Nurse-led Rapid Corneal Collagen Cross-linking

BY D GORE

Over the last decade, clinical trial data has accumulated for new interventions in keratoconus that promise to arrest disease progression, significantly reduce transplantation rates and save many patients from long-term reliance on rigid contact lens wear. Underpinning all of these advances is corneal collagen cross-linking (CXL), a single 30 minute, out-patient procedure in which the cornea is strengthened through the application of ultraviolet (UV) light and riboflavin drops [1].

While the original treatment took over an hour [2], rapid treatment protocols for CXL based on shorter UV exposure times and higher UV power settings have emerged in recent years. The underlying premise in rapid CXL is that delivering a similar total energy to the cornea over a shorter period of time will not compromise safety or efficacy. Rapid CXL has been available at Moorfields Eye Hospital since October 2012, with the total treatment time less than 30 minutes. We have treated 245 eyes since then, with additional all-day Saturday lists being run to keep up with demand, ensuring patients are not waiting more than a few weeks for treatment.

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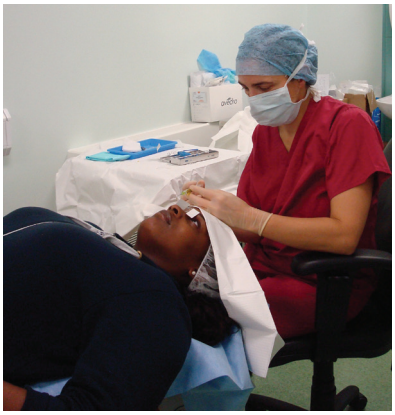
To further accommodate this increasing demand for CXL, as well as to ensure everyone's professional expertise is used to the best effect and provide improvements in patient care, the Trust Management Board recently agreed to support the development of nurses to perform this procedure. Building on Moorfields Eye Hospital's track record in establishing nurse-led intravitreal injections for macular degeneration, Melanie Mason, Lead Clinical Nurse Specialist for the Cornea & External Disease Service, is pioneering the way forward as the first nurse to perform the full procedure in the United Kingdom. Her responsibilities include screening patients suitable for CXL, taking informed consent, mechanically debriding the epithelium, selecting appropriate treatment protocols and postoperative follow-up at one week.

Dan Gore, Clinical Research Fellow, has led Melanie's training with support from Consultant Ophthalmologist Bruce Allan, Medical Director Declan Flanagan and Director of Nursing Tracy Luckett. Instruction began with both didactic and practical instruction in corneal shape scanning (topography), endothelial cell measurements (specular microscopy), epithelial debridement and applied pharmacology related to the drugs used both during the procedure and postoperatively. Melanie's training followed a strict competency-based approach, progression to the next step dependent on sequential competence at each level. Following the theory, she completed a period of observation of the procedure with Dan before undertaking supervised CXL herself. She was approved as a competent practitioner after CXL 20 supervised cases.

All patients are posted an information sheet detailing the procedure and informing them that the treatment may be performed by either a doctor or nurse. So far, informal feedback from patients treated by Melanie Mason has been encouraging.



Sister Melanie Mason performing the CXL procedure.

"During the 20-30 minute procedure, I particularly appreciate being able to talk to patients about their condition, in a less time-pressured environment than the eye clinic," said Melanie. Patient-practitioner continuity is achieved through the one-week follow-up visit performed by Melanie herself in which the patient's bandage contact lens is removed, and the eye examined on the slit-lamp to document re-epithelialisation and rule out complications. For Melanie's peace of mind, there is always a corneal fellow or consultant available for assistance and a second opinion. Certainly in the earlier stages of nurse-led CXL, providing this back-up support has proved to be a key ingredient in making sure standards are maintained.

The advent of CXL represented a game-changing moment in our approach to keratoconus as the first interventional treatment to halt progression of the disease. Training nurses to perform CXL will help us to contribute to the efficient

delivery of this fundamental shift in the management of early keratoconus. Melanie said: "Specialist nurses are experts when it comes to patient-centred care. Training to perform CXL allows nurses a greater understanding of their patients' conditions. I am sure the recent move to support nurse-led CXL will prove to be of great benefit in the management of keratoconus patients at Moorfields."

