

# Psychological Adaptation to Amputation: An Overview

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## INTRODUCTION

There are approximately 400,000 amputees in the United States. It has been estimated that approximately 50,000 new amputations are performed each year.<sup>13, 15</sup> Most amputees are males in their early sixties, approximately 90 percent of the amputations involve the lower limb, and approximately two-thirds of lower limb amputations are necessitated by diabetes mellitus and/or peripheral vascular disease. Although there are circumstances when the amputation of a chronically painful and/or infected limb may be a welcome therapeutic alternative to a patient, the resulting disability is never welcome. In addition, although amputation of a limb is sometimes a lifesaving measure, it exacts a physical and psychological price from the patient. Since an increasing number of amputations are performed each year due to the expanding geriatric population,<sup>13, 15</sup> the process of psychological adaptation of patients to amputation seems to be a subject worthy of further investigation.

Our paper will review and synthesize the literature devoted to the psychological and emotional reaction of patients to amputation and integrate this information with our own experience in 248 patients with 368 amputations over the last five

years. This report is primarily directed towards non-psychiatric allied health professionals, who, we feel, have the most impact in preventing disability and in reducing the need for professional psychiatric intervention.

## ADAPTATION TO AND ACCEPTANCE OF AMPUTATION

The psychological reactions by patients after surgical or traumatic amputation of a limb are both varied and complex. Based upon our own experience and a review of the existing literature, we feel that an individual's adaptation to his/her loss of a limb can be artificially divided into a preoperative stage and three postoperative stages.<sup>4, 5, 8, 17-20, 22</sup> In all four stages of adaptation, certain emotions and defense mechanisms can be universally identified. These psychological phenomena are normal and help the amputee in adapting to a new body image, however, the overutilization of these mechanisms can result in more disability than can be accounted for strictly by the physical loss of the limb.

The first, or preoperative stage, of adaptation for the amputee begins with the pa-

tient's realization that the loss of limb is a possibility. This realization may or may not coincide with the first formal doctor-to-patient presentation of amputation as a therapeutic treatment. This stage is necessarily absent in some patients, for example, with emergency amputation due to traumatic injury. Grief is the universally identified reaction in those patients being told that they must lose a limb.<sup>10, 20, 21</sup> In addition to the grief reaction, the preoperative stage usually includes concerns about: 1) pain; 2) financial difficulties; 3) general health; and 4) future functional capabilities at home or on the job.<sup>12</sup> The overall psychology of the amputee is modified by how he/she perceives the pending amputation, which in turn is modified by variables such as the patient's culture, background, family and community.<sup>3, 10, 21</sup> Questions regarding the exact nature of function and use of a prosthesis, future sexual function, and even disposal of the amputated limb, are all questions which are also prominent in the minds of potential amputees.<sup>3, 21, 24</sup>

The second, or immediate postoperative, stage is a relatively short period of time which begins with the patient's first postoperative realization that the limb is no longer present and ends during the early phases of postamputation rehabilitation. Randall, *et. al.* in their study of 100 amputees, noted that the immediate reaction to amputation was modified by the circumstances surrounding the assault on the limb.<sup>22</sup> Those patients who sustained injuries in battle or in the line of duty, where loss of life was likely, were found to have a more optimistic future outlook immediately after amputation than those individuals who sustained their injuries through carelessness or unfortunate accidents where loss of life was not a significant risk.

However, the early acceptance of amputation as it relates to the mechanism of amputation injury/loss, does not seem to be a significant factor in the ultimate rehabilitation and acceptance of the disability.<sup>4</sup> In fact, it has been suggested that those showing the best early acceptance may have delayed depressive reactions upon return to society.<sup>21</sup> Our experience, in

over 300 amputations (Tables 1 and 2), correlates with studies by Friedmann<sup>4</sup> and Randall, *et. al.*<sup>22</sup> We feel that the immediate response to amputation correlates well with the cause of limb loss, and that, in most cases, the early acceptance of an amputation does not seem to be a significant factor in the ultimate rehabilitation and acceptance of the disability.

As patients move from the second stage, (immediate postoperative), to the third stage, (inhospital rehabilitation), denial gradually replaces grief as the prominent feature in a patient's adaptation to amputation.<sup>19</sup> Euphoric mood, regression and withdrawal are mechanisms used by patients to deny both anxiety and the challenge of adjustment to reality.<sup>17</sup> Patients often deny their injury with statements and demonstrations of physical prowess, such as wheelchair racing in the hallways, boisterous behavior on the ward, and jokes about their respective physical injuries.<sup>2, 3, 17</sup>

Also seen during this transition period is a process described by Parkes<sup>19</sup> as "pining," wherein an amputee grieves for the lost limb, a process primarily represented through the amputee "pining" for those aspects of life lost with the loss of limb.

