Mr Andrew Fleming in Zimbabwe - BFIRST TRIP TO HARARE 15.1.18 - 21.1.18

Background

Zimbabwe has a population of 12 million and only three attending plastic surgeons, Miss Faith Muchemwa, Mr Kevin Nduku and Dr O Exposito on a 3 year contract from Cuba, to service the country. The Department is fairly new, having been established in 2015 as its own department to address the needs of reconstructive surgery in the country. There are currently three registrars, Dr Adrian Karangura, Dr Tingadini Nyoni and Dr Owen Muzinda in the training programme and the eventual aim is to recruit one registrar per year henceforth. This will enable eventual decentralization of Plastic Surgery Services. . The training programme follows the syllabus of COSECSA . In addition, there is a Senior House Officer, Dr Tanaka Chimuka and an intern, Dr Moses Masoka.

To help with the training programme, Mr Andrew Fleming, consultant plastic surgeon at St George's hospital, London, has been visiting Parirenyatwa Hospital by invitation of Professor Muguti, Professor of Surgery, since 2012. In 2015-2016, one of the current

consultants, Miss Faith Muchemwa, spent a year at St George's hospital under the mentorship of Mr Fleming. A year later, in 2017, the BFIRST Chairman, Mr Wee Lam met Miss Muchemwa at the Global Surgical Frontier's (GSF) conference in London and discussed the possibility of BFIRST involvement in Zimbabwe. Following further correspondences, BFIRST was invited to Zimbabwe the following year to participate in the training programme to assist in teaching plastic and reconstructive surgery. The Chairman then got in touch with Mr Fleming and a team was put together to address the specific sub specialties as requested by Miss Muchemwa and Mr Nduku, namely congenital hand surgery and lower limb complex trauma surgery. The final BFIRST team consisted of six members: Mr Fleming/Mr Wee Lam to teach congenital hand surgery; Mr Adam Reid/Mr Jason Wong to teach lower limb surgery and Megan Blakeway and Annie Capon, both hand occupational therapists.

BFIRST Activities

The planned visit was to consist of lectures, cadaveric dissection teaching, intra-operative teaching and informal tutorials with the registrars. The aim of this first visit was more reconnaissance in nature to assess the needs of our hosts and their hospital. However, BFIRST teams were able focus and apply the ethos of BFIRST, which is first and foremost the transfer of skills - to teach so that one day they can teach others.

Monday: The team was picked up at the hotel and brought to the University of Zimbabwe College of Health Sciences Medical school for a cadaveric workshop. The focus was on flaps for lower limb reconstruction and it was very encouraging to see different specialties coming together, notably Orthopaedic, General Surgery, as well as Plastic Surgery registrars. Mr Reid and Mr Wong gave a series of lectures on the principles of flap reconstruction as well as the common muscle and fasciocutaneous flaps.

The delegates were then split up into three groups to perform dissection on three cadavers (a total of six lower limbs) and were supervised by Mr Reid, Mr Wong, Mr Fleming and Mr Lam. There were not more than five participants at each table, enabling a good faculty: delegate ratio. All the common flaps were dissected, including the

gastrocnemius, medial plantar, perforator based fasciocutaneous, reverse sural and anterolateral thigh flaps. There was a healthy discussion around each table and the multi-specialty discussion was especially productive. All of the four teaching faculty members felt that the delegates engaged and interacted well in the relaxed and formative sessions. Informal feedback from the delegates include: 'This is the first time we had a cadaveric workshop and it was excellent'; 'the workshop was really useful to let me see the flaps and it was great to see things I only read about in books' and 'this is so useful for exams!'

In the afternoon, the team was brought to the Parirenyatwa Hospital for a clinic where patients were selected for the next few days of theatre. We saw a total of approximately 25 paediatric and adult patients, with congenital hand conditions and also burn contractures. About 15 patients were selected for surgery. The cases were selected for their complexity and also if they were common conditions, so they could be used as teaching cases. In addition, Mr Reid and Mr Wong saw a few upper and lower limb trauma cases on the orthopaedic wards and advised on their suitability for complex limb salvage. Several cases were scheduled for flap reconstruction. Two all day theatres were planned for Tuesday and Wednesday and a half day list for Thursday.

