Tertiary Health Services Project - Papua New Guinea

Paediatric Surgery

Dr Okti Poki's Examination Visit

PNG Paediatric Surgeons - Okti Poki and Mclee Mathew

A Report for 28th August – 3rd September 2004

Professor Paddy Dewan

Overview

The care of Paediatric Surgical disease in PNG has taken a big step forward as a result of this visit. Having started in 1993, the journey to independence for the PNG Paediatric Surgical team is now closer to being achieved by the success of Dr Okti Poki in the Paediatric Surgical Diploma. Okti will join the group in Lae, to compliment the service provided by Dr Mclee Mathew from Lae. Between the two surgeons it is expected that they will provide the bulk of the in-country outreach Paediatric Urology and Surgery, while further visits from Australian surgeons will assist with the major cases and further education. Research will become an increasingly important part of the program.

The need for clinical care input from Australian surgeons has now decreased dramatically, and the program of assistance, therefore needs to take on a new focus, highlighted during this visit by a small number of complex technical cases being operated on.

For the provision of services to reach a high standard, there is still a long way to go. Patients are still referred late and the community of both doctors and the public are not sufficiently aware of the care available for children with conditions that can be treated surgically. The infrastructure in hospitals will have to improve, particularly with such basic services such as radiology, although medical staff should remember that the clinical features of the illness should remain the most important features on which treatment is planned.

The Paediatric Surgical Foundation will be a major contributor to the development of Paediatric Surgical services, with the help and drive of Mclee and Okti. Donations to the Foundation are now coming from various sources and will assist in enabling the skill acquired by Papua New Guinean surgeons to be applied to a larger number of patients, and more equipment to be made available. The plan for future development is outlined below.

The non-functioning image intensifier in Lae indicates some of the improvements that need to occur in equipment supply and maintenance.

Paediatric Surgical Diploma Examination

The visit had two main aims, one was to assist with the conduct of the Paediatric Surgical Diploma exam for Dr Okti Poki, and the other was to assist with surgery on patients with cloacal anomalies.

The exam was conducted in three sections, two written papers and a day of three clinical components, the details of which are given below.

Marking System

9.5 Excellent
9+ Very good
9 Pass
9- Bare fail
8 Fail
7 Examination Failure

Examiners (see picture)

Prof Paddy Dewan
Prof David A K Watters
Mr Ikau Kevau
Prof J Vince
Mr McLee Mathew (Observer)

Clinical Examination Sessions

Thursday September 1st 2004

Clinical Examination:	0900-1030
Ward round:	1100-1200
Viva Voce:	1430-1530

David Watters, John Vince and Okti Poki during the ward round

University of Papua New Guinea

Higher Surgical Diploma

Paediatric Surgical – Paper I

Monday August 30th 2004

An exam of 3 hours duration with three questions of equal value:

Take time to read each question carefully

Allocate an equal time to each question

Question 1: A neonate presents with a distended abdomen that was noted at birth. The child has bile stained vomiting and visible peristalsis. Detail the resuscitation, the differential diagnoses and investigations that would clarify the diagnosis. Also, outline your surgical treatment if Hirschsprung's were considered the most likely diagnosis.

Question 2: A 7 year-old girl present with wetting and urinary tract infections. Describe the differential diagnosis and the management of this presentation, including investigation. Elaborate on how you would proceed with the investigation of a possible duplex kidney, and describe the rational and detail of the surgical management if duplication was the cause of the wetting.

Question 3: A two-year-old boy presents with a chronic cough and a chest radiograph showing an anomaly at the left base, with opacification. Discuss the differential diagnosis, the investigation and surgical management of the most likely diagnoses

The Department of Surgery wishes you a successful examination

University of Papua New Guinea

Higher Surgical Diploma

Paediatric Surgical – Paper II

Monday August 30th 2004

An exam of 3 hours duration with three questions of equal value:

Take time to read each question carefully

Allocate an equal time to each question

Question 1. A neonate presents in Port Moresby General Hospital with vomiting in the first day of life. A plain X-ray shows a double-bubble appearance. Discuss the pathology of the presentation and describe in detail how you would manage this case.

