Cuban Paediatric Urology and Anaesthesia

A Report for 25th November - 4th December 2003

Professor Paddy Dewan, Dr Andrew Schneider

Fund by
The Cuban Department of Health,
ACTU Overseas Aid Organisation – Cuban Children's Fund
And
Kind Cuts for Kids Foundation

Overview

Cuba was enjoyable the first visit and an unforgettable experience on the second occasion. Cuba is a fascinating country with a rich history, but more importantly, wonderful people to work with. The first Paediatric Urology and Anaesthesia visit resulted from a request from the executive members of the Cuban Children's Fund of the Australian Council of Trade Unions for involvement in the care of a Cuban boy by the name of Daniel. Through Mr Tasnor Bull, the Cuban Children's Fund Board, agreed to fund the trip to Cuba and much of the equipment, and the Cuban Health Department provided the accommodation.

The second visit for 2003 was able to occur because of the support of the staff of the William Soler Hospital, the Cuban Consul, Cuban Department of Public Health, and the fund raising efforts of the Cuban Children's Fund.

The Cuban Consulate in Australia assisted to finalise the funding that allowed the second visit for 2003, resulting in 16 complex cases being operated on during the skill transfer mission. As for the April trip, the warmth and friendship were unforgettable.

Once again, the Director of the William Soler Hospital and the Cuban Minister of Health both had a significant input into the planning and promotion of the visit. The clinical planning was lead by Dr Rosario Calviat, who heads the Paediatric Urology Unit at the William Soler Hospital. Her efforts were supported and encouraged by the Division of Surgery Director Dr Ruperto llanes. It was a pleasure to see a large number of surgeons involved in the pre-surgical clinic and to have more than 8 surgeons involved in the operative sessions. The Cuban Anaesthetic team was also interested and participated actively with the visiting team.

Internatiomal Latin American doctors day was an opportunity to celebrate the achievements of the visit to Havana, which had achieved 60 hours of operating on 16 patients in 6 days.

Consultations (Appendix 1)

More patients were seen on this visit, and importantly, 15 patients seen in both April and November, indicating the excellent follow-up and outcome assessment possible. A total of 26 patients were seen, most during a clinic on the first day. Many were reviewed following the performance of suggested investigations. Of the 26, 17 of the children and young adults had bladder exstrophy, two with an open bladder and the others with variable, but usually poor outcomes from repairs that had been attempted prior to the first visit in April. The staff involved in the clinics and surgery were usually, but not exclusively

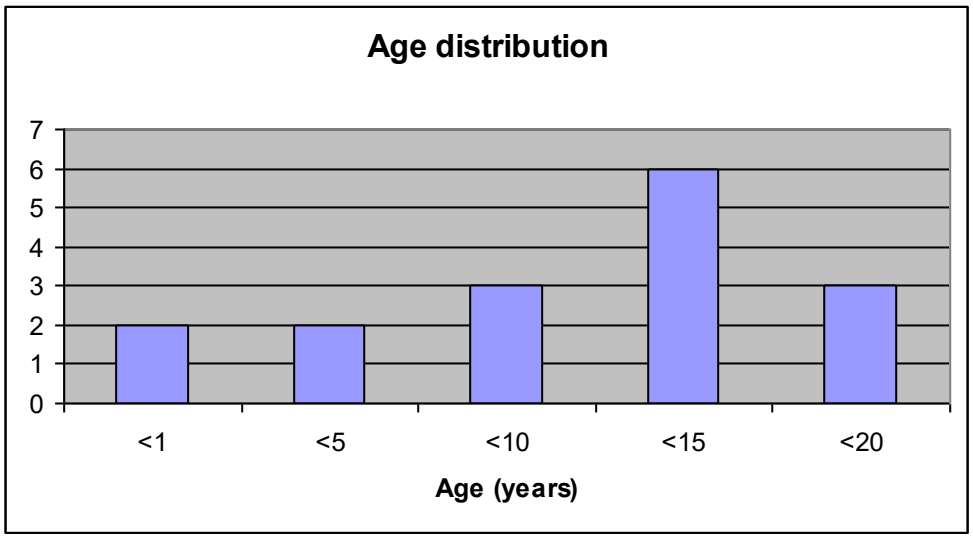
1) Rosario Calviat– Head Urologist, William Soler Hospital
2) Maria Del Carmen Castro – Urologist, William Soler Hospital
3) Vela, Ilset – Urologist, William Soler Hospital
4) Ruperto, llanes – Divisional Director, William Soler Hospital
5) Fernandez, Fermen – Urologist, Juan Manuel Maques Hospital
6) Delgado, Eloy La Puente – Urologist, Juan Manuel Maques Hospital
7) Morales, Aymee – Urologist, Juan Manuel Maques Hospital
8) Guerra-Rodriguez, Marlen – Urologist
9) Santfiel, Amarilis – Plastic Surgeon, William Soler Hospital