Tuesday: The team was picked up at 7.45 for an 8.00 am start. The list included paediatric hand patients for congenital hand surgery and release of burn contractures. The cases included syndactyly release, first web reconstruction for an Apert's Syndrome patient, a cleft hand, and duplicate thumb.. Mr Lam and Mr Fleming took the registrars through the various surgeries and focused on principles of tissue handling, dissection and incision planning.

Mr Reid and Mr Wong visited the orthopaedic theatre and were able to get involved in an open tibial fracture case which required a fasciocutaneous flap. This was an important development in Harare as the interaction allowed the discussion of the importance of a collaborative orthoplastic approach to lower limb reconstruction. The team demonstrated how the orthoplastic approach potentially allowed for fewer operations, thereby saving time and money in the long term for the hospital but more importantly, benefitting the

patient in improving the chances of limb salvage. Good discussions were held with the Orthopaedic Surgeons about auditing their current practice and comparing with a "debride and flap practice", as in UK BOAST guidelines, to ensure better outcomes and save money. Mr Wong was also able to assist and advise an Orthopedic Consultant on how best to approach the reconstruction of a multiple flexor tendon injuries after offering his help.

Wednesday: Another full day of paediatric hand surgery was planned. The major case was a severe burnt contracture that required releasing, tendon lengthening and a pedicled groin flap. In the other theatre, Mr Reid and Mr Wong had scheduled a free anterolateral thigh (ALT) free flap reconstruction (with fashioned fascia lata) for an open wrist defect with missing extensor tendons. This case had required significant planning, both surgically and logistically. One of the aims of the team was to teach and perform free tissue transfer, and train the local surgeons through the critical parts of the case. This would be the first ALT to have been performed in the hospital and would represent a major step forward in Reconstructive Surgery in Harare. The team had brought along a portable hand held Doppler machine for perforator mapping, microinstruments, micro sutures and Acland clamps (all donated by Mercian). Careful instruction was given to the anaesthetic team to maintain a steady blood pressure throughout the surgery and instructions were also made to transfer the patient to a high dependency unit.

Several registrars and Mr Nduku and Miss Muchemwa took part in the Surgery to facilitate a two-team approach. Half way through the surgery, Mr Reid and Mr Wong, together with Mr Lam were accompanied to the venue of the College Guest Lecture by Miss Muchemwa. They jointly presented a lecture entitled: 'The Future of Extremity Reconstruction - From Development to Tissue Engineering to Regeneration'. The lecture was very well attended by about 60 College Lecturers and it was quite well received. There was active discussion and several questions were asked. The team also met Mr Christopher Samkange, the Director of the Institute of Continuing Health Education who had facilitated the lecture, we managed to discuss in some detail, the role of BFIRST in Harare.

Then it was back to the surgery! The free flap was successfully completed at 7.30 pm and the patient transferred to HDU.

Thursday: The day started with a visit to the HDU to check on the patient with the free flap reconstruction, who fortunately was doing very well. Then it was back to the theatre for a half day of operating. Both theatres started with two congenital hand cases and Mr Lam operated with Mr Nduku on a Wassell II thumb duplication, while Mr Fleming performed excision of 4 limb polydactylies. Mr Reid then operated with Mr Nduku on a severe axillary contracture which required multiple Z plastics, a transposition flap and finally a perforator-based medial arm flap. In the other theatre, Mr Wong took one of the registrars through a reversed sural artery flap to cover a calcaneal defect.

In the afternoon, the team was able to sit down and have coffee with the three registrars, Adrian, Tingadini and Owen, as well as Tanaka for an informal tutorial. The topics covered included soft tissue cover of the hand, tendon repair, syndactyly release drawings as well as the reconstructive ladder. This was an excellent opportunity to get to know the trainees and allowed the team to have an idea of the standard of knowledge in Harare.

In the evening, a social dinner was planned for the plastic surgeons and the members of the team including the therapists and anaesthetists.

Friday: The last day of our trip in Harare! The morning was spent on a ward round to make sure all patients were well and post-op instructions were clear. This ward round was especially important as it was multidisciplinary in nature, with the surgeons and therapists discussion the best immediate post op care, but also therapy and wound instructions for the following weeks after the UK team had departed.
In the afternoon, the team departed for a short holiday at the Victoria Falls.

