

Eye Banking in Myanmar: A Review of Services and the Role of International Non-profit Community Based Organizations Transitioning Mandalay Eye Bank Towards Self-sufficiency

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Abstract: Myanmar is the largest country in mainland southeast Asia and is marked by significant geographic and ethnic diversity between regions. Recently emerging from political and economic isolation, the healthcare system is facing several challenges. We describe a recent review of the eye banking services in Myanmar and outline a programme in place in Mandalay. The paper will discuss how, through collaboration and partnership with international non-profit community based organizations, the Mandalay eye bank will transition towards eventual self-sufficiency.

Key Words: cornea, donation, Eye Bank, Myanmar

Myanmar is the largest country in mainland southeast Asia and is marked by significant geographic and ethnic diversity between regions. The overall population in 2017 is approximately 54.4 million people with an estimated growth of 0.86% per year.¹ Buddhism remains the dominant religion within Myanmar, accounting for almost 90% of the population. More recently, Myanmar has emerged from almost a half century of relative political and economic isolation.² Enriched with natural resources, labour force and geographic advantage, Myanmar has an opportunity for significant economic growth and development. Socioeconomic improvements remain important drivers for the transition and growth of health development.³ With approximately 70% of current residents living in rural areas, the continued urbanization of the country may lead to significant health care improvements.³

Health care in Myanmar remains a pluralistic mix of public, private and charitable systems, both in financing and provision. The private sector provides institutional care within the larger cities; however, in regional areas, only basic ambulatory care services are provided. Many monasteries provide specific specialty outpatient facilities. Private health care services are regulated in conformity by law, although this remains difficult to consistently enforce.

In addition to the private for-profit sector, non-profit community based organizations (CBOs) and Buddhist Faith-based organizations contribute significantly to additional ambulatory care. Significantly, almost 70% of health payments remain out of pocket expenses which are amongst the highest in the world, therefore representing a key barrier to the access of universal eye health care within the country.⁴

Disability from blindness represents a major social, emotional, and economic burden for the patients, families, community and government.⁵ Cataract remains the major source of blindness within Myanmar, representing approximately 60% of all cases.^{6,7} The current infrastructure supports between 80,000 and 100,000 cataract surgeries performed annually throughout the country; this has provided a measure of success in reducing the overall burden. Anterior and posterior segment disease however largely represent sub-speciality services which remain restricted.

Corneal disease has been shown to represent up to 15% of cases of visual loss in Myanmar.⁸ Approximately

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three-quarters of reported corneal disease is acquired, with corneal trauma and ulcers representing a significant proportion of cases, reflecting a largely agrarian culture whilst further localizing most cases to underutilized country areas.

Corneal transplantation in Myanmar is serviced by two eye banks, both located in the largest cities. Although the respective eye banks have continued to develop their services and potential reach, their output remains severely limited relative to the overwhelming need. Recently, international CBOs have provided both technical and financial support to develop local eye bank staff and procedures. This review discusses the programs implemented by a CBO to improve local corneal eye bank services and to describe some of the difficulties faced by both local and overseas stakeholders.

BACKGROUND

Myanmar is supported by two eye banks located in Yangon and Mandalay. Both eye banks are relatively young, being established in 1994 and 1999 respectively. Between both institutions, approximately 150 single corneal donations are received each year.

The Mandalay Eye and ENT hospital (MEENT) currently provides the greater number of transplant services - approaching 100 transplants each year. The procedures are derived mainly from the corneal clinic at the hospital, which sees between 30-40 new cases per month. The

ophthalmology department has sufficient infrastructure to provide tertiary eye care services, with four surgeons having received additional sub-speciality training to perform corneal surgery. There are approximately 20 further residents posted to the hospital at any single time. Although the number of available transplants has continued to improve in recent years, the process of donor acquisition and management may benefit from significant development. (Figure 1)

