

PSYCHIATRIC SEQUELAE OF AMPUTATION : II LONG TERM EFFECTS

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ABSTRACT

Psychiatric sequelae present after 6 months to 2 years following amputation were studied in a group of 25 subjects. The subjects were screened on SCID, HRSD and HARS. The most common diagnoses were depressive disorder NOS (20.6%) and major depressive disorder (10.3%). Patients having right sided amputation were more psychiatrically ill than those with loss of a left limb. Phantom limb was seen in about two-thirds of the total sample-more in the sick group (about 88%) than in the non-sick group (about 55%). Pain in the phantom limb was seen more in the sick group, but telescoping and movement were more frequently complained of by subjects of the non-sick group.

Key words : Amputation, late psychiatric aspects, phantom limb

Just facing or undergoing any operation is unique psychological and physical experience for a person (Abrams, 1975). But amputation is much more than that, being an irreversible act. Once performed on any limb, the natural function of the limb is lost forever, and no prosthesis, howsoever sophisticated can be a substitute for it.

Amputation is associated with a host of psychiatric problems, including that of phantom limb, which have been discussed elsewhere (Mall et al., 1997). Ergo, this permanent disability, though with the passage of time may diminish, it seldom disappears altogether.

The present study was undertaken to assess long term effects (psychiatric problems) emerging following amputation.

MATERIAL & METHOD

The sample of the study was chosen from out-patient Department of Physical Medicine & Rehabilitation, K.G. Medical

College, Lucknow, and comprised of consecutive patients (between the ages of 16 to 55 years) who had undergone amputation 6 months to 2 years back. The criteria for age was kept, as the possibility of not comprehending the questions by those very young and organic brain syndromes developing in those over 55 years was higher.

All the selected patients were evaluated on Structured Clinical Interview for DSM-III-R (SCID) (Spitzer et al., 1989), Hamilton Anxiety Rating Scale (HARS) (Hamilton, 1957) and Hamilton Rating Scale for Depression (HRSD) (Hamilton, 1960).

The time period of 6 months to 2 years was taken as during this period amputees usually visit the Rehabilitation Department. Only the first patient of that day who fulfilled the selection criteria was evaluated on the same day and if there were more than one such patients, they were evaluated on a subsequent day, if he was hospitalized, or when he came for next visit. All the three rating scales were

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administered in a single session.

The whole sample was divided into two groups based on evaluation on SCID-sick (those in whom diagnosis of a psychiatric disorder could be made according to DSM III R; APA, 1987) and non-sick (those in whom no psychiatric illness was discernible). HRSD and HARS were administered to patients of both groups.

The statistical analysis was done by Fisher's exact probability test.

RESULTS

Forty-four patients were screened in all, out of which 15 dropped out for various reasons (amputation performed more than two years =8, and less than 6 months =3; age above 55 years =2, and less than 16 years =2). Thus, in all 29 subjects were finally included in the study, out of which 11 (37.9%) showed a psychiatric illness (table 1); most of them fulfilled the criteria of a depressive episode-either major depressive disorder (10%) or depressive disorder NOS (20.6%). Two patients of schizophrenia and alcohol dependence were excluded from the study as they had these psychiatric illnesses before the amputation as

TABLE 1
DIAGNOSTIC DISTRIBUTION (N=29)

Diagnosis	n	%
Major depressive disorder	3	10.4
Generalized anxiety disorder	1*	3.4
Depressive disorder NOS	6	20.6
Schizophrenia #	1	3.4
Alcohol dependence #	1	3.4
Total	11	37.9
No psychiatric illness	18	62.1

*One patient fulfilled criteria of major depressive disorder and generalized anxiety disorder both

#The patients suffering from schizophrenia and alcohol dependence had illnesses before amputation; they were therefore dropped from further analysis.

well. On the basis of psychiatric illness the subjects were categorized either as sick (n=11) or nonsick (n=18).

The levels of psychopathology in the groups as measured by HARS and HRSD, were different. The scores on HRSD in sick group was 15.44 ± 2.83 , while that for non-sick group was 5.11 ± 2.21 ($t=16.31$, $df=25$, $p<.001$). The corresponding figures for HARS were 7.00 ± 3.37 and 3.61 ± 1.70 ($t=7.29$, $df=25$, $p<.001$).