Question 2. Discuss the embryology and pathology of congenital lumps in the neck. Discuss the presentation and operative management of thyroglossal cyst in detail

Question 3. Write brief notes on the following:

A The presentation staging and management of Wilms tumour

B Ventriculo-peritoneal shunts in infants and young children

C Management of a neonate with a strangulated hernia

The Department of Surgery wishes you a successful examination

Teaching

Teaching was conducted during the ward rounds and operative session, and was a particular focus of the examination debriefing. Tasks have been set to ensure that Paediatric Surgery and Paediatric Urology knowledge and skills will continue to advance, with particular emphasis on the learning through teaching. Registrars, residents and nurses were all educated in the management of cloacal deformities, and the skill of the surgeons and registrars enhanced for the complex anorectal and related deformities, especially during the threatre sessions.

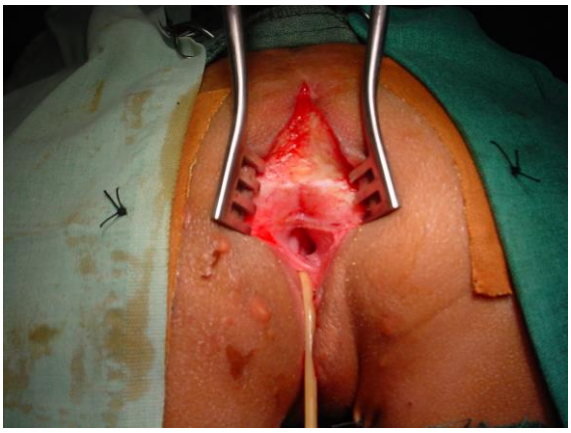
Consultations and Operations

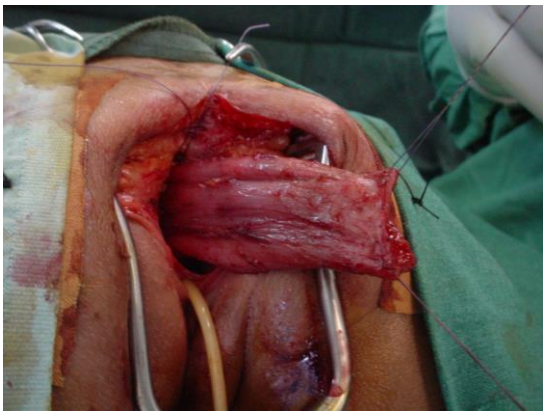
The case numbers was minimal, but the complexity was great, in keeping with the appropriate shift from a tertiary teaching and service visit to a quaternary service and teaching trip. The staff involved, apart from the exam, were all in Lae, and included the theater and ward nursing staff, plus Mclee Mathew, Ben Yapo, and the resident Charles Koi . An indication of the progress of the training was that Charles has already developed some of the skills of a Paediatric Surgeon.

This little girl, with an anorectal anomaly, was not operated on by the Australian team, and shows how well Dr Poki and Dr Mathew care for the these patients

Case 1

Georgina Isaiah was born in January 2002 with a cloacal anomaly, spina bifida, a patent ductus arteriosis, and other minor anomalies. The meningomyelocele was repaired during a previous Paediatric Surgical visit, and a colostomy had been established. The pictures show the initial appearance, the early part of the operation, with the open vagina and the bowel not yet visible. The colon is then on view, and the last picture is of the near-to final result. The girl has made a good early recovery.





<u>Operation:</u>

Findings: The urethra was relatively separate, and the rectum was attached to the back of the upper vagina. The rectum was very dilated, but had good blood supply following plication. A good muscle complex was noted.

Procedure: Georgina was placed in the prone jack-knife position and a urethral catheter inserted. A midline incision made through the pelvic muscles and onto the colon. The colon was dissected from the vagina, dissected into the pelvis and the posterior aspect resected and closed with a continuous 4/0 vicryl. The neo-rectum was then placed between the pelvic muscle which was closed with 4/0 vicryl. The anus and posterior vagina was sutured to the skin with 6/0 vicryl, and the posterior aspect of the wound sutured with a subcuticular suture.

