

Cataract Surgery in China

Project Vision's goal is to provide sustainable eye care to residents of this country's rural regions.

BY NATHAN CONGDON, MD, MPH, AND DENNIS S. C. LAM, FRCS, FCROPTH



Last year, more people in China underwent LASIK than cataract surgery. This statistic is surprising, because, in the next few years, China will surpass India as the country that has the greatest number of people who are needlessly blind. Nathan Congdon, MD, MPH, and Dennis S. C. Lam, FRCS, FRCOphth, are trying to reduce the burden of cataract blindness in China through Project Vision. As the following article shows, Drs. Congdon and Lam's work has already had a tremendous impact in the rural areas of the world's most populous nation.

—Geoffrey Tabin, MD, Section Editor

The 2008 Olympic Games in Beijing focused a well-deserved spotlight on China's recent accomplishments in the realms of financial development, architecture, and sports. Some readers may be surprised to learn, however, that the benefits of China's extraordinary economic progress have been concentrated in some regions while leaving others relatively untouched. Although 60% to 70% of Chinese citizens still live in the countryside, they do not have access to the same healthcare resources as those who live in urban areas. As a consequence, urban residents live an average of 7 years longer than their rural counterparts.

Erasing the disparities in the Chinese healthcare system may take decades, but a team of ophthalmologists and philanthropists from Hong Kong has created Project Vision to focus immediately on treating preventable blindness. Through a series of well-planned interventions, this unique organization is bringing high-quality, low-cost cataract surgery to some of China's poorest citizens.

VITAL STATISTICS

China has a large and growing backlog of patients who need cataract surgery, in part due to a lack of qualified surgeons. Many of the 24,000 Chinese ophthalmologists are concentrated in urban areas, and fewer than 25% of

them can perform cataract surgery. The rate of cataract surgery in China is therefore among the lowest in Asia, averaging approximately 450 cases/1 million population/year. According to recent estimates from the World Health Organization, India's rate of cataract surgery is 10 times higher than that of China (4,500 cases/1 million population/year).

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Distressingly, studies have shown that as many as 50% of the cataract operations performed in rural China result in blindness in the operated eye.^{1,2} These factors and the aging of China's population have combined to create a “perfect storm” of rapidly rising rates of cataract-related blindness.

Dennis S. C. Lam, FRCS, FRCOphth, Chairman of the Chinese University of Hong Kong's Department of Ophthalmology and Founder of Project Vision, has proposed a simple solution to China's cataract problem. His approach is based on the traditional Chinese adage: “Give a

(All images courtesy of the Project Vision Foundation)



Figure 1. Patients wait for their turn in the OR at a Project Vision clinic.



Figure 2. A satisfied patient smiles after undergoing cataract surgery at a Project Vision Clinic.

man a fish, he eats for a day; teach a man to fish, he eats forever."

In 2004, Dr. Lam received funding from the Li Ka Shing Foundation to launch "Caring is Hip" in the financially poor but densely populated Chaoshan region of southern China. This pilot program was designed to create a series of financially sustainable clinics that could, with the help of donated equipment and appropriately trained surgeons, provide cataract surgery to poor patients at an affordable price. Dr. Lam and his colleagues created a model that allowed the six clinics in

Chaoshan to collect enough money to meet their expenses and simultaneously offer cataract surgery for the equivalent of approximately US \$100. Research has demonstrated that that most rural residents can afford to pay that much (usually 1 to 2 months' income) for cataract surgery.³

The clinics in the Chaoshan region were so successful that Dr. Lam used them as a model when, in 2006, he set out to raise US \$13 million for Project Vision. His goal was to establish 100 charity eye care centers in China before 2015. So far, he and his colleagues have launched one center in the Inner Mongolia Autonomous Region and two centers in the Shaanxi Province. Project Vision plans to establish three more centers before the end of 2008. To date, surgeons working in all of these centers have performed more than 10,000 sight-saving operations (Figure 1 and 2).

Project Vision increases access to cataract surgery by entering into permanent contracts with carefully chosen county hospitals that previously could not provide quality cataract surgery. In return for a one-time donation that consists of state-of-the-art surgical equipment and intensive 6-month training, the hospitals agree to perform cataract surgery at significantly reduced fees. Project Vision manages all of its eye care centers with the local hospitals in China. The eventual success of Project Vision depends on its ability to establish permanent charity care and its continued management with local healthcare providers.

Project Vision's partnership with hospitals disrupts the vicious circle that contributes to avoidable blindness among rural Chinese citizens. More people are willing to undergo cataract surgery when they know they can achieve good outcomes at affordable prices. Hospitals also benefit from the program, because the influx of patients provides surgeons with much-needed experience, generates income that sustains the program financially, and improves the overall quality of care they provide. Project Vision's business plan projects that hospitals must perform at least 500 surgeries per year to break even and ultimately strives to help physicians perform 1,000 surgeries per year at each of 100 centers spread across rural China. Patients who cannot pay for their surgery will not be turned away, however, but will



Figure 3. Project Vision offers high-quality cataract surgery with IOL implantation for approximately 10% of the fee currently charged in urban areas in China.

receive free care that is subsidized by donations from the Project Vision Foundation.

EFFICACY AND COMPLICATIONS

A series of articles published in a peer-reviewed journal reported that 95% of patients achieved a visual acuity of 20/60 or better in their operated eye after their cataracts were removed by newly trained surgeons at Sanrao Hospital in Guangdong.⁴ In addition, the rate of operative complications and postoperative blindness was significantly lower among patients treated by surgeons who had completed the skills transfer program than among those treated by other local physicians. In view of these outstanding results, well over half of the patients participating in the project at Sanrao Hospital awarded surgeons the ultimate accolade by signing up for an operation on their second eye.⁵

SURGICAL TECHNIQUE

Surgeons who participate in Project Vision are trained to perform sutureless, large-incision, manual cataract extraction, a surgical technique developed at the Chinese University of Hong Kong by Dr. Lam with the assistance of S. K. Rao, FRCS. This approach allows surgeons to remove cataracts and implant an IOL safely through a posteriorly located, frown-shaped temporal incision that facilitates the rapid restoration of vision (Figure 3). In addition, because Dr. Lam's technique does not use sutures or tubing for phacoemulsification, it is relatively inexpensive, reduces patients' risk of developing postoperative astigmatism, and is well suited for use in rural China.

Dr. Lam plans to expand the services offered by Project Vision by (1) gradually incorporating comprehensive eye care, including the recognition and treatment of diseases such as diabetic retinopathy and glaucoma and (2) offering special options such as phacoemulsification and fold-

able IOLs to patients willing to pay higher surgical fees. The former requires the development of novel surgical approaches appropriate for rural China and the creation of cost-effective models for delivering long-term ophthalmologic care. The additional profits generated by the second strategy can be used to defray the cost of cataract surgery for patients who have more limited financial means.

CONCLUSION

Project Vision provides a sustainable model for eye care in China. The significant challenge of fighting blindness in the world's largest country is further complicated by the prediction that China will have the world's greatest number of senior citizens by 2050. By teaching ophthalmologists in rural areas to "fish" for themselves, Project Vision can help clear a path to good vision for all of China's citizens. ■

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