Sixteen patients went on to have Surgery, and a small group of patients were unable to have planned surgery because of the number and complexity of the procedures that were performed, one because of obesity and another due to a high, unexplained ESR.

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 (in the blue hat).

Operative Surgery (Appendix 2)

During approximately 60 hours of operation time (including all day Saturday and Sunday), 16 patients had a total of 48 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 with 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 visit in April/May, Dr Amarilis assisting with most operations because of her dedication, availability and skill as an interpreter.



Surgery performed included bladder augmentation during an exstrophy, bladder neck reconstruction in one, penile repair for epispadias in two, one of whom also had a bladder neck reconstruction. Three cystoscopies, including one in which a technique for urethral dilatation was shown, and two during which a method of simple urodynamics was illustrated. A further endoscopy was performed to view and remove a renal stone, using a stone basket bought by the team. Two patients had a bladder exstrophy closed, each after previous surgery, and both had bilateral inguinal herniotomies concurrently.

Five patients with bladder exstrophy had redo surgery for continence and cosmesis, four had both anterior and posterior osteotomies, and one had anterior osteotomies. Of the two bladder closure patients, the baby had anterior osteotomies and the older child had both anterior and posterior osteotomies. Six of the bladder exstrophy patients had a wound revision and advancement flap omphaloplasty, and five of the girls with bladder exstrophy had a perineoplasty as part of the procedure.

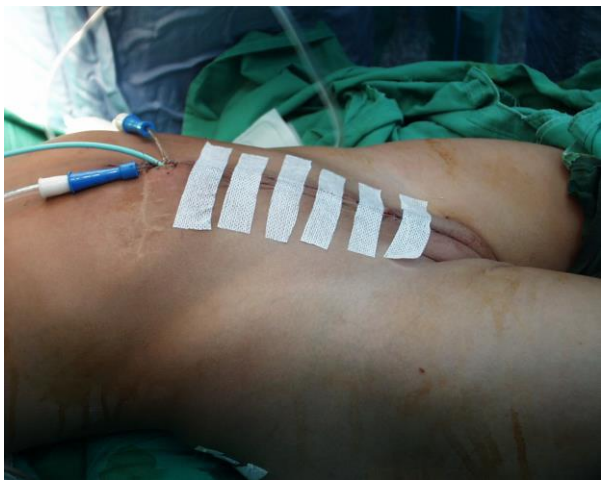
One other bladder exstrophy patient had an "undiversion" to a continent stoma with a transureteroureterostomy, facilitating the use of the left ureter as an intubatable stoma, with conversion of a large ileal conduit to a reservoir.

Apart from the cystoscopy patients, the only other minor case was a boy with a redo hypospadias repair. Two girls with gonadal dysgenesis had vaginoplasty with either sigmoid colon or local skin flaps.

The standard of care in recovery was similar to what one would expect in Australia, with a high standard of postoperative nursing, with often a spare anaesthetist being available to deal with any problems that arose. Postoperative analgesia usually consisted of paracetamol and tramadol, with opiate infusions not being popular. Intensive care and high dependency facilities were available, and used by a small number of our patients, but none of our patients required postoperative ventilation.

Fortunately only four minor complications occurred, including;

1. A seroma in a girl who had a bladder exstrophy repair.
2. A minor wound infection in another girl who had had previously had a complete dehiscence of a bladder closure.
3. A catheter became blocked in girl after a sigmoid vaginoplasty, but without any other adverse outcome.
4. A urethral leak in an epispadias repair, whose catheter had also blocked.



This girl, after a 5 hour operation had only a minor umbilical wound infection, but a excellent cosmetic result, with a good prognosis for continence for her bladder exstrophy closure.