Case 2

Amelia is an eight year old girl from Oro Province, who was born with a congenitally abnormal left lower limb, and an anorectal anomaly. The limb has marked muscle wasting, particularly of the calf, but up to and including the glutei. The leg is both smaller and shorter than the right side.

Amelia's abdomen has a midline scar, the pouting colostomy, and further scaring in the left iliac fossa, caudal to the colostomy. The colostomy was covered with cloth and gauze, not a colostomy bag. Amelia had had a previous anterior approach to the Pena anorectoplasty in 2000 by one of the Australian visiting teams, the result of which is shown.

Operation:

Findings: The perineum showed the urethra to be normal, but there was no perineal body, stenosis of the anus, a fibrous band in the vagina, and a large rectovaginal fistula. The rectum was huge with very thick muscle and good blood supply. A large faecal mass was present in the upper rectum. Imbrication of the proximal rectum and colon will be needed at the time of the colostomy closure

Procedure: Placed in the prone jack-knife position and a urethral catheter inserted. A midline incision made through the pelvic muscles and onto the colon. The skin bridges in the vagina and perineum were divided. Following mobilization of the rectum, the posterior half was excised, as was some of the distal bowel, and the defect closed with 3/0 vicryl, having first removed the faecal mass. The perineal body was formed, as was the anorectal angle, during closured of the perineum, the pelvic muscles and the more superficial layers.

Amelia will have a colostomy closure and imbrication of the distal rectum in one month, and will commence on the protocol for rectal dilatations.

Case 3

Ethel was a baby of 7 months, who had recently had a large faecal mass removed in anticipation of a cloacal repair in the future; given her young age this case was deferred until September 2005. The child had a well placed, satisfactorily functioning colostomy.

Case 4

Joshua, a boy from Bundi, Madang presented with a prolapsed colostomy which had become partially necrotic and infected. Initally a colostomy revision was planned, during the operation the suitability of the colon for a pull-through, and lack of care of the colostomy and the lack of colostomy bags lead to the decision to perform a Swenson's procedure. Regretably, post operative sepsis lead to the demise of the patient the following day.

Operation:

Title: Laparotomy. Resection of necrotic bowel. Swenson

Findings: The distal limb of a 15 cm colonic prolapse was necrotic for the distal 3 cm. The distal end of the stoma exited at the proximal end of the wound. The rectum and distal sigmoid Consistent with Short segment Hirschsprung's. There was good blood supply of mobilised segment bowel, which had to be freed up to the splenic flexure, including division of the left colonic artery to facilitate adequate length. The blood supply of the colon was very satisfactory at the endorectal pull-through.

Procedure: The nectrotic segment of the bowel was resected and the intussuscepted colon was seen to be near normal, and the rectum was seen to be consistent with Hirschsprung's. The colostomy was mobilised and the rectosigmoid segment was mobilised and resected down the upper rectum. The proximal colon was mobilised to reach the anus with division of the inferior mesenteric and left colic vessels. The rectum was then dissected down to the dentate line from within the pelvis, then the level checked by everting the bowel through the anus. After everting the rectum through the anus, the anastomosis was performed with 4/0 vicryl, and the wound was closed in layers.

Case 5

Mary, was one of two girls with a cloaca who came from Milne Bay. Born on 28.3.1996, Mary had both a transverse colostomy and a mid-left abdomal stoma that was described as a ureterostomy. There was only one small orifice in her perineum. The post operative recovery was uneventful.

Operation:

1. *Posterior midline exploration*
2. *Laparotomy: Mobilisation of upper rectal stoma; Mobilisation of transverse colostomy; Resection of inter-colostomy ischaemic section*
3. *Cloacal repair: Conversion of rectal pouch to vagina; Transverse colon-anal anastomosis; Perineoplasty; Distal urethroplasty*

Findings: Two normal kidneys; no uterus; no vagina; narrow long urethra; large bladder; Good pelvic muscle; two normal ovaries and fallopian tubes; ischaemic inter-colostomy bowel segment; atretic attachment of ectatic rectum to bladder neck region, with communication.

