intermittent catheterisation
6. Urodynamic evaluation
7. Bladder exstrophy management

More time was available for discussion of concepts related to the management of complex Paediatric Urological cases than had been available during the two previous visits. Plans were put in place for the management of 17 patients on the basis of these discussions.

Nyla had a successful continence procedure for management of her bladder exstrophy in 2003. Education in toileting, rather than the use of intermittent catheterization, was an important point of discussion during the joint consultation

# Surgical Resource Limitations

The William Soler Hospital provides most of what is required to given a good standard of care, but within a building which lacks many of the "fancy" trimmings in an Australian Hospital. However, staff developed inventive solutions, such as modifying knives to make instruments with which to perform osteotomies. Some of the limitations include:

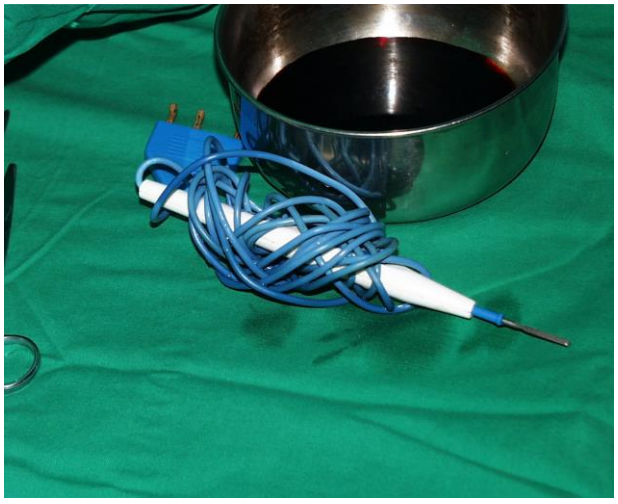
1. No urodynamic equipment.
2. Limited range of suture material.
3. Old and poor instruments.
4. Repaired, damaged Paediatric cystoscope.
5. No containers to discard sharp instruments.
6. Stomal devices are not available.
7. No video recording device for fluoroscopy.
8. Images of the ultrasounds are not always available.
9. The range of surgical drapes is limited.
10. Limited supply of ureteric catheters.
11. Limited supply of diathermy tips and handles.
12. No nuclear medicine service in the Paediatric Hospitals.

While much of the equipment is in need of an upgrade, the Urology Unit is privileged to have a state of the art endoscopic video tower, and there appears to be good access to blood and blood products. Unfortunately, it would appear that the limits on equipment have worsened since 2003. Other aspects of the management of the theatre complex that would improve the risk management would include developing a process of formal counting of the sharps and swabs, incorporating a scrub nurse into the operative team, and improving the monitoring of the output from urinary catheters in the ward.

# Donated Items

Many people and companies assisted with the equipment for the visit to Cuba including; Bard, Ansell, Tyco, Qantas, Smith-Kline Becham. Recycled items came from theatres at Royal Children's Hospital, Mercy Private Hospital, Saint John of God Hospital (Geelong), Geelong Hospital, and Sunshine Hospital. Very few items were taken on this occasion because of the uncertainty of the being able to operate. In future these items should be sent in advance, via London, with which Solutions Plus Consulting have agreed to assist with the logistics.

1) Out of date sutures – one carton.
2) Guide wires.
3) Dilator sheaths.
4) Elastoplast - 1+ 3 inch.
5) Nelaton catheters x 10 (6,8,10,12).
6) Foley catheters x 10 of each of 8,10,12.
7) Hypafix dressing x 20.
8) Diathermy tips x 30.
9) Diathermy handles x 10.
10) Scalpel blades x 2 boxes.
11) Gloves x 100 pairs.

# Recommendations for Future Visits

## *Language:*

In order for the non-surgical parts of the team to be effective, Spanish should be able to be spoken, or other Cuban staff able to translate be available. Those coming from Australia should have at least a few words of Spanish to be able to communicate.

## *Surgical Topics:*

With regard to the teaching, research and service the following could be considered.

1. A lecture schedule, which includes the presentation on topics by the Cuban Urologists.
2. Case discussions on more common Paediatric Urology.
3. A symposium for part of the visit.
4. Research papers by Cuban Urologists and trainees.
5. Anorectal anomalies to form part of the surgery sessions.
6. Surgery on more common conditions, such as hypospadias and primary surgery for intersex.
7. A case list be prepared prior to the visit.
8. Fetal hydronephrosis be a significant included subject.

## *Paediatric Radiology:*

On-going participation by a Paediatric Radiologist would assist in helping to review equipment, standards and protocols for the investigation of Paediatric Urological cases. The standard of Radiology appeared to relatively high, but there does seem to be a problem of the radiation exposure for the patients and staff during the investigations. The lack of nuclear medicine facilities in the Paediatric Hospitals indicates the need for education in the subspecialty. The needs for the future include:

1. Capital input for equipment, especially ultrasound and fluoroscopy.
2. Improved radiation protection measures, including protection of patients and staff.
3. Support for Radiologists to receive specialist training, including support for visitors to Cuba, and attendance at overseas conferences.

## *Theatre Management and Equipment:*

Processes and equipment need to be reviewed and will be assessed during the 2005 visit. Examples of concerns are the use of glass syringes and the limited range of suture material.

## *Donations:*

Donatable items, which had been identified as needed from the previous visits, were found to be invaluable. Melbourne could supply a large quality of needed items, which should be sent ahead, via London, to avoid the difficulties in transport of the excess baggage.

## *Paediatric Anaesthesia:*

Further input would improve the understanding and practice in the use of caudal anaesthesia.