Mauritius

Paediatric Service Training
for
Urology/Surgery, Radiology, Nursing and Anaesthesia

2nd – 12th February 2005

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A project of the Mauritius Department of Health and Quality of Life,
The Society for Children Inoperable in Mauritius,
And the Kind Cuts for Kids Foundation

Overview

There have now been five visits to assist with the backlog of Paediatric Surgical cases and to start the process of skill transfer to the Mauritian Medical and nursing staff. There have now been over 120 patients operated on and nearly 190 operations, but still much work to be done to ensure an ongoing improving quality of care for these children, and those with similar conditions in the future.

The way forward seems to develop a strategic plan that focuses on the need to provide a country-wide service that is interrelated to the other subspecialty services such as renal transplant, cardiac surgery and neonatal intensive care services.

We have now identified a candidate who has already had significant exposure to the training program, and who will be appointed to a Fellowship position in Melbourne, commencing in 2006. Dr Nazeer Hosany will continue to coordinate the follow-up management until he comes to Melbourne, and will be expected to be appointed to the nominated first centre of excellence, which ideally would be where subsequent visits will occur.

The December 2004 visit resulted in the review of 78 patients, 28 of whom had 43 operations, during 88 hours of operating; the February visit included contribution to training in Radiology and nursing, in addition to the usual anaesthetic and Paediatric Surgical training. Such a work load could not have been achieved without the cooperation of many people at Jeetoo Hospital in Port Louis, or without the support of the Hospital administration and the Ministry of Health and Quality of Life. We also owed a debt of gratitude to the Surgeons and Paediatricians for referring the cases.

An important component of the two recent visits has been the involvement of the junior medical staff. The development for an integrated teaching program, including all aspects of the care of children with surgical disease, will be part of any future program.

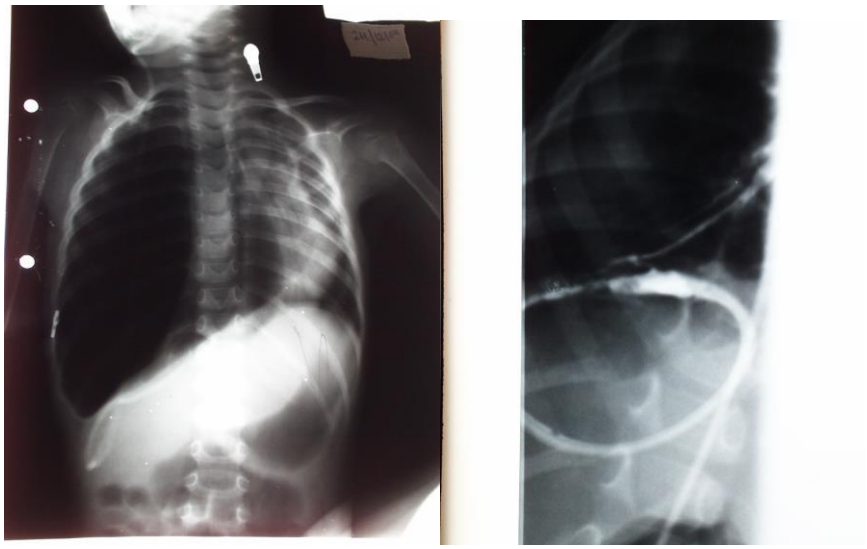
Consultations

On the first day a clinic was conducted during which a majority of cases were seen, many of whom had a radiological investigation and were reviewed later. Also, a clinic was held on Saturday 5th, which included the evaluation of a further 35 patients. Other children were seen between operative cases, with a total of 98 patients being seen in total. Importantly, a large number of new cases were seen, as well as patients who required further surgery and review of the outcome of complex anomalies and surgery.

The initial clinic was notable for the large number of patients who all seemed very tolerant of the long wait for the visit, and during the clinic itself. Also notable was the excellent organization of the clinic. Many junior staff, nurse and medical record staff assisted in ensuring the patients were seen efficiently. Investigations were organized in a timely fashion and appropriate patients were admitted for surgery.

Each of the two major clinics had the involvement of the Jeetoo senior and junior surgical staff and the participation of members of SACIM. Also, Dr Jeffreys was able to assessing the patients' fitness for surgery, following the decision to operate, and Dr Rao was able to assist in the interpretation of the previous Radiological investigation, as well as planning the further necessary investigations.