Training of additional nurses to perform CXL is due to begin very soon. Based on current patient demand, we anticipate running two or three weekly nurse-led lists. A key component in Moorfields Eye Hospital's expansion of this nurse-led extended role is ensuring standards of patient safety and care are maintained. Melanie is committed to auditing her first 100 solo cases prospectively, and thereafter will be auditing her outcomes every three months, with annual assessment of competence planned yearly. Our National Institute for Clinical Excellence (NICE)-directed audit standards are based on two main areas: safety and efficacy. Safety is scored by complication rates of infections, scarring, visual loss and endothelial cell loss. Efficacy is demonstrated by stability (or improvement) in corneal topography which takes up to 12 months post-treatment to manifest. So far Melanie has treated 42 patients and has had only one minor complication, with a patient developing a temporary sterile infiltrate. These are known to occur in up to 7% of CXL cases and readily resolve with additional topical steroids for a few days [3].

Melanie said: "It is exciting to be involved in a treatment that can significantly help stabilise keratoconus and potentially obviate the need for corneal graft surgery."

References

1. Gore DM, Shortt AJ, Allan BD. New clinical pathways for keratoconus. *Eye* 2013;**27**:329-39.
2. Wollensak G, Spoerl E, Seiler T. Riboflavin/ultraviolet-a-induced collagen crosslinking for the treatment of keratoconus. *Am J Ophthalmol* 2003;**135**:620-7.
3. Koller T, Mrochen M, Seiler T. Complication and failure rates after corneal crosslinking. *J Cataract Refract Surg* 2009;**35**:1358-62.

TAKE HOME MESSAGE

- Corneal collagen cross-linking (CXL) is the only treatment available to halt progression in keratoconus.
- With proper training and support, nurses are able to perform CXL.
- Nurse-led CXL is as safe as that performed by ophthalmologists.

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Declaration of Competing Interests: None declared.

UKISOP Society Education Day

BY L NORTH

The UKISOP Society continues to provide a formal structure to the organisation and development of education and training provision for professions allied to ophthalmology. One of the main aims and focus of the Society is to provide interactive training and education in one forum by bringing all of the professions together. Of course, each profession has their own professional body, association and congress, however, by amalgamating the professions we can share ideas and discuss recent advances in diagnostics, treatment and management on one platform.

In Manchester this year, the home of the XXXVII UKISCRS Congress, UKISOP ran another excellent educational day in parellel to the United Kingdom and Ireland Society of Cataract and Refractive Surgeons (UKISCRS). The standard of speakers at the meeting was exceptionally high. Each year the programme is created by the faculty designed on delegate feedback and to highlight what's new, what needs discussion and what has happened in the last year.

Chris Steele, UKISOP presenter.

In the opening UKISOP session this year we heard the different prospectives from Allied Professionals describing their roles in ocular emergencies. Speakers included Lynn Ring, Advanced Nurse Practitioner; Emma Pennington, Orthoptist; Chris Steele, Consultant Optometrist; and Austin McCormick, Consultant Ophthalmologist.

This was then followed by a detailed session delivered by Clinical Optometrist,

Prof David Thomson and Consultant Ophthalmologist, Sathish Srinivasan.

Prof Thomson gave an interesting talk about his involvement in the 2012 Olympics and Paralympics, this was also illustrated in poster format. This is the first year in which Allied Professionals have displayed posters at the annual scientific meeting of the UKISCRS and it proved to be a success. UKISOP faculty Consultant lead Sathish Srinivasan then presented his fascinating work on iris reconstruction.

In the final session of the day 'Out of the box' we heard about non-medical led procedures by professionals allied to ophthalmology. The advances included Intravitreal Injections (Jonah Nago), YAG Capsulotomy (Helen Gibbons) and Non-medical led YAG PIs (Shazia Hussain). Each described the training they had undergone and the results of their audits. The final presentation of the day gave an insight about the legalities of extended roles from Lesley-Anne Baxter Chair of the British and Irish Orthoptic Society (BIOS).

It continues to be refreshing to hear about, and learn from, our colleagues providing patient care in such fascinating areas. The programme in Manchester and the previous article 'Nurse-led Rapid Corneal Collagen Cross-linking' highlights the ever advancing and extending roles of allied health professionals. It demonstrates that in continuing the delivery of extended care services, we provide benefit to the patient, whilst also assisting the consultant and the demands of a busy clinic. Extended care assists in relieving pressures of service delivery, with the reassurance that all extended roles are audited to ensure safe practice and high quality care is being delivered.

Sathish Srinivasan; presenting at UKISOP and Consultant Lead for Allied Professions (UKISOP).

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