Reflections

This has been an extremely productive and worthwhile trip. Many friendships were formed and the team recognised the enormous potential of the unit as a place for BFIRST investment. The main reasons for success on this trip include:

1. There was a strong ethos for the transfer of skills. We met a very engaged group of young surgeons who are keen to learn, and valued the expertise provided.
2. The organisation of the hosting surgeons, Miss Faith Muchemwa and Mr Kevin Nduku. From the beginning, Faith was very clear in what she wanted for the team; paediatric hand surgery and complex lower limb reconstructive surgery. This allowed BFIRST to scout the UK for appropriate surgeons with the correct skill set. The result was a specialized multidisciplinary team that consisted of hand and lower limb surgeons and specialist hand therapists with expertise in splint fabrication.
3. The involvement and experience of Mr Drew Fleming. As a native Zimbabwean, Mr Fleming provided invaluable advice for the preparation of this trip. His vast experience and wisdom of local knowledge and politics made his presence during the trip invaluable and also provided a constant source of reassurance and encouragement to the team.
4. The eagerness of a few of the Orthopaedic surgeons to learn orthoplastic lower limb surgery, especially Mr Tongai Chitsamatanga, senior registrar in Orthopaedics.
5. The availability of cadavers for a dissection workshop. The opportunity at the beginning of the week for the trainees to practice dissecting, and then to have the opportunity during the week to see the real flaps being raised, was truly invaluable.
6. Finally, the incredible hospitality of everyone we met at the hospital. From the moment we arrived and were picked up by the doctors, Tanaka and Owen, to the moment we left, there was a tremendous sense of generosity felt by the team. Nothing was too troublesome for the hosts. We were really touched by the friendliness of the Zimbabweans and was made to feel extremely welcome and appreciated every day.

Recommendations:

There remain challenges in the training and delivery of a plastic surgery programme in Harare:

1. The lack of theatre space. This is not a unique problem to Harare (!) but the impact of a lack of operating space meant that training opportunities are limited. One important development that must be pursued is the orthoplastic collaboration that had been started during our trip, especially in the areas of lower limb flap reconstruction and complex adult hand trauma surgery.
2. Theatres provided for this mission needed to be given up by other specialties – this created a problem for the local plastic surgery team as they will now need to relinquish their lists for weeks after the mission. In future some local sponsorship will be needed to facilitate opening of additional theatre space (which exists but is moth-balled due to financial constraints) and paying local anaesthetists and nurses.
3. The majority of Hand trauma surgery is currently undertaken by the orthopaedic surgeons. Plastic surgery input is vital for the optimal repair of smaller structures like nerves, arteries, tendons (especially in children) and general soft tissue cover. There is a trauma theatre available every day and these can be potentially valuable training space.
4. A closer link with the orthopaedic surgeons for lower limb trauma surgery. While a full compliance with the BOA/BAPRAS guidelines may be several years away, the present situation allows for combined procedure using workhorse flaps, like the gastrocnemius and fasciocutaneous flaps. Skill transfer for these flaps may not necessarily be for the Plastic Surgeons but also for the Orthopaedic Surgeons.
5. Free flap surgery: Following the successful free flap surgery, several lessons were learnt. Most importantly, free flap surgery is possible in Harare! With adequate preparation and instrumentation, and also a keen awareness of the post-operative care needed, this important reconstructive method could revolutionise the development of plastic surgery in the department, but further training and consolidation of skills, as well as critical monitoring infrastructure is required to ensure that the cases are successful.
6. Skill transfer may involve the visit of a local surgeon to UK or to another centre that performs multiple free flaps on a regular basis. This would ideally be coordinated in timing with reconstructive meetings and microsurgical courses to fully maximize the visitors education time. The BFIRST fellowship should be able to facilitate this by sponsoring a suitable member of the team to possibly Manchester or to Taiwan.

7. Planned annual visits by the same team to deliver a systematic curriculum in hand and lower limb surgery.
8. Sharing of educational resources, including free JPRAS journals and other textbooks.
9. Use of technology to maintain communications for distanced learning, training and advice. The team has already set up a WhatsApp group that will facilitate discussion of complex cases and best safe approaches and solutions in these developing environments. As the Harare team is still new to complex reconstructive procedures, this dialogue is essential in ensuring that the unit feels supported in the absence of the UK team's direct presence.