The cases seen in the clinics and in the ward included 22 hypospadias boys, 24 children with an anorectal anomaly, 10 with Hirschsprung's, 8 with a neuropathic bladder, 6 with a COPUM (posterior urethral obstruction), 1 girl with a duplex kidney with ectopic ureter and wetting, 1 baby with an incurable Neuroblastoma, a girl with Klippel Trenauney syndrome (front cover), a fetal diagnosis of exomphalos, an adolescent with bleeding oesophageal varices, two children with severe stricture disease of the oesphagus, and a spina bifida girl who had developed a phenothorax and pleural fluid collection from migration of her ventriculoperitoneal shunt into one of her bronchi.



The right chest was filled with air under tension (far left) which was shown on the injection of her ventriculoperitoneal shunt to be due to ulceration of the catheter into the bronchus of the right lung (near left). The girl recovered quickly from an operation that repositioned the shunt in the peritoneal

Surgical Cases

A total of ***54 operations*** were performed on ***45 patients:*** the major load came from:

Hypospadias repair	13 cases
Pena type procedure	7 cases
Swenson procedure	4 cases
Orchidopexy	6 operations
Colostomy closure	5 operations

The other cases included one or more of appendicectomy, cystoscopy, Fowler Stephen's procedure for undescended testicle, Ladd's procedure for gut malrotation, lienorenal shunt for oesophageal varices, oesophageal dilatation for stricture, nephrectomy, pyeloplasty, rectal biopsy, rectal dilatation, rectal imbrication, and rectal resection, repositioning of a ventriculoperitoneal shunt, vaginal polypectomy, vesicostomy or major wound revision.

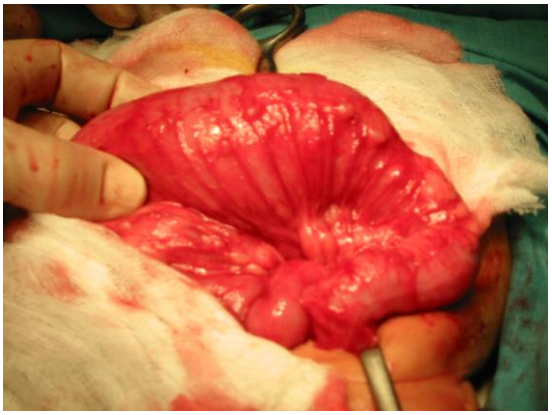
Of the patients who had surgery, or were reviewed in the clinic, 33 patients will require some form of follow-up surgery.

A small, but important number of complications occurred, namely a urethral leak following a hypospadias repair, a wound haematoma after a combined orchidopexy and hypospadias repair, and a food bolus was not able to be removed from the oesophagus because of limitations in the instruments available. Also, a boy who had had several operations, and a poor outcome from previous anorectal anomaly surgery had damage to his urethra during an attempted anterior plication. Akash has subsequently had further treatment in Melbourne, assisted by SACIM.

Cases of particular note include:

Case 1:

A little baby presented with a bowel obstruction in the newborn period, resulting in an operation that created a relatively proximal colostomy and the formation of a connection between the stomach and the small bowel (***Gastrojejunostomy)***; decisions taken by a team who did not have the advantage of Paediatric Surgical support. The surgery in December reversed the inappropriate connection between the stomach and the small bowel, and the colostomy was re-positioned, which enabled a better outcome for surgery during the most recent visit, which removed the lower segment of bowel which was devoid of its nerve supply.



The pictures show the colostomy adjacent to the two parallel midline incisions, and the dilated bowel beyond the dysfunctional colostomy, found at the time of the surgery in December 2004 *(above)*: the colostomy was in good position prior to the final operation in February 2005 *(left)*. The beautiful little boy is seen asleep at the time of his final surgery *(below)*.

Case 2:

Danveer developed infection in his umbilicus soon after birth, resulting in the veins draining blood from his gut, to his liver, becoming blocked. Treatment options for this conditions, which results in frequent episodes of near-fatal bleeding from the oesophagus, are limited. An effective procedure is to bypass the blood flow to the systemic circulation via the spleen or kidney. Danveer made a rapid recovery from his major operation.

Teaching

Paediatric Surgery

1. Anterior anal sphincter plication.
2. Posterior anal sphincter plication.
3. Pena anorectoplasty - single stage.
4. Swenson procedure.
5. Skin crease incision for orchidopexy.
6. Hypospadias repair.
7. Lumbotomy nephrectomy.

