

EDITORIAL

Expanding the orthopaedic training programme to improve the management of lower extremity trauma

Open fractures of the tibia continue to be a challenging problem in orthopaedics. This is particularly so in our country because of the high incidence of motor vehicle accidents. The results of the management of these injuries are not universally good, with non-unions and infections being the major complications. At the recent South African Orthopaedic Association Congress (2015), we learned that in some centres in our country the infection rate is as high as 40%.

In these lower extremity injuries, a number of tissues get injured, each requiring specialised care. These tissues are bone, nerve, tendon, blood vessels and other soft tissues.

As orthopaedic surgeons we are adequately trained in managing the skeletal injuries. We have in our armamentarium intramedullary nails, anatomical contoured locking plates and external fixation devices that can provide fixation in high energy fractures with minimal additional insult to bone. With the amount of training offered by our academic departments, and the numerous courses we have all over the country on these devices, we are able to use these devices appropriately by the time we complete our training.

We are also well trained in managing injuries to the nerves; from primary nerve repair, secondary nerve repair, nerve grafting, and even closing nerve gaps with interposition vein conduits. The same can be said about tendon injuries.

With regard to injuries to blood vessels, the vascular surgeons throughout the country respond promptly to a call for a threatened limb. In areas where there is no vascular surgeon, the local general surgeons are able to manage vascular trauma to the limbs.

Once the vascular repair has been done, the orthopaedic surgeon is usually left alone to continue managing the limb, and the patient.

The next tissue is the soft tissues. This is where our problems currently lie and it is where we can improve our training to achieve better results in lower extremity injuries. It has been shown that early soft tissue cover reduces infection and non-union in these injuries.¹

The plastic surgeons are traditionally trained to take care of the soft tissues. In practice however in this country, the orthopaedic surgeon performs the initial debridement. Even when the orthopaedic surgeon thinks he needs input from plastics, in the middle of the night the response one often gets is; 'debride the wound, we will see it in the

morning'. Off course the wound will not be reviewed the following morning, as it is not usual to open these types of wounds in the ward on day 1 post-operatively.

The timing of the second debridement at 48 hours may not be suitable for the plastic surgeon, as they may not have seen the wound so as to plan further management. This then delays the soft tissue cover to the exposed structures.

The practical scenario outlined above is compounded by the fact that we do not have enough plastic surgeons to help us cope with the amount of lower extremity trauma that we have to manage. The figures at the Colleges of Medicine of South Africa show that in the five years from 2011 to 2015, the College of Plastic Surgeons qualified 30 plastic surgeons. During the same period 151 candidates passed the exams of the College of Orthopaedic Surgeons. If this situation continues, we will continue to have very few plastic surgeons available to help the orthopaedic surgeons with the management of these injuries.

Plastic surgeons are invaluable in the management of these injuries. What makes plastic surgeons even more important is that the soft tissue cover often requires continued supervision. Their input is often required for much longer periods than that of vascular surgeons, who usually are no longer involved with the management once the leg is vascularised.

Recognising the value of plastic surgeons in managing these injuries has resulted in some countries forming orthoplastic centres.² These are centres where plastic surgeons work together with orthopaedic surgeons from initial stage to conclusion of treatment, in order to provide a better service for these patients.

In our country we have only seven teaching centres that would be able to create orthoplastic units. Even in these teaching centres, we may not have enough plastic surgeons dedicated to musculoskeletal trauma, because of competition from cosmetic surgery.

We therefore need a different solution to the orthopaedic units.

The solution for South Africa is to train orthopaedic trainees in procedures for soft tissue cover in lower extremity trauma.

We do not have to climb to the top of the ladder of soft tissue reconstruction.³

The first few steps are already covered during the medical officer training in the departments of general surgery. These are primary wound suture, delayed primary suture, secondary suture and split-skin grafting.

We need to climb a little higher up the ladder to local flaps and free flaps. This is where plastics can help us. Orthopaedic trainees need to rotate through plastics to learn the principles of local flaps. We do not have to learn all the flaps. The commonest flaps used to cover exposed bone and other structures in the proximal lower limb are the gastrocnemius flap and the soleus flap.

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The sural flap has become more reliable in routine management of large soft tissue defects of the distal lower limb, because of its wide area of rotation and constant anatomical features and blood supply.⁴ If more complex flaps are required, these can be performed by plastic surgeons.

Of course our trainers will guide us on which of these flaps can be done routinely by non-specialist surgeons. What is encouraging is that we do not have to do the free flaps. In an interesting review of the use of flaps in lower extremity trauma, Parrett *et al.*³ report that over the years there has been a decrease in the number of free flaps required for closing lower limb soft tissue defects.

The plan of rotating through plastics will make it possible for orthopaedic surgeons working in any part of the country to be able to provide soft tissue cover for most open fractures of the lower extremity. The goal of early soft tissue cover in open tibia fractures would be universally achievable, except perhaps in a few patients who will require more specialised flaps by plastic surgeons.

Will we not be encroaching into the domain of another speciality?

I do not think so. The aim is to provide early skin cover, which is not happening at the moment. Besides, training in skills across the specialities is not unfamiliar.

Any self-respecting orthopaedic hand surgeon can do a groin flap. They make sure that they are trained and able to do this type of flap. Any self-respecting gynaecological surgeon should be able to repair an uncomplicated small bowel perforation. Besides, these trainees will be trained on a programme supervised by plastic surgeons. They are not simply going to an overseas course on flaps for a few days.

Do we have time to do this training?

A number of orthopaedic training programmes in our country are for 60 months. Those that are for 48 months have a lot of orthopaedic training time outside the 48 months.

I believe that in the 60 months we have enough time to rotate through plastics and learn the principles and techniques of soft tissue cover in lower extremity trauma. The duration of the training can be discussed with the trainers.

We have to look for a local solution to our local problem. If we do not, we will continue having suboptimal results for lower extremity trauma because of delay in getting adequate soft tissue cover.

References

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