Majority of subjects in both the groups were young adults (44.5% & 55.6%) and males outnumbered females (88.9/11.1 and 94.5/5.5 in the sick and non-sick groups respectively). Farmers and labourers were represented heavily (n=17), while the rest of the sample comprised of those in service (n=5), or business (n=2), unemployed currently (n=1), housewife (n=1) and student (n=1). There was no statistically significant difference between the two groups regarding sociodemographic variables.

As shown in table 2, most of patients had undergone amputation of one limb only (92.6%), and only 2 (7.4%) had amputation of two limbs. In the later group, one patient had bilateral amputation of upper limb, and the other had amputation of both the limbs of left side (below knee and upper limb). These 2 patients were also dropped from the study.

Thus, only 25 patients completed the study, 4 being dropped out (2 because of pre-existing psychiatric illness, and another 2 because they had bilateral amputation).

TABLE 2
NUMBER OF LIMBS AMPUTATED

	n	%
A. One limb only	25	92.6
-right upper limb	6	22.2
-left upper limb	4	14.8
-right lower limb	7	26.0
-left lower limb	8	29.6
B. two limbs	2	7.4

The cause of amputation in majority was labeled as emergency (n=25, 92.6%), and in the rest as elective (n=2, 7.4%). In the former group, road accidents were responsible for most amputations (51.9%), followed by thresher injury (22.2%), train accident (14.8%) and fight (3.7%).

The patients who underwent right sided amputation (46.2% vs 16.7%), especially of upper limb were psychiatrically more sick (table 3) although the difference between sick and non-sick groups was not statistically significant.

TABLE 3
SICKNESS IN RELATION TO SITE OF AMPUTATION

Site of amputation	Sick (n=8)		Non-sick (n=17)	
	n	%	n	%
Right limb	6	75.0	7	41.2
Left limb	2	25.0	10	58.8
Fisher's probability test : p=0.125, NS				
Upper vs lower limb				
Upper limb	3	37.5	7	41.2
Lower limb	5	62.5	10	58.8
Fisher's probability test : p=0.607, NS				

Phantom limb phenomena was seen in amputees of both the groups, although more in the sick (n=8, 100%) than non-sick group (n=10, 58.8%) (table 4). Further data about the associated symptoms of pain, telescoping and movement in the phantom is restricted to those subjects only who showed phantom limb, hence percentage values are calculated considering 8 subjects in the sick group and 10 subjects in the non-sick group. The presence of pain was more in the sick group (50%), those with right sided amputation (36.4%) and upper limb amputation (40%) but telescoping and movement were seen more in the non-sick group, left limb amputation and lower limb amputation (tables 4 & 5).

TABLE 4
PHANTOM LIMB PHENOMENA

	Sick (n=8)		Non-sick (n=17)		p-value
	n	%	n	%	
Present	8	100	10	58.8	
Absent	0	0	7	41.2	
	Phantom in sick group (n=8)		Phantom in non-sick group (n=10)		
	n	%	n	%	
Pain	4	50.0	0	00.0	0.022, NS
Telescoping	6	75.0	8	80.0	0.790, NS
Movement	6	75.0	8	80.0	0.790, NS

* Fisher probability test values considering presence or absence for each symptom, viz pain, telescoping and movement.

DISCUSSION

The immediate post-operative period is a distressful time for the patients, a time when he is grieving the loss of a body part. However, with the passage of time, the patient endeavours to come to terms with his problem, but often he is not successful. This would construe that on discharge from hospital, the difficulties of patient are just beginning to appear. The ongoing struggle of being involved in his regular life-style is quite likely to lead to psychiatric illness.

Depression is an almost invariable concomitant of a disabling illness, including amputation, either as an organic symptom or emotional consequence. Langer (1994) characterized depression in amputees as being constituted by indecisiveness, thoughts of death or ideas of self harm, as opposed to guilt and body image changes with fatigue in patients of Parkinson's disease. In our sample, about 40% individuals had a psychiatric diagnosis, most commonly depression. Shukla *et al.* (1982a) have reported a higher figure of 65% psychiatric morbidity, but they had assessed patients in the immediate post-amputation period. Frank *et al.* (1984) have commented that depression is most marked immediately after amputation and is gradually resolved over time and

