

Clinical report

Bilateral hip disarticulation in paraplegics

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Background: Decubitus ulcers are severe challenges to paraplegic patients, as well as to the medical providers caring for such disabled persons. Severe, chronic infection often can lead to death, especially in developing countries. Sometimes, hip disarticulation is the most appropriate surgical response to chronic ulceration.

Objective: Report the results of bilateral disarticulations in 3 patients, one in Cambodia, and two in Australia.

Methods: Chart reviews, examinations, and interviews with the patients were conducted to identify appropriate details of the indications and results.

Results: Severe decubitus ulcers were successfully treated using the technique, without undue surgical complications. The general health of the patients was much improved.

Conclusion: Bilateral hip disarticulations were performed as last stage salvage operations in three patients, who expressed satisfaction with the results, even though some problems with balance and recurrent ulceration persisted.

Keywords: Chronic ulceration, hip disarticulation, paraplegia

Paraplegics face a number of medical, psychological and emotional issues, which can usually be managed in resource-rich centres with adequate social support [1, 2]. However, in developing countries, with substantially less resources, living with paraplegia and its associated complications is considerably more difficult [3]. A common and extremely debilitating complication of paraplegia is the occurrence of decubitus ulcers [4], which are notoriously difficult to treat, resulting in multiple hospital admissions, and diminished self-esteem and well-being [5]. Hip disarticulation has been cited in the literature for many years as a treatment for chronic decubitus ulcers in paraplegics [4-8], albeit as a procedure only to be undertaken when all others have been exhausted [3, 9]. Hip disarticulation has some advantages for the paraplegic patient, such as increased independence, a lighter body weight and minimization of local infection, as well as being an emergency life saving procedure on occasion [10]. Disadvantages, however,

include impaired cosmetic appearance, loss of stability, and loss of body image [6]. In resource poor countries in particular, bilateral hip disarticulation for paraplegics may be a welcome relief from chronic ulcers and lack of maneuverability. This paper describes three case reports, one in Cambodia, and two in Australia.

Case 1

In Cambodia, a 19 years old male patient (HM 14592) presented with bilateral ischial ulcers and chronic osteomyelitis of the R. upper femur. As a 12 years old, he had fallen from the third floor of his house and when he regained consciousness a week later in hospital, could not move or sense his lower limbs. He subsequently developed ulcers. Over the years, he had a right ischial debridement and proximal femoral excision (Girdlestone operation) in another hospital, as well as at least one debridement of an ulcer on his left hip, prior to being sent to a Rehabilitation Centre. When he was brought to us in September 2008, he had been receiving good nursing care for several months, but still had foul smelling necrotic ulcers and bilateral fixed flexion deformities of hips and knees (**Fig. 1** and **2**).

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Fig. 1 Extensive scarring and ulceration following Girdlestone operation.



Fig. 2 Right hip and pelvis before disarticulation.

His parents are no longer alive and he counts on his older brother for support, but for some months, had been staying at a well run care-centre where the staff gave excellent nursing care. He was very discouraged by his continuing ulcerations and infections, and highly motivated to do whatever was necessary to improve his overall condition. Therefore, after much discussion, consented to a right hip disarticulation as the most feasible solution to his fixed deformity and chronic ulceration. Three months later, in December 2008, he was so pleased with the result, and so improved in general condition, that a left hip disarticulation with a lateral flap reconstruction of his ulcer was offered to him, and he gladly accepted.

Three more months later, in March 2009, all his wounds were healed, and he was very much happier. His weight had increased and he looked in much better

condition than when first seen. Transfers from his wheelchair to a bed or other piece of furniture were now much easier, and although he did need some cushions to help him balance, he felt that he was very much better off without his legs than he had been with them. When seen most recently, in September 2009, he had unknowingly, but recently, developed another shallow ulcer over his right ischial region while attending school, but was receiving treatment for it, and it was healing well. He reported that he had had some problems with balance initially, but now had learned to control his trunk well, and no longer felt that balance was a problem (**Fig. 3 and 4**).



Fig. 3 A demonstration of ease of transfer.



Fig. 4 Physical appearance of post amputations.

Case 2

The second report is of a 57 years old Australian man who had been a T11 paraplegic for 35 years, following a motor vehicle accident. For many years, he had been relatively independent, being able to cook for himself and engage in gardening. He had had no problems with decubitus ulcers until their onset in 2003, when a skin infection had developed into significant decubitus ulcers on his buttocks, sacrum and over his greater trochanters. He then had several debridement procedures before having a left Girdlestone excision for significant osteomyelitis in August 2007. This did not lead to sustained relief, so he underwent a left hip disarticulation in January of 2008. A similar series of several debridement procedures on his right hip and buttock area in 2007 and 2008, subsequently led to a right hip disarticulation in March of 2008. Even after both of these disarticulations, he has since had several debridement procedures for persistent sacral ulcers.

