Mauritius

Paediatric Urology/Surgery and Paediatric Anaesthesia Training and Service

17th-27th November 2001

Professor Paddy Dewan and Dr Richard Horton

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

Overview

SACIM is an organisation founded to allow for children with conditions for whom there have not been the resources available in Mauritius for their surgical treatment in-country. Therefore, over the last few years a small number of children have been treated by Professor Dewan, in Australia. From previous experience working with the Kind cuts for Kids Foundation by both Professor Dewan and Dr Richard Horton, it was felt that a larger number of children could be treated, while skills would be more effectively transferred to the local doctors by a Paediatric Surgical visit to Mauritius.

With the efforts of both the Australian and the Mauritius components of SACIM, the Minister of Health and Quality of Life was able to appreciate that a Paediatric Surgery and Urology visit, focussed on the treatment of Anorectal Anomalies was appropriate. Also, it was expected that the more complex cases would be able to be undertaken if the team included an Anaesthetist with subspecialty Paediatric Anaesthetic skills.

With 14 patients having had major surgery for which they would have needed to leave the country, the visit has indeed been successful. In addition to the service provided there appears to have been established a firm base on which to provide further education, training and service.

The members of SACIM, the agents of the Minister and the medical and nursing staff should feel proud of there magnificent contribution to the care of a significant number of children, at little cost, and to the great enjoyment of Professor Dewan and Dr Richard Horton.

A view of Signal Point (far right), which overlooks Port Louis. The photo was taken from the hospital across the cane fields in which burning-off was occurring.

History of Mauritius

It is always interesting to reflect on the history of a country in which a training visit in Paediatric Surgery is launched. Mauritian history is, indeed, rich and colourful.

The island for a long time remained unknown and uninhabited. It is probably visited by Arab sailors during the Middle Ages, and on maps of about 1500, it is shown by an Arabic name "Dina Arobi". In 1598, a Dutch squadron, under the orders of Admiral Wybrand Van Warwyck, landed at Grand Port and named the island Mauritius, in honour of Prince Maurice Van Nassau, "Stathouder" of Holland. However, the Dutch had little interest in settling the island. Abandoned by the Dutch, the island became a French possession when, in September 1715, Guillame Dufresne D'Arsel landed and took possession of this precious port of call on the route to India, but it was only in 1721 that the French started their occupation. However, it was only from 1735, that the "isle de France" started developing effectively, when La Bourdonnais established Port Louis as a naval base and a shipbuilding centre.

During the Napoleonic wars, the isle of France had become a base from which French corsairs organised successful raids on British commercial ships. The raids continued until 1810 when a strong British expedition was sent to capture the island. By the Treaty of Paris in 1814, the isle de France that regained its former name "Mauritius" was ceded definitely to Great Britain. In the act of capitulation, the British guaranteed that they would respect the language, the customs, the laws, and the traditions of the inhabitants. One of the most important events under the British was the abolition of slavery in 1835. Thus, the planters turned to India, from where they brought a large number of indentured labourers to work in the sugar cane fields. The Indian immigrants, who were of both Hindu and Muslim faith, were to change rapidly the fabric of the society. They were later joined by a small number of petty Chinese traders.

In 1965 the way was paved for Mauritius to achieve independence. After general elections in 1967, Mauritius adapted a new constitution and independence was proclaimed in 12th March 1968. Mauritius achieved status of Republic 24 years later on 12th March 1992.

The various immigrant populations have made Mauritius a unique blend of different races, cultures, and religions. People of European, African, Indian and Chinese origins have created a multiracial society where the various cultures and traditions flourish in peace and harmony. During the last ten years the population has grown at average rate of 1.1% annually. At the end of 1996, the population of the Republic of Mauritius was estimated at 1,142,513. With such a considerable population there is obviously a need to not only provide Paediatric Surgical services, but to embark on education, training and service planning for Paediatric Surgery.