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TABLE 5
PHANTOM LIMB IN RELATION TO SITE AND SIDE OF LIMB

	Side of limb				Site of limb					
	Right (n=13)		Left (n=12)		Upper (n=10)		Lower (n=15)			
	n	%	n	%	n	%	n	%		
Present	11	84.6	7	58.3	5	50.0	13	86.7		
Absent	2	15.4	5	41.7	5	50.0	2	13.3		
Fisher's probability test :	p= 0.155, NS				p=0.062, NS					
	(n=11)		(n=17)		p-value*	(n=5)		(n=13)		p-value*
	n	%	n	%		n	%	n	%	
Pain	4	36.4	0	0.00	0.155, NS	2	40.0	2	15.4	0.062, NS
Telescopy	8	72.7	6	85.7	0.485, NS	3	60.0	11	84.6	0.956, NS
Movement	8	72.7	6	85.7	0.485, NS	3	60.0	11	84.6	0.956, NS

* Fisher probability test values considering presence or absence for each symptom viz, pain, telescopy and movement

disappears by the time patient has come home. However, in the study by Randall et al. (1945), 4% of battle casualties and 13% of non-battle casualties had severe psychiatric problems in the immediate phase and the corresponding figures in the intermediate phase rose to 57% and 38% respectively. In another aspect of this study conducted in the immediate post-amputation period, the incidence of psychiatric morbidity was 31% with the most common diagnosis being post-traumatic stress disorder (Mall et al., 1997). A possible explanation could be that other factors like nursing care, interaction with doctors and other similar patients in the ward, visits by relatives and friends shielded him from the changed reality and immediate problems of practical day to day living, while the patient is in the hospital, and this support is withdrawn when the patient reaches home.

It was seen that psychiatric sickness was comparatively more in those with right sided, and in those with lower limb amputations, although the difference was not statistically significant. However, in the immediate post-amputation period, psychiatric morbidity was

reported to be higher in upper limb amputees (53%) than lower limb amputees (47%) by Shukla & colleagues (1982a). A possible explanation for this could be that as lower limb amputee recovers he realizes the problems to be faced by him, and with passage of time, both upper and lower limb amputees perceive the same quantum of handicap.

Phantom limb was seen in 18 (66.7%) of patients which included all the patients of sick group. Other researchers have also reported along similar lines - 65% by Soloren (1962), almost all patients by Carlen et al. (1978), 86% by Shukla et al. (1982b) and 92% by Mall et al. (1997). The latter two studies deal with immediate post-amputation sequelae, and as it has been pointed out by Carlen et al. (1978) most of the studies deal with subjects who had undergone amputation years earlier, our data seems to be in close agreement with this. Albeit, some workers have reported an increase of phantom limb phenomena or persistence of it in same number with the passage of time (Ewalt et al., 1947; Gillies, 1964).

Gillies (1964) has stated that phantom

is usually painless to begin with but becomes painful in weeks, months and even years after the amputation. Katz & Melzack (1992) have opined that the pain in phantom has its origin in the somatosensory sensations felt in the limb before amputation. These somatosensory memories, which include deep tissue injuries, bone and joint pain, are replicas of the pre-amputation lesions, and pain experienced at or near the time of pre-amputation, and are related to the duration of pre-amputation pain, time since amputation, age, gender, level of amputation, number of limbs amputated, or whether amputation followed illness or accident. In our study, pain in phantom was reported only by 50% of subjects in the sick group and none in the non-sick group. A possible reason could be that pain was a part of the underlying psychiatric illness. However, there were no right/left or upper/lower limb significant differences, although right limb amputees, and upper limb amputees felt it more than their respective counterparts. This seems to be in agreement with the statement that chronic phantom pain represented an emotional response to loss of a body part significant in the patient's relationship with others. Earlier workers (Frazier & Kolb, 1970; Parkes, 1973; Solomon & Schmidt, 1978) are of the opinion that persisting pain in the phantom limb may result from unresolved mourning, fantasies about the amputated limb and overvaluation of it.

A retrospective study of post-trauma lower limb amputees (Pierce *et al.*, 1993) negated the view that such patients do well. In their study, the authors reported that 51% of amputees had anatomic problems and 56% had social problems. Pell *et al.* (1993) singled out "mobility" as the most important independent variable to affect the quality of life of amputees. Hence, the surgeon performing the amputation should try to obtain the best possible stump, on which a good prosthesis can be provided later on, thus ensuring maximum mobility. However, a multidisciplinary team effort is indispensable for the best outcome with

least psychiatric morbidity in amputees.

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