On direct questioning, he complained that his main problem appeared to be his balance. With no lower limbs for support, he reported falling forward while in his wheelchair. The loss of balance was a cause of extreme frustration and loss of independence; severely affecting his quality of life to the point where he had lost the desire to live. During hospitalisation, he requested a 'Do Not Resuscitate' order and was assessed by the psychiatric team. He reported experiencing no pain below the level of his injury but being distressed at the presence of chronic sacral ulcers. He reportedly found self-transfer no easier following the hip disarticulations, and now suffered from shoulder pain stemming from rotator cuff tears, which he had not noticed while transferring prior to his hip disarticulations. In spite of his own disability, he has to look after his mother whose vision is impaired, and his sister who suffers from multiple sclerosis. A supportive social network was augmented to help reduce his psychological stress and he was in substantially improved spirits on discharge, but it is likely that his sacral ulcers will continue to wax and wane (**Fig. 5** and **6**).

Case 3

The third report is of a 47 years old Australian man who had been a paraplegic for 11 years following a motor vehicle accident where he had sustained an injury at the level of T12. He has experienced decubitus ulcers for the past two years and had various

procedures to attempt to treat them including debridements and failed local flaps in January and February 2008. A right hip disarticulation was carried out in February 2009 to resolve the problems. On his left side, he has had a good result from a Girdlestone procedure, which he underwent in April 2009 and has been able to keep his left lower limb to this point.

He complained of some difficulties with balance following his right hip disarticulation. However, he is confident he will be able to be as independent before. He has a wife and a daughter for support and is able to return to his previous occupation. He experiences pain only on changing dressings and feels well in himself. He has never suffered from rotator cuff pain in his shoulders.



Fig. 5 Prior to debridement on 17/4/09.



Fig. 6 Post-debridement on 18/4/09.



Fig. 7 Destructive changes in proximal femur from osteomyelitis.



Fig. 8 Post left girdlestone procedure.

Discussion

Deep decubitus ulcers are an uncommon but debilitating complication of paraplegia [4]. Treating chronic pressure ulcers is costly and requires a specialized and extensive rehabilitation program with an aim of restoring independence and rejoining society [1, 2, 11]. In developing countries, resources are particularly stretched and these services are needed more often, but available less frequently [3]. As a result, patients like the one in Cambodia, present late, with stage-3 or -4 decubitus ulcers and/or osteomyelitis, both of which are indications for surgical treatment [1]. Anecdotally, a female paraplegic in Cambodia told us that several paraplegic friends of

hers had died from infections in their legs, although they might have survived if hip disarticulations had been carried out.

Theoretically, bilateral hip disarticulation has many advantages for a paraplegic patient including reducing the problem of ulcers, decreasing body mass and so increasing ease of movement leading to improved independence, and feelings of self-worth and therefore self esteem [6]. However, for the two Australian paraplegic patients, body mass and ease of movement was not perceived to have been a problem for them prior to their hip disarticulation procedures and they reported having been previously independent. Their feelings of self-esteem and self-worth had not noticeably changed and while both had had at least one life-saving hip disarticulation, the 57 years old patient had the misfortune of still suffering from persistent decubitus ulcers in his sacral area.

Informal interviews were conducted with six landmine victims in Cambodia who had had bilateral above knee amputations following landmine accidents. Although they did not suffer from paraplegia and its associated complications, and almost certainly are better able to survive their injuries, their disabilities are similar to a paraplegic patient who has had bilateral hip disarticulations: all of them face the same issues of independence, balance, and body image. However, the issue of balance, which caused such a decrease in quality of life for our 57 years old patient, was less of a problem since they still had some portion of their lower limb remaining to provide increased stability. This is well recognised and argues for a high above knee amputation if feasible, leaving as much as possible of the femur, instead of a disarticulation. All the victims reported having had an understandable period of grief and depression and a lack of will to live initially. Most had family support, and some had children who were able to help them in everyday tasks and motivate them to rejoin society and find employment. Support from family and friends has been found to be a vital part of rehabilitation and re-affirming self worth [12, 13]. All of the landmine victims were employed, at either a disability services centre or a centre for teaching disabled people skills. The ability to contribute to society, and in particular in Cambodia, to the upkeep of the family through employment, is a factor that improves the quality of life [12]. These findings are promising for our Australian patients also, both of whom had family and social support, and one of whom was employed.

Transfer into and out of wheelchairs, necessitates significant shoulder strength and movement, and sometimes results in rotator cuff injuries and shoulder pain, especially in older patients who get fatter and heavier. This occurred in one of the Australian patients, and although he saw it as a complication of bilateral hip disarticulation, in fact, the disarticulations lessened his body weight, and probably reduced the stress on his shoulders.

None of our paraplegic patients suffered from pain below the site of injury, but all the landmine victims complained of neuropathic pain, which was usually managed by simple analgesics. Most patients were independent, able to use public transport on their own, and move themselves around adequately, but many expressed difficulties using bathroom facilities and being dependent on others for things such as preparing food.

Medical complications of paraplegia such as decubitus ulcers significantly affect quality of life, self-esteem, and successful rehabilitation. A study in spinal cord injury patients, which was conducted in Northern India, found that 36% of their sample population had decubitus ulcers, adversely affecting their quality of life [13]. We argue that in the case of chronic decubitus ulcers in paraplegic patients, particularly in developing countries, hip disarticulation is a favorable surgical option when other treatments have failed. However, it is important to note that further rehabilitation may be necessary to help patients become accustomed to their new body habitus, develop a modified sense of balance and learn how to live independently in their new situation.

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