



Supporting the Leicester-Gondar Link

PROJECT UPDATES

Project Name : *(please highlight accordingly)*

- Operating Theatre (Jane & Peter Aires)
- Bio-Medical Engineering Dept (Nick Brown)
- Paediatric Ophthalmology (Geoffrey Woodruff FRCOphth, Consultant Ophthalmologist Emeritus, LRI)
- University Projects (Mark Goodwin)
- Patient Safety (THET/DFID) / Nursing & IPC (Sandra Kemp)
- Orthopaedics & Trauma (Laurence Wicks)
- Mental Health (Lynn Wroe)
- Kolladiba (Christine Iliffe)
- Collaborative Teaching Programme / Endoscopy / Dietetic (Barrie Rathbone)
- Laboratory – Microbiology (Steve Hardy)
- Global Women's Health Collaborative (Doug Tincello)

Background - About 200,000 children world wide are blind because of cataract, and the proportion of blindness in children caused by cataract is increasing. Surgery for cataract in children presents unique difficulties, and only two ophthalmologists in the whole of Ethiopia (population 102 million) are trained to do this.

Dr Mulusew worked in Gondar as a trained paediatric ophthalmologist for 4 years from 2011 to 2016 but has since relocated to Addis, his home city. There has been an active link between Leicester Royal Infirmary Department of Ophthalmology and Gondar University Hospital since March 2013 when I first visited Dr Mulusew in Gondar. Since then, Dr Mulusew, Prof Clare Gilbert and I have held a British Council for Prevention of Blindness Mentorship grant, with the help of which Dr Mulusew has published two papers and is now presenting for publication in British Journal of Ophthalmology a further paper describing his experience of operating on 142 children with cataract over a 4 year period in Gondar.

Invitation - Early this year, Dr Mulusew's successor in Gondar, Dr Teshager, travelled to Tanzania to undertake a one year fellowship training in paediatric ophthalmology. Although a wonderful long term investment for the benefit of children with cataract in Gondar and Ethiopia as a whole, this resulted in a short term accumulation in Gondar of children with cataract waiting for treatment. Delay in cataract surgery in children prevents normal development of the child's visual system and causes a poorer outcome. Consequently, Dr Fisseha, Head of the Department of Ophthalmology at Gondar University Hospital invited Dr Mulusew and myself to spend a week in Gondar teaching the resident's paediatric ophthalmology and undertaking the surgery of some of the children waiting for cataract surgery.

*Kathy Astbury – Leicester-Gondar Link & HALE Administrator
International Office, University of Leicester
Tel: 0116 252 5321 / Email: ka289@le.ac.uk*

Objectives of the visit -

- 1) To undertake cataract surgery on children waiting for treatment in Gondar.
- 2) To explore the feasibility of undertaking a national audit of children's cataract surgery in Ethiopia, the "Children's Improvement in Cataract Outcome in Ethiopia" (CHICOE) Study.
- 3) To provide teaching in paediatric ophthalmology to the Ophthalmology Residents (trainee ophthalmologists) in Gondar.
- 4) **Further Objective which became evident during the visit:**
To re-establish paediatric cataract surgery in Gondar after a break of nearly one year.

Activities - We had an early start on Monday morning catching the 7am flight from Addis to Gondar. When we got to Gondar University Eye Clinic, the waiting area seemed overrun with patients. However, the residents (trainee ophthalmologists) had been working hard in the previous weeks to identify children who would benefit from our visit, so that our children's clinic was much more manageable, with a mere 45 children waiting to see us....still a lot of patients by UK standards.



Very busy adult eye clinic



Dr Mulusew examining a child with the indirect ophthalmoscope in the paediatric clinic

Betlehem aged 4 years had previously had bilateral cataract surgery for congenital cataract at the age of 3 months by Dr Mulusew in Gondar. She had had further surgery for visual axis opacification in the left eye a year ago and recently had squint surgery. We found her to be doing well with an excellent acuity of 6/9 (close to normal) in the right eye and 6/24 on the left. We found that she could benefit from a change of glasses with which the left eye improved to 6/18 (half way down the letter chart). No surgery for visual axis opacification was needed.



4 year old Bethlehem previously operated on by Dr Mulusew in Gondar attending for follow up

Berhane, a young adult from Gondar, told me that when her vision had started failing badly, she had decided to travel the 450 miles to Addis Ababa for surgery on her childhood onset cataract. This had been done 4 months previously. We found her to have had an excellent surgical outcome except for some visual axis opacification in both eyes which was limiting her acuity of 6/60 (the top letter of the Snellen chart). Dr Mulusew undertook surgical Laser posterior capsulotomy in each eye that evening.



Dr Mulusew carrying out YAG laser capsulotomy for Berhane who previously had surgery for congenital cataract

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During the course of the day, and in smaller clinics on other days, we identified a further 6 children with unilateral traumatic cataract and one 14 year old child blind from bilateral cataract since infancy. Most of the remaining 45 children had misalignment of the eyes, ie squint, with 10 of these needing squint surgery, albeit as a lower priority than the children with cataract.

SUMMARY STATISTICS:

54 outpatients seen:

3 had previously had surgery for paediatric cataract, of these, one needed bilateral Yag Laser capsulotomy

6 children had unilateral traumatic cataract needing surgery

1 child was blind from bilateral cataract and needed urgent cataract surgery

Surgery Performed:

2 laser capsulotomies

7 cataract operations on children

5 operations for squint (misalignment of the eyes)

Cataract Surgery –



14 year old Abeba with severely impaired vision caused by bilateral cataracts which were first noticed 10 years ago and have got steadily worse. Operated by Dr Mulusew 13th and 15th December 2017

Of the children we operated on for cataract, 5 had traumatic cataract and one had bilateral congenital cataract. For comparison, a big teaching hospital such as Leicester Royal Infirmary serving a population of one million in the UK undertakes this number of surgeries for childhood cataract over a 6 month period.