The inhospital, postsurgical, rehabilitation adjustment period can be made more complex by surgical limb revision, manipulation, prosthesis fitting and training, and adjustments to friends and relatives from whom the patient was separated during the first and second stages. It is at this point in the adaptation process that the patient begins to feel deeply depressed, insecure, uncertain, apathetic, and preoccupied with limb loss.<sup>4, 20, 22</sup>

Many of these feelings arise from the patient's interaction with those people close to him/her. Insecurity and anxiety stem in part from the amputees' concern over the anticipated reaction of loved ones and the actual sympathy that they eventually receive from them.<sup>22</sup> It has been suggested that sympathy serves as a reminder to the patients of their amputation and that empathy is both more appropriate and supportive.<sup>4, 22</sup> Most authors agree, however, that although depression, anxiety, and

feelings of self pity are prominent during the third stage, the need for formal psychiatric intervention is indicated in relatively few patients.<sup>17, 20</sup> That is not to say that there are not significant problems worthy of professional psychiatric attention in patients during this early adaptive process, rather it is to emphasize the need for supportive intervention on the part of those non-psychiatric personnel (prosthetists, therapists, nurses, etc.) involved with amputee postsurgical care and rehabilitation.

The fourth or final stage of adaptation begins with the patient's return home, usually several weeks after amputation. While leaving the hospital represents some evidence of recovery to the amputee, it also forces upon him/her the more harsh realities of disability. By the time of hospital discharge, most patients have undergone some prosthetic fitting and many have actually begun or are well adapted to ambulation as an amputee. However, upon returning home, the amputee is abruptly faced with a marked decrease in supportive help (previously provided by hospital personnel) and a marked increase in demands that manifest his/her disability, both physically and emotionally.<sup>10, 20</sup>

It would appear that the amputee's return to home is a crucial turning point in the adaptation/rehabilitation process. Available evidence suggests that the amputee will either successfully adapt during this final phase and learn to live with his/her disability, or will fall back into a pattern of psychological behavior which represents a continuation of the third stage (denial) of adaptation.<sup>20, 22</sup>

Certain demographic factors may also play a role in ultimate social adjustment. While younger patients may have more difficulty in initially adapting to a "new body image," older patients tend to have more difficulty with longterm social adjustment.<sup>20, 22</sup> In addition, single individuals have more difficulty than married individuals and lower extremity amputees have more difficulty than upper extremity amputees.<sup>20, 22</sup> Not surprisingly, those individuals with multiple amputations have more difficulty than those individuals with only unilateral amputations. Finally, it is of

interest to note that no real differences have been identified between male and female amputees in terms of social adjustment after amputation.<sup>19</sup>

The experience of the authors is in agreement with the studies by Parkes,<sup>18-21</sup> Randall, *et. al.*<sup>22</sup> and Reinstein, *et. al.*<sup>23</sup> with respect to age, sex, marital status, number of amputations, and upper versus lower limb amputations as each of these factors relate to the process of rehabilitation. A large part of the psychological reaction to the fourth stage is secondary to environmental influences largely out of the control of the patient. With proper support and aggressive rehabilitation, the final stage of social adjustment for the amputee is successful in time, whereas without support, social adjustment is seriously impaired.<sup>13-15</sup>

## GUIDELINES FOR THE PSYCHOLOGICAL MANAGEMENT OF AMPUTEES

It is unfortunate that many times, amputation surgery, as a therapeutic alternative in the management of patients with limb threatening problems, has been looked upon with a jaundiced eye in relationship to seemingly preferable limb salvage procedures. Of particular interest, therefore, is a recent study by Sugarbaker, *et. al.* who did a quality of life assessment in 27 patients, roughly half of whom had limb sparing surgery plus radiation and chemotherapy for limb cancer, while the other half had amputation surgery and chemotherapy. It was the initial hypothesis of this group that limb sparing surgery resulted in a higher quality of life as compared to those patients treated with amputation; however, this hypothesis was not demonstrated and, in several instances, the amputee group had higher quality of life scores than their counterparts in the limb salvage group.<sup>25</sup> Overall, the quality of life assessment for both groups was not found to be significantly different.<sup>25</sup>

