Orthopaedic training in China

EXPERIENCES FROM THE PROMOTION OF ORTHOPAEDIC SPECIALIST TRAINING IN CHINA

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There is no unified national training system for orthopaedic surgeons in China. With such rapid progress in many aspects of life in China, there is an imminent need for improvement in the training of orthopaedic specialists. Since 2003 the orthopaedic community in Hong Kong has been working in collaboration with their colleagues in mainland China to develop a training system for orthopaedic surgery. We adopted the system from the Royal College of Surgeons of Edinburgh (RCSEd), setting up a trial centre in the Beijing Jishuitan Hospital in 2006, with trainers and trainees attaining the standards set by RCSEd and the Hong Kong College of Orthopaedic Surgeons (HKCOS). This trial is ongoing, with the success of two trainees who passed the exit examination in 2010 and became the first Chinese orthopaedic surgeons with a joint fellowship of both the RCSEd and the HKCOS. Following this inaugural success, we are confident that China will develop a training system for orthopaedic surgeons to a consistently high international standard.

In 2003, the Hong Kong College of Orthopaedic Surgeons (HKCOS) invited the President of the Chinese Orthopaedic Association (COA), Professor G. X. Qiu, to be an observer for the conjoint specialist examination organised by the HKCOS with the Royal College of Surgeons of Edinburgh (RCSEd). This started a collaboration to promote specialist orthopaedic training in mainland China between the HKCOS and the Beijing Jishuitan Hospital (JST).

Background to training in mainland China

Since the opening up of the country and the economic reforms of the 1980s, there have been tremendous changes and progress in all aspects of life in China. China is currently the second largest economy in the world, with a gross domestic product in 1980 of < US $200 billion, which increased to US $5 trillion in 2010.1 The population of 1.3 billion produces more than 30 million university graduates every year, increasing annually by 2.5 million. In 2005 there were an estimated 150 medical schools, which has grown to about 300 by last year, with more than 50 000 practicing orthopaedic surgeons in 2010, of whom 35 000 are officially registered with at least one year of clinical experience.2

Owing to the geographical differences in economic and academic development, orthopaedic specialist training in China is very diverse, with different systems of education and training (Fig. 1). An orthopaedic trainee may have completed five years of basic medical school education, increasing to seven years with a postgraduate MPhil or eight years with a postgraduate PhD. Graduate studies are mostly clinically orientated and undertaken in the hospital environment, with different degrees of emphasis on laboratory work. It is only through working in a clinical unit that junior staff can enroll into specialist training within the same orthopaedic department. In recent years, more resources have been invested to support high-quality basic scientific research with the aim of publishing in Science Citation Index journals with high impact factors. Nevertheless, there remains a large mismatch between the huge research workforce, the extensive clinical data available and the number of good-quality clinical research publications.

Training programmes in mainland China

Although the specialist training programmes in major Chinese cities appear similar to those in Hong Kong and the rest of the world, the format and perhaps the standards are very different (Table I). There are significant differences in clinical teaching and less emphasis on bedside and outpatient teaching. Teaching is often didactic in mainland China, and interactive discussions and tutorials are less common. However, there has recently been a trend
towards small group teaching and interactive tutorials. There is as yet no unified nationwide training programme. Each hospital or university may have its own system and requirements for recruiting trainees. For example, the entry requirements for orthopaedic training are not defined by Peking University. In most orthopaedic specialty training programmes, three years of basic surgical training with rotations through different surgical and related specialties are required. This is followed by two years of general orthopaedic training (the ‘three-plus-two’ training system). As yet there is no orthopaedic subspecialty training in China, except in hospitals such as JST. The orthopaedic profession in China recognises the importance and need to develop a training system that is workable but which respects the diversities present in such a large country. Since the introduction of the HKCOS system to China many workshops and meetings have been organised. One of the critical issues is the training of the trainers, because under the present system they are usually senior surgeons who may themselves be overwhelmed with clinical duties and administrative work. There is no proper recognition of their contribution, nor is there a system to ensure the standard of the training they give. The establishment of Directors of Training, and the acknowledgment of their key role and contribution to training, is also needed in order to encourage more surgeons to participate actively in the training programme.

**Table I.** Orthopaedic training programmes in different countries (N/A, not applicable; +/-, not compulsory)

<table>
<thead>
<tr>
<th>Program details</th>
<th>China</th>
<th>Hong Kong</th>
<th>USA</th>
<th>UK</th>
<th>Australia</th>
<th>France</th>
<th>Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal duration (yrs)</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>5</td>
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<tr>
<td>Basic (yrs)</td>
<td>3</td>
<td>2</td>
<td>N/A</td>
<td>2</td>
<td>2 to 4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Higher (yrs)</td>
<td>2</td>
<td>4</td>
<td>5 (last 2 yrs in same unit)</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
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<tr>
<td>Rotation</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Structured</td>
<td>+/-</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Continuous assessment</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Exit examination</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes/Thesis</td>
<td>Yes</td>
</tr>
<tr>
<td>Subspecialty</td>
<td>N/A</td>
<td>+/-</td>
<td>N/A</td>
<td>N/A</td>
<td>Paediatric/General Orthopaedics</td>
<td>N/A</td>
<td></td>
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<tr>
<td>Re-certification</td>
<td>-</td>
<td>-</td>
<td>10 years</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CME/CPD*</td>
<td>+/-</td>
<td>Yes/Unknown</td>
<td>Yes/Unknown</td>
<td>Yes/Unknown</td>
<td>Yes/Unknown</td>
<td>+/-</td>
<td>Yes/Yes</td>
</tr>
</tbody>
</table>

