

Trauma and amputation – Geoff Hill



Trauma surgeons have traditionally worked on the premise that limbs should be saved whenever possible, and that amputation is an absolute last resort. Specialists involved in rehabilitating people after trauma do not always agree. They point out that an intact but non-functioning limb can leave someone more disabled than an amputee with a healthy stump and the ability to wear a prosthesis.

What is most important is the function the person has once their rehabilitation is finished, rather than how much of the limb was able to be salvaged. Certainly, the sight of amputee athletes on TV or soldiers returning to active service tends to support the view that amputation can lead to a high recovery of function. However, these are fairly small groups of people. The question for most people is, which gives the best outcome: limb salvage or amputation?

Earlier this year a paper published in the *Journal of Orthopaedic Trauma** combined the findings of a number of studies comparing amputation and salvage. They found:

- similar functional outcomes, at least up to seven years
- similar rates of self-rated disability
- similar long term pain levels
- similar rates of returning to work
- limb salvage had longer rehabilitation time, greater costs, higher rates of rehospitalisation and complication.

However, these general statements can hide some important points. While limb salvage may mean more medical treatment during rehab, at the time of the injury practically no patients prefer amputation. Why would they? Amputation would seem like a terrible, devastating and irreversible procedure. Salvage results, on the other hand are as yet unknown, and optimism generally prevails. And the surgeons must, of course,

respect the patient's wishes.

Without the differences being clear it is much harder to make an informed decision early in the piece as to the merits of amputation or salvage in a particular case. Certainly salvage is done in the expectation of producing a functioning limb. Elective amputation later remains an option if this is not successful.

Although the study states that functional outcomes are similar on average, the range of outcomes varies greatly for both amputation and salvage. Mobility-wise, an uncomplicated below knee amputation is considered by many to be a minor level of disability. No-one thinks that of any above knee amputation, despite progress in prosthetic technology, so lumping the two together can hide big differences in function. Both, however, have associated problems such as phantom pain, back pain or skin problems, which can be severe. Salvage may also result in reduced mobility and ongoing joint and back pain. Importantly, though, salvage leaves the body intact, which is important for the body image of many people.

A possible complication here is that during an extended salvage process, the person's condition may deteriorate enough that they end up with a worse outcome than if an amputation had been done at the start. For example, the development of osteomyelitis may cause an amputation to be done as an above knee, where a below knee had previously been viable. Also, the extended rehab time may contribute to psychological issues such as depression or relationship stress, which can take their own toll on the person involved. The quicker rehab of an amputation may pay off in better emotional wellbeing.

That higher costs for salvage appear to be due to the relatively short follow up of the studies reviewed. Initial costs may be higher as more medical procedures are performed and rehab can be longer for limb salvage. However, given that amputation commits the health system to lifetime prosthetic costs, the long term costs are unlikely to be less. Either way, the person undergoing the procedure should not have to consider their insurer's costs when making this decision.

** 'Complex limb salvage or early amputation for severe lower-limb injury: a meta-analysis of observational studies', Busse, J., Jacobs, C., Swiontkowski, M., Bosse, M., Bhandari, M., Journal of Orthopaedic Trauma Vol 21(1) January 2007. 70-76.*



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