Radiology

The teaching component of the visit was enhanced by the involvement of resident staff and having the opportunity to give a lecture to the broader medical community. The involvement of Dr Padma Rao in the radiology Department facilitated further education of the Radiography staff in radiation exposure and the surgeons was trained in the appropriate use of investigations. A total of 22 procedures were performed as part of the service and training, including, renal ultrasound (10), abdominal ultrasound (3), pelvic ultrasound (1), scrotal ultrasound (1), image intensification (1), barium meal (2), barium enema (1), cystogram (2), and one contrast study via a Ventriculoperitoneal shunt.

Nursing

Caron Oakley, working with the theatre nursing staff, was instrumental in a many changes in the theatre complex that have improved the processes and safety for both the patients and the staff. Her focus was on training related to safe work practices, related universal precautions, sterile technique, organization of the theatre stock and trolleys, and professionalism of theatre nurses.

Mauritius Nurses

The Mauritian nurses are generally very inspiring people, most of whom in the theatre are male, despite the poor financial remuneration, and the forty hour week with twenty one days off a year as annual leave. The shifts are 12 hour days, afternoons and nights, as well as on call. The theatre nurses receive only on the job training in theatre after they have finished their primary nursing studies; their enthusiasm to learn was obvious. In Caron's words:

Safe Work Practices

Not surprisingly, the lack of a formal training process has resulted in a number of deficiencies in safe work practices in theatre. Some of the problems in the theatre included; cluttered equipment on shelves, no designated area for stock to be stored, checking, recording of the count was virtually non-existent, although a verbal count was used. Also, not all patients had identification bands: the scout nurse was not always a nurse quite often the scout was an assistant: none of the swabs or the packs had radio opaque: the theatre, on occasions, contained over twenty five people in the theatre. Further problems included the positioning of the patient, which was usually done manually, equipment positioning in the theatre created hassards with the cords, which were attended to. Also, the theatre was often too cold, and local anaesthetic injections were inadequately checked.

Universal Precautions

Without a formal education program, not surprisingly, the standard of the application of these principles was lacking; the most dangerous was the handling of sharps. There were no sharps containers provided, although they had improvised recycled plastic containers. Also, often sharps remained on the set-up trolley at the end of a case. A part solution was developed with the use of a piece of rubber tubing rather that the usual needle board. Eye protection was lacking and there was an inadequate supply of masks.

Covered footwear was very much lacking. Most of the nurses and doctors wore appropriate shoes usually clogs but most of the assistants just wore thong like slip on

shoes. With the number of needles and blades that inadvertently ended up on the floor it was surprising that there had been no injuries.

Labeling and care of specimens was an area that we had trouble establishing exactly what should be done. The specimens were not labeled with Bradma labels as these do not exist at the Jeetoo Hospital. The patient identification was hand written. Specimens were but no one could exactly tell me. From what I could gather the specimens were taken by an assistant to pathology; usually the specimen was not labeled but a pathology slip went with the specimen container. And, reportedly, there was a register for specimens in the operating room complex.

Sterile Technique

All the instruments, linen, swabs and packs are sterilized in round tins of varying sizes depending on what they contained. No instruments are packaged in trays or steri-peel, and there are not sterility indicators on the individual tins, an issue to be explored further.

The tins of sterile drapes, gowns and instruments have no clear labeling, so that multiple tins are repeatedly opened throughout the day. After the first case of the day, those instruments recycled in an oven that was in the theatre. The scrub, scout or assistant take instruments from the oven throughout cases. The ovens top surface became too hot to touch. Solutions were offered and received for these problems, thus improving the patient safety. Better labeling and tracking of the sterile stock would assist patient safety and operating room efficiency.

Instrument Trolley Layout

The instrument trolleys were not organized in a systematic manner, with instruments left in no particular order as the case progressed, making finding the correct instrument more difficult. Ongoing training during the visit in proved the efficiency during the cases and the care of the instruments.

Teamwork

Surgery requires a team approach, with the surgeon as team leader, but with the need for ongoing interactions between all members of the team. Greater interaction with the surgeon, better definition of the roles of those in theatre, and asking questions to promote understanding and learning were promoted. The Mauritian nurses were, however, very active in their role of scrub nurse, often pre-empting the needs of the surgeon.