Procedure: A midline posterior incision was made and the dissection continued through the pelvic muscle; the only viscus located was the urethra, which was long and narrow (8FG). The patient was turned into the prone position and a laparotomy via lower abdominal transverse incision performed, the pathology identified and distal, left-sided stoma mobilised. The ability to mobilise the rectal segment was identified and the proximal (transverse) stoma freed from the abdominal wall. The ascending colon, caecum and distal small bowel were orientated to allow the colon to be mobilised sufficiently to facilitate the transverse colon to be anastomosed to the anus. The rectal stump was trimmed and the mobility checked. The size of the segment was too large to from the vagina, and was later trimming, without loss of vascularisation. The patient was again placed in the prone position and the two segments of bowel joined to the perineum and the perineal body constructed with 4/0 and 6/0 vicryl. The urethral catheter was sutured in place, as a balloon catheter was not able to be inserted.

Case 6

Marina a six year old girl who presented with a traumatic rectovaginal fistula, for whom a left iliac fossa colostomy had been formed, unfortunately via a separate right sided incision, giving her two, rather than one abdominal scar. The initial action may have been appropriate in the setting to tissue damage, limited facilities and no expertise in the management of such a condition. The images show the before and after views.

Operation:

Findings: No perineal body. Scaring of the lateral wall between the origical anal and vaginal openings. Excellent apposition of the perineal body.

Procedure: Triangle excised on either side and extended across to the contralateral side, with separation of the distal vagina and rectum. From the depths of the wound the rectum, vagina and perineal body were progressively repaired, up to the perineal skin level. 3/0 and 5/0 vicryl suture was used for the repair.

Case 7

Elizabeth, a 21 year old woman had surgery on day one of life, for the formation of a colostomy, and subsequently had closure of the colostomy, and formation of an anus, in the first year of life. She presented having menstrual flow per-urethra, and with a history of episodes of abdominal pain, distension and constipation over protracted periods of time. She had no colostomy when seen, and good faecal and urinary control.

Case 7 (cont'd)

Elizabeth is happy to have the surgery that will stop her menstruating via her urethra

Operation:
Laparotomy: Division of colonic adhesions; mobilisation of urogenital sinus

Findings: Dense adhesions in the region of the transverse colon were likely to be the cause of the intermittent bowel obstruction Elizabeth experienced.. The upper vagina was duplicated (as expected), as was the uterus. The two kidneys were normal, the bladder and lower colon were normal. The pelvic muscle was excellent.

Procedure: Midline abdominal incision, adhesions identified and divided. The patient was placed in prone position, and a midline incision through which the posterior vaginal wall and pelvic muscle were incised up to the bifid uteri. The urethra was separated anteriorly and closed with 5/0 vicryl over a 10FG balloon catheter. The anterior wall of vagina closed with 5/0 vicryl, and the posterior wall of vagina closed with 3/0. The muscle was then closed with 3/0 vicryl, forming the perineal body and the pelvic muscle between the vagina and rectum.

Problems and Recommendations

Recurrent Clinical Cases Issues

1. Midline laparotomy to be avoided in children.
2. Colostomy prolapse should be treated early and with the division of the loop.
3. Colostomies should be formed in the wound to find the colon.
4. Distal bowel lavage should occur after colostomy formation.
5. Anterior anorectoplasty should not be used.
6. Reversal of position of proximal and distal limbs of the colostomy.
7. Rectal biospsy should be taken at the time of a laparotomy for Hirschprung's.
8. A colostomy should not be made too proximal, to prevent bowel loss.
9. Dual stomas in cloacal patients should be avoided.
10. Colostomy should not be performed in late presenting perineal trauma

Clinical System Issues

1. Intervention before transfer should be with consultation to subspecialty team.
2. Cloacal anomalies should be referred centrally.
3. Peripheral visits should be by the PNG Paediatric Surgeons.
4. Recommendations from individual team members should be only incorporated.
5. Donations-in-kind should be coordinated, including for colostomy bags. The Paddy Dewan Paediatric Surgical Foundation should work with the Paediatric Surgeons in both Australia and Papua New Guinea to develop a sustainable system of low cost supplementation of the available equipment.
6. Skills in the Anaesthesia need to be developed for both Anaesthetists and ATO's, to give support to the developing Paediatric Surgical team.
7. Radiology services should be improved, with a focus on basic equipment.
8. Supplies of sutures need improving.
9. Further basic Paediatric Surgical instruments are required.
10. A country-wide service plan for Paediatric Surgery should be developed.