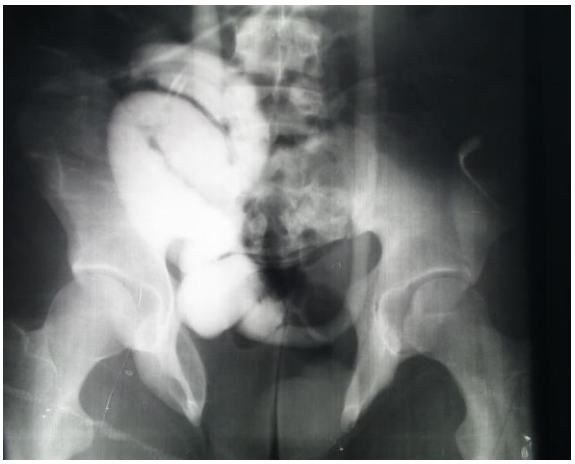
Case Description 1

Daniel 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.

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 one of two boys who had an epispadias report in April. 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 or Mitrofanoff, catheterisable stoma. The change in Adrian's anatomy allows him to be dry, by passing a catheter into his bladder 4 times each day.

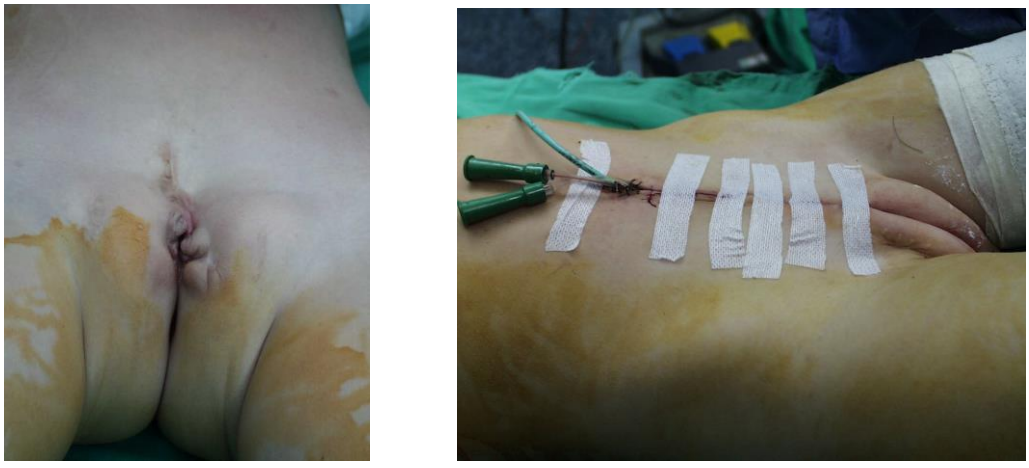


Adrians ileostomy stoma is shown prior to his continent diversion operation, along with the contrast study of his ileal conduit, which was converted into a continent reservoir. The lower picture shows the strong bond with this boy, consistent with the trust and confidence expressed to the visiting team.

Case Group Description

The bladder exstrophy group of patients consisted of 17 children and young adults, 10 of who had an operation. The series of patients allowed for the demonstration of primary closure in the newborn period through to the treatment for incontinence with a continent division. In addition, one patient 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 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.

An important part of the training related to bladder exstrophy surgery was the technique of posterior osteotomy with minimal cosmetic impact, as shown by the improved approach on the right.



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

Anaesthesia

There were a number of notable differences in the way patients were handled coming into theatre compared to Australia. Pre-anaesthetic assessment was often performed after arrival in the holding area, with no discussion of risks and complications, and no informed consent being obtained, their appearing to be little patient autonomy.

The patients were often left alone in holding area, having been earlier separated from their parents upon arrival at theatre, with little effort to reduce pre-operative anxiety.

Also, intravenous access was carried out in holding area by nursing staff, but no local anaesthetic cream available, with the concept of gas induction, and intravenous access after the patient was asleep, seeming to be an alien practise. The drug management also differed from Australia, with all patients, regardless of age or weight, given intravenous Atropine and Midazolam or Diazepam immediately prior to transfer to the operating theatre.

Transfer of patients between the trolley and the table seemed haphazardous, with no patient slide devise being available, there seeming to be little regard to staff health regarding back care with heavier patients.