Future Direction

Paediatric Surgery

1. Future visits involved a symposium component.
2. Teaching the teachers remains the focus.
3. Two Paediatric Surgical visits per year are arranged of two weeks duration.
4. Two Paediatric Surgical centres should be established, one associated with the cardiac surgical centre and the other attached to the neonatal unit.
5. Dr Nazeer Hosany is appointed to a position in Australia in 2006.
6. In 2006, Dr Hosany should return for the Mauritian Paediatric Surgical visits.
7. Cases to be considered for transfer out of Mauritius should be vetted by those closely involved with the Paediatric Surgical visits.
8. Those surgeons involved in the care of the more common surgical conditions in children, who are not the nominated subspecialists, should be accredited to do so.

As previously stated, it is important to ensure that the Health Department recognizes that the subspecialty Paediatric Surgery is now available in Mauritius. The SACIM group must continue to be recognized for their contribution to the development of the specialty, through having made the link in the first instance, and it would be essential that they remain closely involved with further developments.

Nursing

Items that would be valued additions to the facilities provided would be books, educational posters, learning activity packages, visual prompts, hand-washing technique posters, Acorn standards manuals, journals, toys, practical education sessions, in-service training, storage boxes.

For the next visit the following equipment should be taken; fine instruments, needle boards, 5.5 ET tube, 1.5 laryngeal mask, disposable gloves, alcohol swabs, yellow kidney dishes, needle point diathermy tips, Hypafix, colostomy bags with plastic rim to change frequently, Caprosyn & Dexon 3/0 taper, Dexon 5/0 taper Dexon, selection of Vicryl ties 1/0, 2/0, and 3/0.

Radiology

To improve the services for radiological investigation of children there should be a coordinated approach to the provision of services between the centres that provide other facilities for children, particularly related to the more expensive facilities, such as nuclear medicine and CT scanning. The following would assist further development, and quality of Paediatric Radiology:

Department Facilities for Improvement

1. Laser printer to connect to digital fluoroscopy unit.
2. Paediatric Ultrasound probes.
3. A CT scanner for Jeeto Hospital.
4. Detailed patient labeling of Xrays to include: Name, DOB, UR number, date and time of xray actually imprinted into the xray, not handwritten.
5. Detailed Xray labeling– R/L side markers; erect/supine/decubitus annotation.
6. Locate a second Nuclear Medicine service in the North.
7. Supply 5Fr and 6Fr feeding tubes for MCUG.
8. Thyroid shields.
9. Newer, lightweight lead aprons.
10. Record patient doses during fluoroscopy.
11. Cotton robes rather than the patient being naked
12. Mattress, cover sheet and proper pillow for fluoroscopy table.
13. Provide a dedicated surface for sterile equipment and procedures.

Training and Education

1. Departmental computer access.
2. Books and journals in the Radiology Department.
3. Promotion of overseas Paediatric Radiology (and other) Fellowships.
4. Dedicated Radiologist conference / study leave.
5. Retraining radiographers with regard to Paediatric patients, coning, radiation protection.
6. Radiographers designated tasks during procedures.
7. Develop protocols for investigations e.g. IVU or Barium study or MCUG.

Donations

Air Mauritius, Ansell, Tyco, Bard Urological, and Smith, Kline and Beecham, and hospitals including Geelong Hospital, St John of God Hospital (Geelong), and Western Hospital, Sunshine, were generous donors to the project. They provided transport, diathermy pads, diathermy handles, ureteric catheters, feeding tubes, Nelaton catheters, urethral catheters, dressings, Elastoplast tape, micropore tape, betadine, gloves, and sutures.

- 290 x Sterile Surgical Gloves
- 10 Yanker suckers
- 50 insultated needle point diathermy tips
- 12 rolls 1" Elastoplast
- 25 x Mefix dressings
- 36 x urethral catheters (8FG, 10FG, 12FG)
- 22 small diathermy pads
- 13 disposable diathermy handles
- 33 feeds tubes (5FG, 6 FG, 8 FG)
- 20 Hypafix dressings
- 14 boxes sutures

60 x 100ml Betadine antiseptic
2 x Glide wires
50 needle point diathermy tips
12 rolls 3" Elastoplast
20 oxygen face masks
10 x Cliney catheters
23 large diathermy pads
3 reusable diathermy handles
30 Nelaton catheters (10FG, 12FG, 14FG)
Radiology text book set
45 hyposadias stents

An invaluable diathermy handle donated to Kind cuts for kids for the Jeetoo Hospital.