Some of the beautiful scenery in Mauritius

Consultation Clinic

The work commenced with an outpatient clinic on the Monday morning in which the Visiting Anaesthetist and Surgeon worked with the local staff, both medical and nursing to review previously treated patients, evaluate those in need of surgery and to arrange the operating time accordingly.

Pre-operative anaesthetic appraisal occurred during the surgical clinic on the morning of the first day. During which occurred:

- Peri-operative planning that catered to local conditions, including;
  - Prioritizing needs
  - Diagnosis and treatment of concurrent medical illnesses
  - Pre-medication requirements
  - Estimation of surgical time
  - Transfusion requirements
  - Post operative pain relief options
  - Need for post operative intensive care
- Teaching in pre-operative assessment to the Anaesthetic trainee.

Surgery was delayed in only 1 child due to ill health. The general health of the children was good with the noted absence of malaria and malnutrition.

Most cases requiring surgery were treated, but there remain cases that require specialist Paediatric Surgery.

The staff and a few of the patients in the Monday morning outpatient clinic

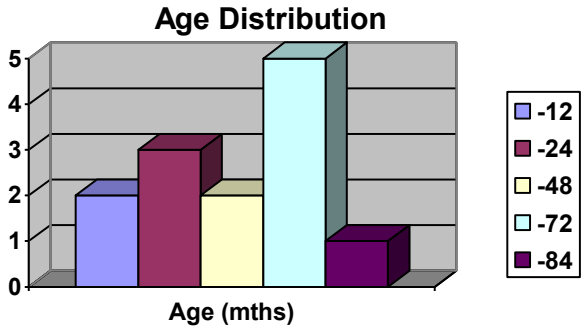
Consultations

Pathology	*Hosp #*	*Age*	*Gender*
Adrenogenital Syndrome	933146	12	Female
Adrenogenital Syndrome	757427	108	Female
Anorectal anomaly	923630	12	Male
Anorectal anomaly	923014	18	Male
Anorectal anomaly	762379	24	Female
Anorectal anomaly	767744	24	Male
Anorectal anomaly	724988	30	Female
Anorectal anomaly	703612	24	Male
Anorectal anomaly	174358	18	Female
Anorectal anomaly	803842	72	Female
Anorectal anomaly	858288	36	Male
Anorectal anomaly	883373	36	Male
Anorectal anomaly	840154	48	Male
Anorectal anomaly	534282	24	Female
Anorectal anomaly	811720	72	Male
Anorectal anomaly	872220	36	Male
Bladder exstrophy	509260	108	Female
Bladder exstrophy	Unk	154	Male
Colostomy for ruptured	Unk	480	Male
Hirschsprung's	566652	18	Female
Hirschsprung's	552719	78	Male
Hirschsprung's	751890	11	Female
Hydronephrosis	744826	8	Female
Hypospadias	927398	60	Male
Perineal tear	921270	72	Female
Prune Belly Syndrome	580226	54	Male
PUJ obstruction	363950	264	Male
Rectal prolapse	147410	600	Female
Rectal prolapse	433398	780	Female
Unknown	261286	528	Male
Urethral obstruction	416624	84	Male
Urinary incontinence	389071	6	Male

The above list includes those patients seen in the Monday clinic, those seen in theatre between cases and those who were to attend, or were discussed specifically but did not attend in person.

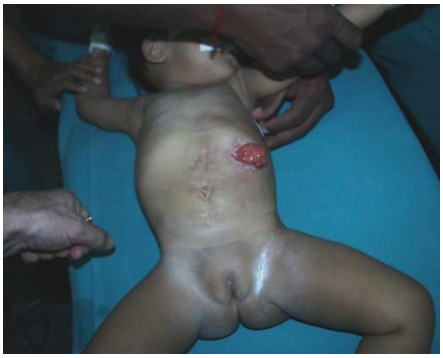
Operations

Fifteen operations were performed on 14 children with an age range of 11 to 84 months. The majority of cases were major lasting 4-6 hours, the most common surgery being the performance of a redo of a previously performed Pena anorectoplasty procedure for anorectal anomalies. Despite the lengthy operations only four children required blood transfusion. No child required intensive care management and no adverse anaesthetic complications occurred.