8 year old Dawit with left cataract following injury playing with sticks with a friend. Operated by Dr Mulusew 14th December

In every cataract operation we eliminated an unsightly white pupil and prevented a guaranteed progression to no retrievable vision without treatment. All children had an improvement in vision, typically from 2/60 (unable to read the top letter of the chart at 6 metres) to 6/36 (the second line on the chart) the next day, but the final outcome will not be known for some time. We declined to undertake surgery on one child with unilateral cataract and other major intra-ocular damage following trauma. This was partly because of time constraints and partly because we were not satisfied that the equipment and set up we had was sufficiently reliable to guarantee an improvement.

CHICOE STUDY (Children's Improvement in Cataract Outcome, Ethiopia).

While making arrangements for this visit to Gondar, I was in touch with Dr Teshager who is due to resume his post in 2018 after one year's training in Tanzania. He is enthusiastic to participate in the study. We also met with the head of Ophthalmology at St Paul's Millennial College Medical School, who has recruited a new paediatric ophthalmologist, who he would like Dr Mulusew to supervise, inevitably providing more patients for the study. We familiarised ourselves with the challenges of providing treatment and collecting data in a resource poor environment. We also had the opportunity to review the mechanisms for the supply of consumables for paediatric cataract surgery. We met with Sisay Joseph, the statistician who contributed to Dr Mulusew's previous publication about Paediatric cataract surgery.



Brainstorming the next steps for the CHICOE study, left to right: Dr Mulusew, Mr Sisay (Biomedical Statistician), Dr Geoff Woodruff

RE-ESTABLISHMENT OF CATARACT SURGERY FOR CHILDREN IN GONDAR

While planning this visit, I had been concerned that Dr Mulusew and I might undertake all of the children's cataract surgery leaving none available for Dr Teshager to do on his return. This proved to not be a problem at all. Indeed attendance for paediatric cataract surgery seems to be most governed by the perception of the availability of treatment. Providing a paediatric cataract service for a week can be expected to promote the attendance of children and their families seeking treatment. After the absence of a paediatric ophthalmologist for nearly a year, the paediatric eye theatre was in a moribund state. For the first procedure the set up was so crowded with 3 trainee anaesthetists, myself and Dr Mulusew crowding around the patient's head that I feared for the safety of the child.



Very crowded arrangement of equipment for first cataract operation

*Kathy Astbury – Leicester-Gondar Link & HALE Administrator
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Rearranged equipment in Theatre allowing much better anaesthetic access at beginning and end of operation and in case of emergency. The operating microscope has been swung out of the way (to top right of picture)

We soon undertook a rearrangement of the operating theatre, shifting some massive items, placing the anaesthetic machine further away from the head of the patient and placing the operating microscope in the opposite side of the operating table from the anaesthetic machine.

An essential piece of equipment for paediatric cataract surgery is a vitrectomy machine. Gondar Eye Department has a bulky sophisticated vitrectomy machine which has never worked reliably, but I knew there to be hidden somewhere a very simple 'Geuder' vitrectomy machine that would entirely meet our needs. I had brought some disposable cutters that would fit either machine, but sadly the foot pedal control for the Geuder machine could not be found until our second day of operating. Resurrecting this simple vitrectomy machine in advance of Dr Teshager's return, and leaving behind some sharp cutters were major achievements. Overall, we left the theatre team in a much better position to meet Dr Teshager's needs than they had been before.



Sophisticated vitrectomy machine we would not make work. Vitrectomy machine Compressor and air reservoir without which vitrectomy machine will not work. Much simpler Geuder vitrectomy machine which worked fine once we found the foot pedal

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Choosing an intra-ocular lens and a vitrectomy cutter from my rapidly diminishing supply of useful bits and pieces donated by Altomed Zeiss MISS and Rayner

Squint Surgery - Misalignment of the eyes is not generally a blinding condition. However, it causes great distress to patients and is a common cause for a child attending an eye clinic in both the UK and in Africa. The management of squint is a major part of the practice of paediatric ophthalmology and trainees tend to be unsure of the appropriate amount of corrective surgery to undertake.

We operated on 3 children with grossly convergent squints and two children with very unsightly divergent eyes. All five children had an improvement in their ocular alignment.

A target outcome was determined before surgery; post operatively an assessment was made as to what extent the target had been achieved. In addition, in each case, I involved the registrars by asking them to write down whether they would have undertaken the same or more surgery or the same or less as the consultants planned to do. At the time of writing this report, the final outcome is not yet known. I have asked the 3 staff most involved in helping us, to collect follow up data on all the patients we operated on. I have undertaken to co-author a paper with them about the visit if they can collect the post-operative data.

Acknowledgements - I acknowledge with thanks the support of the Ridley Eye Foundation which provided the airfares for both myself and Dr Mulusew, an honorarium to cover Dr Mulusew's absence from work in Addis Ababa for a period of one week, and the cost of Dr Mulusew's accommodation expenses. In addition, I am grateful to Rayner who provided cohesive viscoelastic and injectable intra-ocular lenses when the required lens power was not available in Gondar. Many thanks also to Zeiss who provided viscoelastic, to MISS who provided vitreous cutters and to Altomed who kindly donated vitreous cutters and a wide variety of useful consumables such as aspiration cannulas, tubing adaptors for connecting up unlikely combinations of vitrectomy machine and cutter etc. Thanks also to HALE (Health Action Leicester for Ethiopia) and Vision 2020 and for long term support of the Leicester Gondar Eye Link. All patients and their parents consented to photography. Names of patients have been changed for anonymity.

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