Tucson VA Medical Center and University of Arizona 7/1/77-6/30/82	
Number of Patients	248
Number of Amputations	368
Primary	300
Preparatory	54
Revisions	14

**Table 1.**

In our opinion, and that of Bowker,<sup>1</sup> amputation surgery should be viewed by all involved personnel as a reconstructive, not a mutilating procedure. A team approach is optimal in amputee rehabilitation and should include the surgeon, ward team, surgical nurses, prosthetist, physical therapist, occupational therapist, social worker, vocational counselor, and, if indicated, a psychiatrist or psychologist.<sup>6, 14, 21</sup>

The psychological preparation of the potential amputee should begin as early as possible, and preferably, should begin preoperatively (Stage I).<sup>1, 4, 7, 10</sup> When the amputation becomes a possibility, not a probability, the patient should be informed and the entire amputation rehabilitation process should be discussed. Open communication is essential and should specifically address the hows, whys, and wherefores of the operation itself, disposal of the amputated limb or part, expected phantom phenomena and phantom pain, sexual and social readjustment, prosthetic fitting and training, and the process of amputee rehabilitation.<sup>12, 21</sup>

Surgeons or rehabilitation teams who keep the possibility of amputation from their patients until it becomes inevitable, are left with far less desirable conditions for successful rehabilitation than surgeons or rehabilitation groups who integrate the patients and families into an early program of planned prosthetic rehabilitation.<sup>1, 21</sup> The authors would suggest that keeping the possibility of amputation from the patient until the last possible moment serves only to cultivate the attitude in the patient that the amputation is a treatment failure

Tucson VA Medical Center and University of Arizona Primary Amputations 7/1/77-6/30/82	
Amputation Level	Number of Amputations
LOWER LIMB	
Toe	49
Transmetatarsal	10
Symes	22
Below Knee	124
Through Knee	15
Above Knee	61
Hip	1
UPPER LIMB	
Partial Hand	1
Below Elbow	9
Above Elbow	7
Shoulder	1
TOTAL	300

**Table 2.**

and not a lifesaving or reconstructive surgical procedure. Integration of the family into the support group for the amputee is also recommended as early as possible (Stage 1). The authors believe that such family involvement decreases some of the social problems that an amputee would otherwise face on his return home (Stage 4).

In many institutions, amputation surgery is delegated to junior house officers, often without supervision. Such an approach, in the opinion of the authors, compromises optimum rehabilitation results. Amputation surgery should command the attention of the senior surgical staff. In our program, the senior surgical attending is directly involved in the performance of all amputations and supervises the entire process of amputation rehabilitation. A poorly

performed amputation almost guarantees poor rehabilitation. While a well performed amputation does not guarantee a successful rehabilitation outcome, it certainly makes successful rehabilitation more possible.

Early prosthetic fitting and amputee rehabilitation (Stages 2 and 3) are vital to a patient's successful physical, psychological, and emotional recovery, both from a short-term and longterm standpoint.<sup>9, 11, 13-18</sup>

Early prosthetic fitting and rapid rehabilitation enable the patient to incorporate all of his physical and emotional efforts into recovery from the earliest possible moment, rather than allowing the patient to focus only on disabilities and pain.<sup>4</sup> An important corollary to this principle is the early introduction, to the potential amputee, of the patients who have undergone similar amputations and successfully adapted to their prosthesis and their social environment.<sup>16</sup> The experience of the authors supports the view expressed in the literature, that the introduction of a successful amputee patient to a potential amputee has been very helpful in the rehabilitation of the latter individual.<sup>4, 10, 21</sup>

## CONCLUSION

Of utmost importance in the rehabilitation of any amputee is the realization that the rehabilitation process is a lifelong effort. It is only with concerted effort that the rehabilitation team will be able to provide the necessary reassurance for each amputee in order to get them through the gate of the rehabilitation process.<sup>1</sup> It is our contention that with a better understanding of an amputees' psychological and physical needs, they need not become more disabled than necessary by the loss of their limb alone. In addition, it is the authors' contention that professional psychiatric intervention is required for relatively few amputees, if allied health personnel play a continually active role in the rehabilitation process.