Induction and Maintenance of Anaesthesia

The patients were usually strapped to table in a crucifix position, and induced with Thiopentone, with or without Fentanyl, and Pancuronium or Vecuronium. They were then ventilated with 100 % O_2 and Halothane, via Seimens 900C with Mapelson D circuit. One Dragger machine, which has a circle system was available, but rarely used.

The Seimens 900C Anaesthetic machine with the monitoring devices that were usually used.

Potential and real Anaesthetic problems included:

1. No gas scavenging.
2. Glass syringes mainly used.
3. Ketamine was used for cystoscopies.
4. Limited role of regional analgesia, although Bupivicaine was available.
5. Laryngeal masks were underutilised, due to concerns about ventilation.
6. Maintenance with 60% O_2 and 40% O_2 (with small amount of halothane) with the associated increased risk of awareness.
7. Ampules were shared between patients, with risk of cross-infection.
8. Universal precautions did not exist.
9. No sharps containers.
10. Hand washing between cases was limited by the distance to basins.
11. Yanckuer suckers were not used for aspiration of the oro-pharynx.
12. Only one suction container was available for both the surgeon and the anaesthetist.
13. The same distal tubing used for suction for more than one case.
14. Subjective decisions were made to give blood and bicarbonate intra-operatively without confirming need by simple investigation, which was readily available.
15. No forced air warmers excited to maintain normothermia or to treat hypothermia.
16. Agent and inspired O_2 monitoring were broken.
17. Blood pressure was not routinely monitored intraoperatively.

Patients were intubated with disposable PVC tubes, and a frequently used option was intravenous Ketamine, with the patient breathing air or O_2 via a Hudson mask. Fortunately, end tidal CO_2, pulse oximetry and ECG were available.

Post-operative Analgesia

Monitoring in recovery was rudimentary, with no equipment such as pulse oximetry, sphygmomanomter and other usual available equipment in Australia. Patients were often restrained in a crucifix position, with parents not able to be in attendance, and little, if any, effective analgesia, possible due to poor supplies of the drugs.

In the ward patient care was largely by the parents, with medicines dispensed by nursing staff. If drugs were available, education in the use of morphine infusions, epidural catheters would be required.

Despite the “historical” standard of care, compared with current “best-practice”, the outcomes for the children were good with there being no Anaesthetic morbidity of mortality.

Donations

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. In future these items should be sent in advance, via London.

DONATED ITEMS

1) Betadine – 12 litres.
2) Out of date sutures – one carton.
3) DJ stents x 8.
4) Guide wires.
5) Dilator sheaths.
6) New sutures – one cartons.
7) Elastoplast - 1+ 3 inch.
8) Nelaton catheters x 10 of each of 6,8,10,12.
9) Foley catheters x 10 of each of 8,10,12.
10) Hypafix dressing x 20.
11) Diathermy tips x 30.
12) Diathermy handles x 5.
13) Scalpel blades x 2 boxes.
14) Cliney Mallecot Catheters x 10.
15) Gloves x 100 pairs.
16) Urine drainage bags x10.
17) Endotracheal tubes x 20.
18) 2ml syringes.
19) 50ml syringes.
20) Stone baskets x 2.
21) Gloves - 240 pairs.
22) Ureteric catheters x 12.

The 100 Kg of donated equipment used for the surgery is seen in Cancun, Mexica, then on a trolley in the theatre, incuding gloves donated by Anesll.

Teaching

Surgery

Much of the education occurred during either the theatre, clinic and ward round sessions, plus a two hour Paediatric Urology seminar. Also, there was the opportunity to teach students on one of the ward rounds. The principle topics covered during the teaching were:

1. Bladder exstrophy management plan and surgery.
2. Urethral stricture guide-wire dilatation technique.
3. Urodynamic measurement without expensive equipment.
4. Percutaneous, stone basket renal calculus removal.
5. Omphaloplasty and wound revision.
6. Vaginoplasty.
7. Ulaanbataar Hypospadias repair.
8. Post operative catheter management.
9. Management of obstructive uropathy.

Lessons were learnt by both the Cuban and Australian members of the team, exchange of ideas occurred frequently during the theatre sessions, the ward rounds, lectures and clinical consultations.