* CME, continuing medical education; CPD, continuous professional development
Accreditation and qualifying assessments
There are many ‘specialist’ accreditation authorities in China, ranging from nationwide to regional bureaux, including the Health Bureau, Universities-Education Bureau and the Army. Each has its own system: for example, Peking University has Part 1 and 2 examinations, and the Health Bureau of Beijing City has different Part 1 and 2 examinations. Most of the accreditations and assessments are closely linked to career progression and are not focused on the candidate meeting accepted orthopaedic specialist professional standards. This variability can lead to considerable differences in quality and expertise between surgeons of the same rank.

Milestones in the promotion of orthopaedic training in China
There are about 50 000 doctors practising orthopaedic surgery in China. Standardisation of specialist care and professional standards of training in orthopaedics are the top priority. The diversity of training programmes as well as the standard of specialist care in different provinces and regions are well recognised by the orthopaedic community. A pilot training project is planned with the trial centre in Beijing, and it is hoped that this will lead to a unified system which can be adopted by the orthopaedic fraternity in China.

Since 1993, HKCOS has been the official organisation conducting orthopaedic specialist training and accreditation in Hong Kong. The specialist training system follows the United Kingdom model. After its inauguration in 1988, HKCOS has been working with RCSEd to develop orthopaedic specialist training. HKCOS has also organised a conjoint exit examination with RSCd in Hong Kong, and successful candidates are conferred with two diplomas: FHKCOS and FRCS(Orth). We believe that the format developed and the experience gained might be helpful in the development of standardised orthopaedic specialist training in mainland China. The visit by Professor Qiu in 2003 and other senior professors from the COA in 2004 and 2005, provided recognition of the quality of the orthopaedic training programme from HKCOS and consideration of its further development in China. In 2006, HKCOS agreed to work with the Beijing Jishuitan Hospital, which volunteered to participate in a pilot collaboration to develop a training system for orthopaedic specialists. This project was endorsed by the COA, approved by the Hong Kong Academy of Medicine and the Chinese Health Bureau, and also enthusiastically supported by the RSCed, which conducted training centre accreditation visits with HKCOS in March 2006 and 2007. In September 2008 JST was officially accredited as the first higher orthopaedic training centre in China by HKCOS and RSCed. In 2008 the trainers from JST also participated in the trainer and examiner courses in Hong Kong organised by HKCOS and RSCed.

When the first five trainees from JST passed the MRCS examination in March 2007, the formal higher orthopaedic training programme was launched at JST. In the following years, HKCOS organised weekend training courses, with senior trainers from HKCOS working side by side with the JST trainers in Beijing. The trainees from JST also rotated to hospitals in Hong Kong for clinical attachments, and training ranging from six to 12 months. During their clinical attachments, they were offered a temporary clinical practice certificate in teaching hospitals of the Faculty of Medicine of the Chinese University of Hong Kong, with full clinical duties. They enrolled in all the training programmes conducted in Hong Kong, and joined in various training activities conducted by HKCOS and by the different orthopaedic units in Hong Kong. The focus of the clinical attachment was on communication skills in English, basic scientific knowledge, and improving clinical skills. The first two candidates sat the conjoint exit examination in 2010 and passed with high scores to become the first two orthopaedic specialist surgeons in China with joint professional diplomas from HKCOS and RSCed.

Review and outlook
So far, there are 17 trainers in JST under the combined accreditation scheme. There are 25 trainees registered, two of whom passed the exit examination in 2010, and seven passed the MRCS examination organised by HKCOS, Hong Kong College of Surgeons (HKCS) and RSCed.

This project has proved that it is possible to train young surgeons in China to international standards. As early as the late 1990s, the Chinese government had the legislation to implement specialist training. Any reform of the current framework needs judicious timing and a receptive environment. With strong economic development and the increasing expectations of the Chinese people concerning the quality of medical care, the opportunity now exists to establish proper training systems in medical care in general and in orthopaedic surgery in particular. Like specialist clinical training programmes in other countries, our scheme needs to satisfy the needs of the nation and to align itself with undergraduate medical education and with the public healthcare system.

Presently there are four collaborative projects in specialist training under the signed Memorandum of Understanding between the Health Bureau of China and the Hong Kong Academy of Medicine involving orthopaedics, dental surgery, paediatrics and ophthalmology. Following the successful example of orthopaedic surgery, in 2010 a similar training programme in general surgery was launched at the Peking Union Medical Hospital and Peking People’s Hospital by the College of Surgeons of Hong Kong (CSHK) and RSCed. It is reasonable to expect that similar models in other specialties will soon be implemented. As this process evolves, China will continue to
require support from the rest of the world. The medical profession in Hong Kong would like to invite the international community to work with its mainland colleagues in promoting further specialist training in China, and to eventually be able to provide quality medical care for all of the Chinese people.

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References