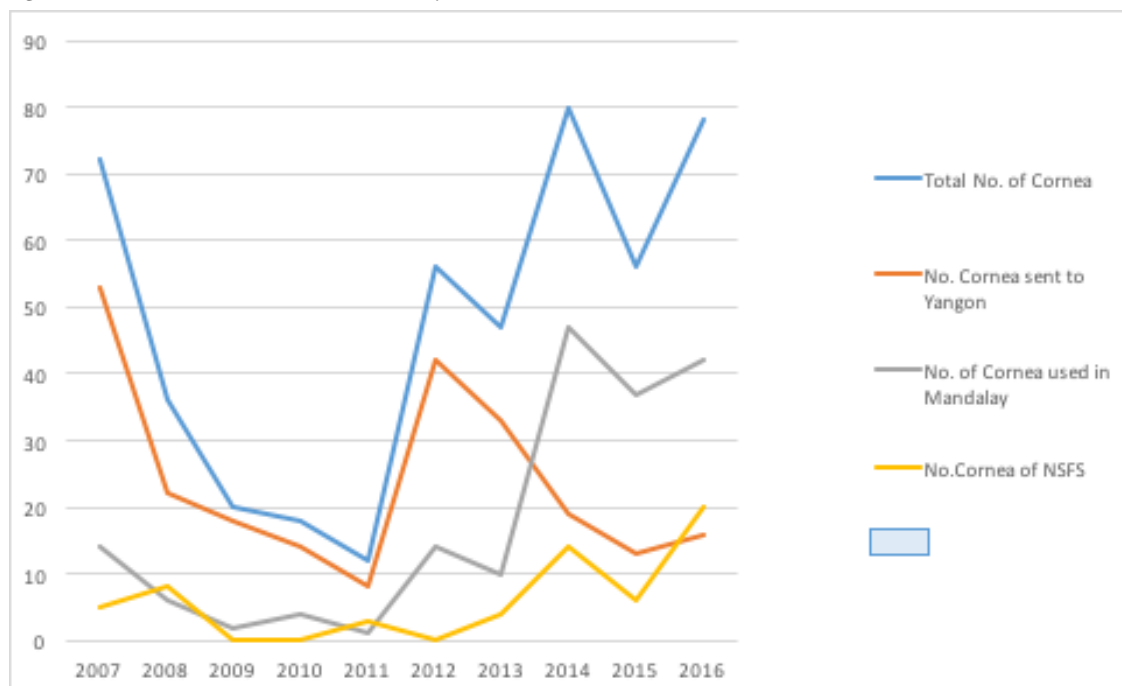
The primary source of corneas in Mandalay, is the mortuary at Mandalay General Hospital (MGH). This is situated approximately 5km (3miles) from MEENT and represents the largest of the local general hospitals, although there are several additional mortuaries in the local area. MGH receives approximately 2,000 bodies per year for autopsy; however due to significant local penetration of contraindications including Hepatitis B and C, HIV and drug use, approximately 80% of cases are not referred for consideration for eye donation by the forensic pathologist. This would suggest that only a portion of the available corneas have been collected.

ISSUES IN OPTIMISING CORNEAL DONATION

Limited Corneal Surgical Services

Although a proficient education program exists within Myanmar for ophthalmologists, additional subspecialty

Figure 1: Corneal donation breakdown Myanmar 2007-2016



training for corneal transplantation remained relatively limited, providing a simple, yet significant barrier to increasing corneal surgical services. Local infrastructure has similarly been restricted. Prior to 2013, there was no microscope to help provide gram staining of donor corneas nor working cabinet to undertake feasible cell count and viability. These issues required priority consideration.

Limited Paramedical Support

Currently the eye bank has six staff including two technicians, counsellor, office staff and eye bank manager. The position of manager was vacant for an extended time. Prior to the external CBO involvement, there was no structured training program for local corneal or eye bank staff. Further, financial resources for support staff and surgeons remain limited, reducing the potential viability as long-term occupations. It is hoped that the continued growth of the program will consolidate the various roles and opportunities for local staff. Although external CBO's may be in a position to help in the short term, this responsibility will need to be driven from the local government and research institutions. Perhaps reflecting the current evolution of eye services in Myanmar, the government recently developed a long-term National Health Plan identifying the need for the expansion of eye care training positions.⁹

The provision of additional services remains limited. No services for advanced microbiology and pathology are capable within MEENT. Additionally, there is also no local ability to structure hospital corneal retrievals.

Although the local population would appear to support a significant increase in eye bank activities, only two hospitals exist with comprehensive eye care services that currently enable cooperation with the eye banks.

Local Myanmar Law

Myanmar has previously established a law to regulate and provide ongoing medical treatment to patients requiring corneal transplantation. This nominally represents an opt-in system albeit with several considerations. According to the local Eye Donation Law, authorized personnel may automatically remove the eyes of anyone who has previously donated their body, unclaimed bodies, or from deceased victims of a crime (once permitted by the Police Surgeon).¹⁰ Although this provides potential streamlining, this is hindered by additional regulations which exclude autopsies being performed between the hours of 5pm to 9am. As the window for accessing viable corneal tissue is between 5-8 hours after circulatory standstill, this presents as a significant obstruction.

Local policy

Significant policy changes require continued dialogue with government committees which remain centralized. More recently, the development of a national health plan has provided a promising framework for future policy changes.⁹

Existing hospital agreements provide further restrictions and require amendment. Currently an existing agreement to supply corneal tissue from the hospital morgue to the eye bank is limited to 25 corneas per year. As previously noted, this figure fails to address the existing needs of the wider community.