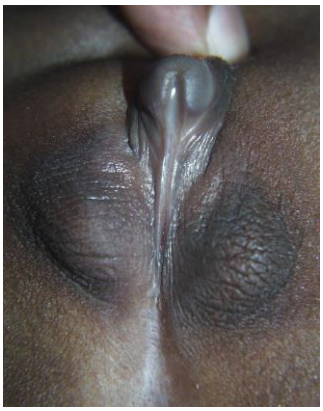


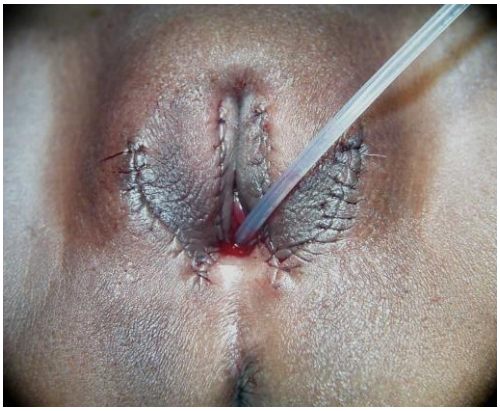
Date	*Hosp #*	*Gender*	*Age*	*Anaesthetic*	*Pathology*	*Operation*
23/11/01	933146	Female	12	GA + Caudal	Adrenogenital	Genitoplasty
21/11/01	921270	Female	72	GA + Caudal	Perineal tear	Repair of perineum
20/11/01	751890	Female	11	GA + Caudal	Hirschsprung's	Swenson
"	"	"	"	"	"	Closure of colostomy
23/11/01	840154	Male	48	GA + Caudal	Urethral fistula	Foreskinoplasty
20/11/01	174358	Female	18	GA + Caudal	Anorectal anomaly	Pena – redo
22/11/01	534282	Female	24	GA + Caudal	Anorectal anomaly	Rectosigmoid resection
"	"	"	"	"	"	Pena – redo
20/11/01	927398	Male	60	GA + Caudal	Hypospadias	Hypospadias repair
20/11/01	803842	Female	72	GA	Anorectal anomaly	Laparotomy
"	"	"	"	"	"	EUA, evacuation of faeces
21/11/01	"	"	"	GA + Caudal	"	Pena – redo
19/11/01	762379	Female	24	GA + Caudal	Anorectal anomaly	Pena
20/11/01	416624	Male	84	GA	COPUM	Fulguration
22/11/01	580226	Male	54	GA + Caudal	Prune Belly	Ureteric reimplants
"	"	"	"	"	"	Bilateral FS Orchidopexy
"	"	"	"	"	"	Rectosigmoid imbrication
"	"	"	"	"	"	Abdo wall plasty
19/11/01	767744	Male	24	GA + Caudal	Anorectal anomaly	Anoplasty
23/11/01	811720	Male	72	GA + Caudal	Anorectal anomaly	Pena – redo
21/11/01	883373	Male	36	GA + Caudal	Anorectal anomaly	Pena – redo