Anaesthesia

An Australian Anaesthetist able to speak Spanish improved the skill transfer for the Anaesthetic part of the team. Lumbar epidural analgesia, caudal epidural analgesia and laryngeal mask use were the principle techniques used, but also the issues mentioned earlier were discussed at length, to improve risk management and reduce patient stress.

Important skills discussed between the members of the Anaesthetic team were the use of laryngeal masks and the technique for caudal injection of local anaesthetic. Andrew Schneider is shown recording (left) and demonstrating each of the procedures.

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, the staff have 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. Imited 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 avialable.
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.

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.

Recommendations for Future Visits

Language:

Both the Cuban and Australian parts of the team had developed a better understanding of each others language, the development of which would further the benefit of the teaching visits.

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.

Radiological Services:

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 nulear medicine facilities in the Paediatric Hospitals indicates the need for education in the subspecialty.

Theatre Management and Equipment:

Similar to the April trip the resources issues were identified and need to be addressed, but inparticular there are changes in processes in theatre that would not be costly, but would improve safety, namely the handling of sharps and formal counting of swabs. It is hope that providing a theatre nurse as part of the team for the next visit would help to develop ways of facilitating system change.

Donations in kind:

At the time of the second visit, the donated items, which had been identified as needed from the April visit, were found to be invaluable. Distribution of this list in Melbourne will allow for further supplies to be recruited before the return trip. Importantly, the equipment should be sent ahead, via London, to avoid the difficulties in transport of the excess baggage.

Paediatric Anaesthesia:

Once again it was noted that topics identified by the Cuba Anaesthetists would be best developed into presentations to be given in lectures to be presented in 2004.

Appendix 1: Consultations

Pathology	*Hosp #*	*DOB*	*Age*	*Gender*
Bladder exstrophy	622928	17/02/1991	12	Female
Bladder exstrophy	597215	27/09/1994	12	Male
Bladder exstrophy	515953	15/11/1986	17	Female
Bladder exstrophy	593244	17/12/1993	9	Male
Bladder exstrophy	559160	29/11/1989	14	Female
Bladder exstrophy	Unknown	12/11/2003	0	Male
Bladder exstrophy	651672	19/11/2002	1	Male
Bladder exstrophy - epispadias	507179	6/11/1984	19	Male
Bladder exstrophy-incontinence	546031	21/12/1988	15	Male
Bladder exstrophy-incontinence	116244	31/07/1998	15	Male
Bladder exstrophy-incontinence	61539	10/12/1996	9	Female
Bladder exstrophy-incontinence	635279	11/03/2000	3	Female
Bladder exstrophy-incontinence	1040184	31/05/1998	5	Female
Bladder exstrophy-incontinence	Unknown	29/10/1997	6	Female
Bladder exstrophy-incontinence	546031	21/12/1988	15	Male
Bladder exstrophy/epispadias	Unknown	21/07/1984	19	Male
Cloacal exstrophy-incontinence	658124	5/11/1996	7	Female
COPUM - renal failure	622928	21/05/1998	5	Male
Crossed ectopia	294149	21/10/2001	2	Male
Hirschsprung's/renal stone	654096	15/11/1989	14	Male
Hypospadias - previous surg	658158	21/01/1999	4	Male
Mixed gonadal dys/vagina atres	585679	11/10/1992	11	Female
Mixed gonadal dys/vagina atres	Unknown	16/01/1992	12	Female
Neuropathic blad + resid VUR	694283	6/12/1996	7	Male
Neuropathic bladder	598197	3/08/1994	9	Male
Vaginal Atresia	496046	23/05/1986	17	Female