Consumables

Both eye bank storage and the eventual surgical procedures require the extensive use of consumables. Most medications are imported or supplied by the Ministry of Health and Sports or through overseas organizational donors thereby demanding either additional on-costs or organizational requirements. Myanmar currently lacks the infrastructure to provide large scale indigenous surgical and postoperative consumables such as storage medium and patient topical medication. For example, although facilities exist within Myanmar, production has been interrupted routinely by the lack of access to basic chemicals.⁹

Audit and Research

Audits remain central to improving local standards. Staff have limited research exposure; furthermore, ongoing assessment of patients remains limited due to poor patient compliance with postoperative visitation, due to both cost and distance from primary eye care services. This limitation was recognized in the recent National Health Plan with a commitment to undertake research to enable mid to long-term planning and monitoring of progress.⁹

THE IMPLEMENTATION OF CHANGE

The Mandalay Eye bank program has previously been supported by external CBOs. Although there remains significant goodwill between the organisations and both the hospital and government institutions, the long-term goal is to increase self-sufficiency and develop a sustainable program that adequately supports local ophthalmic needs.

Partnerships and Collaboration

To address issues, the Lions NSW Eye Bank (LNSWEB, Sydney, New South Wales, Australia) has previously provided technical and material support for the eye bank programme through ongoing visits to Myanmar. The pur-

pose of these visits was to review the current program to identify areas for improvement, provide short-term training opportunities for both residents and eye bank staff and equip the eye bank with required resources. Over the period of 2014 – 2016, this resulted in the eye bank becoming fully equipped with the necessary equipment to enable the expansion of current services as required.

Although training by visiting corneal surgeons was deemed valuable, further training opportunities were deemed necessary to consolidate newly acquired skills. This led to the identification of a local surgeon to pursue a corneal fellowship in Australia. In early 2017, the recipient fellow travelled to Australia to gain theoretical and practical experience in both standard and complex corneal transplant techniques. Additionally, the fellow received training from the eye bank scientists regarding all facets of eye banking including, but not limited to, the initial donor eye processing, endothelial cell count and donor viability, storage principles and scheduling for transplantation.

The success of this external co-operation was reflected in an increase in local transplant procedures at MEENT from 37 corneal procedures in 2014 to 112 in 2016. Collaboration with a geographically closer partner was felt crucial to consolidating these changes and to investigate further potential opportunities to deal with existing concerns.

Secondary Phase

The LV Prasad Hospital, in conjunction with the TEJ Kohli Institute (India), formed an ongoing partnership with the MEENT team and the Australian CBO (Lions NSW Eye Bank). Several additional initiatives have been developed to facilitate the increase in local services.

To address the lack of ongoing corneal specialty training, a surgical skill exchange program will be commenced with resident surgeons undertaking a 12-18 month program in either India or Australia. Furthermore both eye bank surgical and allied health staff have been provided access to external education resources at the LV Prasad. LNSWEB will continue to oversee the local education of specialists and eye bank staff through programmed visits.

Optimising Eye Bank Efficiency

As previously noted, there remains local inefficiencies within the recruitment and retrieval system. A key initiative of the group is to amend local policies to obtain access to potential donor corneas between the hours of 4pm and 8am; these currently remain unavailable. This would potentially provide significantly more donor corneas for

consideration. In preparation of this change, technician and counsellor staffing has been restructured to allow staffing 24 hours per day. In addition, approval for a full-time eye bank manager has been undertaken to provide oversight to the programme. This position is to be funded externally for 12 months before revision.

There remains no current access for eye bank staff and counsellors within the local Mandalay Hospital. Arrangements have been made to accommodate staff to allow easy access to the mortuary to provide counselling to relatives and accelerate donor retrieval. Access to other district hospitals will be investigated to allow additional potential donors. This has not previously been a consideration due to staffing and access issues.

Approximately 20% of available corneas were rejected in 2016 due to concerns regarding serology interpretation. Improving the training and understanding of technicians may provide an additional avenue to reduce discarded donor tissue. The programme will be facilitated by ongoing visitations from experienced microbiology technicians and microbiologists (LV Prasad). Additional consulting options will allow for the provision of online secondary opinions from LV Prasad. While difficulties with internet access hinder this as an option, this represents an exciting initiative for local staff.

Education programmes for local residents will be implemented to highlight the need for organ donation. This program will reflect local sensitivities and be introduced through key local religious leaders who remain positive to donation, an important consideration given the country's background.

Consumables

Self-sufficiency remains the key provision of the assistance programme. The ability to create adequate storage medium locally remains limited. The Ramayamma International Eye Bank (RIEB), which is directly associated with LV Prasad is to provide storage medium directly to the MEENT Eye Bank until provisions are made to produce this on-site. This resolves any ongoing concerns regarding the storage of excess donor corneas.

SUMMARY

Myanmar represents a country with unbridled potential. Eye bank and transplant services have been limited by training and general limitations rather than the enthusiasm of key local healthcare workers. The ongoing presence

of international CBOs has provided a positive impact upon services however further refinements are required to reach this potential. This requires an ongoing relationship between key local and international representatives. Educational and employment support is invaluable, but recognition of local difficulties represents additional avenues to improve overall efficiency. This may serve as an example for other international eye banking programmes.

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