Services for children with Paediatric Surgical needs have expanded to include dedicating a part of the Lae surgical ward to their care. This should now happen in Port Moresby

Proposed Staff distribution

2005	McLeod, Liz	– Thoracics – POM + Lae, June
	Dewan, Paddy	– Urology Workshop, September
	Ben Yapo	– Melbourne
	Mathew, McLee	– Lae (PNG Coordinator)
	Okti Poki	– Moresby
	Charlie Turharus	– Moresby - travel with visitors
	Outreach	– McLee + Okti (shared)
		– Rabaul; Goroka; Hagen + Madang
	Albert, Shun	– Solomons
2006	McLeod, Liz	– Thoracics – POM + Lae, June
	Dewan, Paddy	– Anorectal International Workshop, September
	Ben Yapo	– Sydney
	Mathew, McLee	– Lae (PNG Coordinator)
	Okti Poki	– Moresby
	Charlie Turharus	– Moresby - travel with visitors
	Outreach	– McLee + Okti (shared)
		– Rabaul; Goroka; Hagen + Madang
	Albert, Shun	– Solomons

Ikau Kevau congratulates Okti Poki on becoming the second PNG Paediatric Surgeon

Paediatric Surgical Trainees

Benjamin Yapo Paediatric Surgical Trainee, Sunshine Hospital 2005; Advanced training, Sydney 2006; Paediatric Surgeon, Mt Hagen 2007: Diploma exam September 2007.

Charlie Turharus MMed 2005; Two Years Service 2006, 2007; PNG Senior Registrar 2008; Australia 2009; Rabaul 2010. Diploma Exam September 2010.

A further candidate needs to be identified to complete the contingent of five Paediatric Surgeons, with that person being appointed to the second position in Port Moresby in 2013. The outreach to the more peripheral centres should be organised by the Group, in cooperation with the Department of Health and the Paddy Dewan Paediatric Surgical Foundation.

Charlie, Mclee and Ben are the three to the right of the picture

Appendix 1: Donations

Provided by Sunshine Hospital and St John of God, Geelong

Betadine	- 6 litre
Dathermy pads	- 100
Sutures	- 4 boxes
Hyspadias stents	- 30
Gloves	- 120 pairs
Guide wires	- 7
Sheath dilators	- 30

Provided by College of Surgeons

Catheter bags	- 12
Catheter - urinary 8f	- 10
Catheter - urinary 10f	- 10
Catheter - urinary 12f	- 10
Catheter - cliney	- 10
Gloves - disposable	- 40
Gloves - sterile	- Box
Hypafix	- Roll
Tape - micropore	- Box
Tape - pink elastoplast	- Box
Tape - white elastoplast	- Box
Suture - Vicryl 2/0	- Box × 2
Suture - Vicryl 3/0	- Box × 3
Suture - Vicryl 4/0	- Box × 3
Suture - Vicryl 5/0	- Box × 2
Suture - Vicryl 6/0	- Box × 2
Suture - Vicryl 7/0	- Box × 2
VP shunt	- 3

The boxes of donations arriving in PNG

Appendix 2: Patient list

#	NAME	Hospital #	DOB	SEX	VILLAGE	PROVINCE	DIAGNOSIS
	G I	456301	29.01.2002	F	Mussau	New Ireland	Cloaca/SB
	AA	456215	09.10.1996	F	Tufi	Oro	Anorectal anomaly
	EA	454927	26.02.2004	F	Bukawa	Morobe	Cloaca
	J T	456224	08.04.1998	M	Bundi	Madang	Hirschsprung's
	MC	456214	28.03.1996	F	Alotau	Milne bay	Cloaca
	MA	456233	01.01.1998	F	Trobrian Is	Milne bay	Perineal trauma
	EK	456213	13.05.1983	F	Topa	Milne Bay	Cloaca