Appendix 2: Operations

Hosp	*DOB*	*Age (ys)*	*Gender*	*Operation*	*Pathology*
559160	29/11/1989	14	Female	Cystoscopy + urodynamics	Bladder exstrophy
585679	11/10/1992	11	Female	Vaginoplasty - skin flaps	Mixed gonad dys/vagina atres
622928	17/02/1991	12	Female	Perineoplasty	Bladder exstrophy
622928	17/02/1991	12	Female	Omphaloplasty	Bladder exstrophy
622928	17/02/1991	12	Female	Osteotomy - Bilateral anterior	Bladder exstrophy
622928	17/02/1991	12	Female	Osteotomy - Bilateral posterior	Bladder exstrophy
Unknown	12/11/2003	0	Male	Exstrophy closure	Bladder exstrophy
658124	5/11/1996	7	Female	Exstrophy closure	Cloacal exstrophy-incontinence
658124	5/11/1996	7	Female	Osteotomy - Bilateral posterior	Cloacal exstrophy-incontinence
658124	5/11/1996	7	Female	Osteotomy - Bilateral anterior	Cloacal exstrophy-incontinence
61539	10/12/1996	9	Female	Osteotomy - Bilateral anterior	Bladder exstrophy
658124	5/11/1996	7	Female	Wound revision	Cloacal exstrophy-incontinence
61539	10/12/1996	9	Female	Osteotomy - Bilateral posterior	Bladder exstrophy
515953	15/11/1986	17	Female	Perineoplasty	Bladder exstrophy
515953	15/11/1986	17	Female	Omphaloplasty	Bladder exstrophy
515953	15/11/1986	17	Female	Wound revision	Bladder exstrophy
515953	15/11/1986	17	Female	Osteotomy - Bilateral anterior	Bladder exstrophy
515953	15/11/1986	17	Female	Osteotomy - Bilateral posterior	Bladder exstrophy
658158	21/01/1999	4	Male	Hypospadias repair - Duplay	Hypospadias - previous surg
Unknown	12/11/2003	0	Male	Osteotomy - Bilateral anterior	Bladder exstrophy
658124	5/11/1996	7	Female	Perineoplasty	Cloacal exstrophy-incontinence
651672	19/11/2002	1	Male	Cantwell Ransley	Bladder exstrophy
507179	6/11/1984	19	Male	Ileal neobladder	Bladder exstrophy - epispadias
658124	5/11/1996	7	Female	Omphaloplasty	Cloacal exstrophy-incontinence

Appendix 2: Operations - continued

Hosp	DOB	Age (ys)	Gender	Operation	Pathology
1040184	31/05/1998	5	Female	Bladder augmentation	Bladder exstrophy-incontinence
Unknown	12/11/2003	0	Male	Hernia Inguinal - bilateral	Bladder exstrophy
507179	6/11/1984	19	Male	Transureteroureterostomy	Bladder exstrophy - epispadias
658124	5/11/1996	7	Female	Hernia Inguinal - bilateral	Cloacal exstrophy-incontinence
507179	6/11/1984	19	Male	Mitrofanoff - ureter	Bladder exstrophy - epispadias
597215	27/09/1994	12	Male	Cystoscopy + urodynamics	Bladder exstrophy
654096	15/11/1989	14	Male	Nephrolithotomy - percutaneous	Hirschsprung's - renal stone
654096	15/11/1989	14	Male	Nephroscopy	Hirschsprung's - renal stone
116244	31/07/1998	15	Male	Osteotomy - Bilateral anterior	Bladder exstrophy-incontinence
116244	31/07/1998	15	Male	Cantwell Ransley	Bladder exstrophy-incontinence
622928	17/02/1991	12	Female	Wound revision	Bladder exstrophy
116244	31/07/1998	15	Male	Wound revision	Bladder exstrophy-incontinence
116244	31/07/1998	15	Male	Young Dees bladder neck reconstruction	Bladder exstrophy-incontinence
1040184	31/05/1998	5	Female	Perineoplasty	Bladder exstrophy-incontinence
1040184	31/05/1998	5	Female	Wound revision	Bladder exstrophy-incontinence
1040184	31/05/1998	5	Female	Osteotomy - Bilateral posterior	Bladder exstrophy-incontinence
1040184	31/05/1998	5	Female	Osteotomy - Bilateral anterior	Bladder exstrophy-incontinence
1040184	31/05/1998	5	Female	Omphaloplasty	Bladder exstrophy-incontinence
Unknown	16/01/1992	12	Female	Vaginoplasty - sigmoid	Mixed gonad dys/vagina atres
61539	10/12/1996	9	Female	Omphaloplasty	Bladder exstrophy
294149	21/10/2001	2	Male	Cystoscopy + dilatation	Crossed ectopia
61539	10/12/1996	9	Female	Perineoplasty	Bladder exstrophy
61539	10/12/1996	9	Female	Wound revision	Bladder exstrophy
116244	31/07/1998	15	Male	Omphaloplasty	Bladder exstrophy-incontinence