Operations

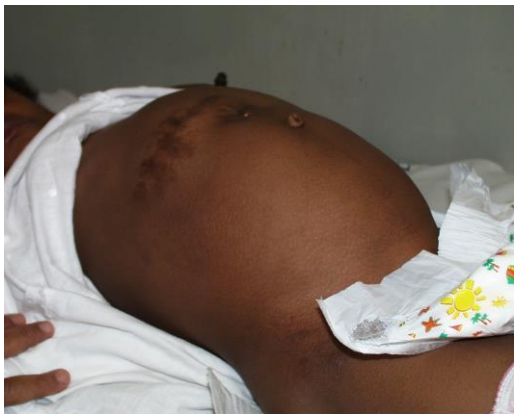


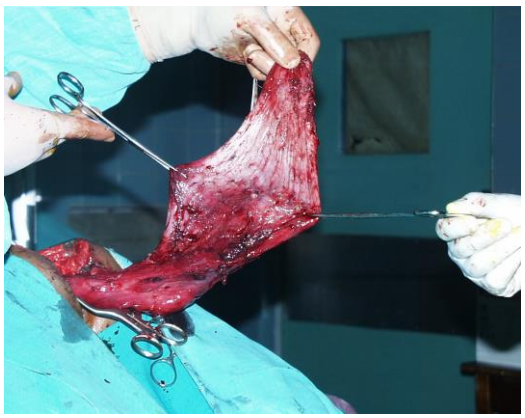
An 11 month old girl with a colostomy, who had been thought to have a congenital stricture, but who was found to have Hirschsprung's disease. Definitive surgery cured her of her previous bowel obstruction.





A 12 month old girl with adrenogenital syndrome who underwent a single stage genitoplasty.





This girl was grossly constipated (left). A laparotomy revealed pathology related to an anorectal anomaly that was repaired with one abdominoperineal operation the following day. The right picture shows a huge megarectum during the anorectoplasty.

Surgical Education and Training

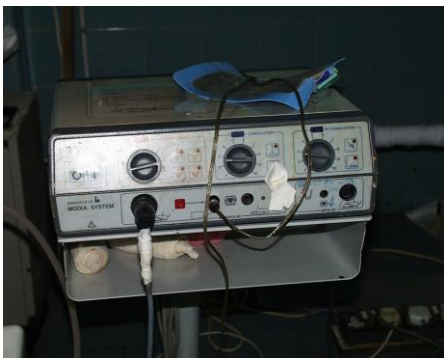
The surgical staff of the SSRN Hospital participated actively in the education program, as coordinated by Dr Fakim. Most operations were assisted by two surgeons, and watched by at least one other surgeon. As many of the cases were anorectal anomalies, the principle focus of the training was on initial treatment and the decision making related to the conduct of "redo" surgery: the particular aspects of the teaching about this condition were:

1. The role of cut-back procedures for intermediate lesions.
2. Indications for redo surgery.
3. Surgery without the use of a nerve stimulator.
4. Management of the ectatic rectosigmoid segment.
5. Colostomy formation and revision.
6. Nixon anoplasty flaps.
7. Post-operative dilatation.

General principles were also discussed, for a large range of Paediatric Surgical and Urological topics, such that the operative surgical time (apart from being an enjoyable work environment for all) was filled with discussion of cases and treatments of the patient on the table and many other subjects. It was of great value to have the opportunity to discuss cases with Paediatricians and the surgeons who had previously cared for the children undergoing operative treatment.

In particular we discussed:

1. Intraoperative wound care.
2. Would closure with subcuticular sutures.
3. Abdominal incisions in children.
4. Vesicoureteric reflux.
5. Undescended testes.
6. Medical management of phimosis.
7. Medical management of the neuropathic bladder.
8. Urothelial lined bladder augmentation.
9. Foreskin reconstruction.
10. Urological investigations in Children.
11. Prune belly syndrome.
12. Urinary tract obstruction.
13. Hirschsprung's disease.



The diathermy machine held together with adhesive, and some (but not all) of the team in theatre.

Anaesthetic Education and Training

The complex paediatric surgical cases were excellent experience for the Anaesthetic trainees in Mauritius, who are currently in their 3rd year of training. All lists where well attended for which I give special thanks to Dr. Bhudoye, consultant Anaesthetist at SSRN Hospital. Twelve cases involved the use of caudal anaesthesia, 4 of which were performed both at the beginning and at the end of the surgery. This local anaesthetic block was new to the trainees and the cases gave them a good opportunity to both learn and practice it (as shown in the team photo on page 8). This technique is extremely useful when providing anaesthesia for major surgery in small children as all sensation is abolished and patients wake up pain free without the adverse effects of opioid analgesia, in particular respiratory depression. This is especially important when postoperative surveillance is limited. I was able to deliver tutorials with anatomical illustrations via a lap top computer in the operating theatre. Besides Paediatric Anaesthesia, many other topics were covered (listed below). Trainees where able to down-load presentations of interest onto floppy discs and I exchanged email addresses for following up issues. An Anaesthetist has expressed interest in doing a Paediatric Anaesthesia fellowship at the Royal Children's Hospital in Melbourne, Australia.