## REFERENCES

- <sup>1</sup>Bowker, J.H., "Amputation rehabilitation: Critical factors in outcome," *J. Ark Med Soc.* 78(5):181-183, 1981.
- <sup>2</sup>Brown, P.W., "Bilateral lower extremity amputation," *J Bone Jt Surg*, 52A(4):687-700, 1970.
- <sup>3</sup>Cane, D., "Psychological considerations affecting rehabilitation after amputation," *Med J Austr.* 2:818-821, 1973.
- <sup>4</sup>Friedmann, L.W., *The Psychological Rehabilitation of the Amputee*, Charles C. Thomas, Publ., Chapt. 2 & 3, pp. 17-67, Springfield, Illinois 1978.
- <sup>5</sup>Gingras, G., Morgeau, M., Susset V., Lemieux, R., Chevrier, J.M., Voyer, R., "Psychosocial and rehabilitative aspects of upper extremity amputees," *Canad Med Assn J.* 75:819, 1956.
- <sup>6</sup>Hamilton, A., "Rehabilitation of the leg amputee in the community," *Practit.* 225:1487-1497, 1981.
- <sup>7</sup>Healy, M., Hansen, H., "Psychiatric management of limb amputation in a preschool child," *J Am Acad Child Psychiat.* 16:684-692, 1977.
- <sup>8</sup>Hughes, J., White, W.L., "Emotional reactions and adjustments of amputees to their injury," *U.S. Naval Bull (Suppl.)* 157, 1946.
- <sup>9</sup>Kerstein, M.D., "Group rehabilitation for the vascular disease amputee," *J Am Ger Soc.* 28(1):40-41, 1980.
- <sup>10</sup>Kessler, H.H., "Psychological preparation of the amputee," *Ind Med Surg.* 20:107-108, 1951.
- <sup>11</sup>Lipp, M., Malone, S.J., "Group rehabilitation of vascular surgery patients," *Arch Phys Med Rehab.* 57:180-183, 1976.
- <sup>12</sup>MacBride, A., Rogers, J., Whylie, B., Greeman, S.J.J., "Psychosocial factors in the rehabilitation of elderly amputees," *Psychosom* 12(3):258-264, 1980.
- <sup>13</sup>Malone, J.M., Moore, W.S., Goldstone, J., et. al.: "Therapeutic and economic impact of a modern amputation program," *Ann Surg.* 189:798-802, 1979.
- <sup>14</sup>Malone, J.M., Moore, W.S., Leal, J.M., Childers, S.J.: "Rehabilitation for lower extremity amputation," *Arch Surg.* 116:93-98, 1981.
- <sup>15</sup>Malone, J.M., Childers, S.J., Underwood, J., et. al.: "Immediate postsurgical management of upper extremity amputation: Conventional, electric and myoelectric prostheses," *Ortho Pros.* 35:1-9, 1981.
- <sup>16</sup>May, C.H., McPhee, M.C., Pritchard, D.J., "An amputee visitor program as an adjunct to rehabilitation of the lower limb amputee," *May Clin Prot.* 54:774-778, 1979.
- <sup>17</sup>Noble, D., Price, D., Gilder, R., Jr., "Psychiatric disturbances following amputation," *Am J Psych.* 110:609-613, 1954.
- <sup>18</sup>Parkes, C.M., "Components of the reaction to loss of a limb, spouse, or home," *J Psychosom Rsrch.* 16:343-349, 1972.
- <sup>19</sup>Parkes, C.M., "Psychosocial transitions: Comparison between reactions to loss of a limb and loss of a spouse," *Brit J Psychiat.* 127:204-210, 1975.
- <sup>20</sup>Parkes, C.M., "The psychological reactions to loss of a limb: The first year after amputation," in *Modern Perspectives in Psychiatric Aspects of Surgery*, Chapter 24, pp. 515-532, New York, N.Y., 1975.
- <sup>21</sup>Parkes, C.M., Napier, M.M., "Psychiatric sequelae of amputation," *Br J Hosp Med.* 4: 610-614, 1970.
- <sup>22</sup>Randall, G.C., Ewalt, J.R., Blair, H., "Psychiatric reaction to amputation," *J Am Med Assn.* 128:645-652, 1945.
- <sup>23</sup>Reinstein, L., Ashley, J., Miller, K.H., "Sexual adjustment after lower extremity amputation," *Arch Phys Med Rehab.* 59:501-504, 1978.
- <sup>24</sup>Solomon, G.F., Schmidt, K.M., "A burning issue—phantom limb pain and psychological preparation of the patient for amputation," *Arch Surg.* 113:185-186, 1978.
- <sup>25</sup>Sugarbarker, P.H., Basofsky, I., Rosenberg, S.A., Granola, F.J., "Quality of life assessment of patients in extremity sarcoma clinical trials," *Surg.* 91(1):17-23, 1982.

## NOTES

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