Anaesthetic Topics and Participants

Date	**Topic**	**Present**
20/11/01	Neural Blockade for Paediatric Anaesthesia	Dr. Danielle Wong Dr. Ali Dulymamode Dr. Gopal Woodalsingh
21/11/01	Acute pain service development	30 staff from SRRN Hospital
21/11/01	Anaesthesia and pregnancy Fluid management, Pulse Oximetry Physiological changes of anaemia	Dr. Faizal Abdoul Latiff Dr. Danielle Wong Dr. Ali Dulymamode Dr. Gopal Woodalsingh
22/11/01	Neonatal physiology Anaesthesia and coexisting diseases Physiological changes after surgery	Dr. Danielle Wong Dr. Ali Dulymamode Dr. Gopal Woodalsingh
23/11/01	Respiratory physiology Physiology and aging Anaesthesia and #NOF	Dr. Danielle Wong Dr. Ali Dulymamode Dr. Gopal Woodalsingh

Recommendations for future Development

The trip was a great success, not only in achieving the objective of performing a number of operations, but also in making contacts, and facilitating skill Paediatric Surgical and Anaesthesia skill transfer. After detailed discussions with Surgeons, Anaesthetists, plus observations during the time spent in theatre we would wish to make the following recommendations:

Surgery

Suggestions	*Assistance Offered*
Two Hospitals to should develop a Paediatric Surgery unit.	Further visits to assist with planning
New diathermy machine for SSRN	Donation to be taken next visit
Diathermy pad supply to improve	Supplies to be sent through donations in kind
Lecture program to be given	Lectures in Sept/Oct 2002
Midline abdominal incisions to be avoided	Include in further training
Two surgeons to be selected for further training in Paediatric Surgery	Identification of training posts and assistance with procurement
Protocol for anal dilatation to be used	Protocol provided during visit

Anaesthesia

If Mauritius plans to develop the specialties of Paediatric Anaesthesia, future visits, exchanges and donations could help achieve the following:

- Parents present at induction and recovery
- The use of forced air blankets for patient warming
- Paediatric sized blood pressure cuffs
- Alternative oximeter probes for paediatric use
- The use of subcutaneous the cannular for Morphine administration in the paediatric ward

Donated Items

Item	*Number*	*Item*	*Number*
Betadine, 100 mL bottles	64	Gloves, Boxes of 50	2
Elastoplast, boxes - 2.5 cm	1	Elastoplast, boxes – 3 cm	1
Elastoplast, boxes – 5 cm	1	Guide-wires – Sterile	7
Sheath Dilators	23	Sutures – boxes	40
Hypafix dressing – sterile	40	Steristrips – box	1
Tape - alluppore – rolls	8	Nelaton caths - 6 FG	10
Nelaton caths - 10 FG	12	Nelaton caths - 12 FG	14
Cliney nephrostomy Tubes	5	Urethral Catheters	30
Anal dilators – set	1		

Conclusion

The visit to Mauritius has come from the initiative of Professor Dewan and SACIM; the Mauritian Minister of Health and Quality of Life has been instrumental in then developing a mission that has resulted in 14 children having major surgery and skill transfer for Paediatric Surgery and Anaesthesia occurring. A way forward would be for a further visit to occur in 2002, during which surgeons and facilities could be identified for the subsequent development of Paediatric Surgery.

Professor Dewan and Dr Horton would like to thank all the staff of the Ministry, SACIM, the SSRN Hospital, plus all the Surgical and Anaesthetic staff who helped make the time in Mauritius so productive.