

# A Clinical Study of Upper Limb Amputees

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**In one year (1988) 76 upper limb Amputees attended the centre. Male & Female ratio was 18.2:1. 75% amputees were from rural areas. 46.05% amputees were in 3rd decade. Cause of amputation was Trauma in 92.1% cases. 55.26% were below elbow and 25% were Above elbow amputees. Mostly stumps were ideal for Prosthetic fitting. Amputation was more common in farmers. Functional Prosthesis were given in 61 and cosmetic in 15 cases. Unless proper and effective preventive measures are applied, manpower loss and demand for Prosthetic Services will continue.**

In India upper limb amputations are still uncommon as compared to the lower limb amputations. Rapid industrialisation specially of cottage industries, mechanisation in agriculture and increase in the rail-road traffic have tremendously increased the number of upper limb amputees. In Northern India, specially in Western U. P., Haryana and Punjab where farm machines are maximum, number of upper limb amputees are also more. However there had been gradual increase in the numbers of upper limb amputees reporting to this centre for Prosthetic fitting.

In contrast to the lower limb amputations which are mainly due to rail-road accidents, the upper limb amputations are mainly due to improper use of farm machines by untrained personnels and also due to inadequate protection in the machines.

## METHOD AND MATERIAL

This study is based on the number of upper limb amputees, who have attended Rehabilita-

tion and Artificial Limb Centre (RALC), Department of Physical Medicine and Rehabilitation, K.G.'s Medical College, Lucknow, during the year 1988.

Detailed clinical history and stump examination was done in each case. The upper limb prosthesis were made from prefabricated parts manufactured by ALIMCO, Kanpur. All these patients are being followed up.

## OBSERVATION AND DISCUSSION

During the year 1988, 76 upper limb amputees attended RALC, out of which 72 were males and 4 were females. The maximum cases were in third decade followed by 25% in 2nd decade as shown in Table No. 1.

Out of 76 cases, 57 cases (75%) were from rural area and 19 from urban area (Table no. 2)

## Causes of amputation

Significantly, trauma was the commonest cause of amputation. Mostly males from rural area were exposed to accidents as a result of

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Table I.

Age gr.	Male	Female	Total
1-10	2	—	2
11-20	18	1	19
21-30	32	3	35
31-40	9	—	9
41-50	7	—	7
51-60	2	—	2
Above 60	2	—	2
	72 (94.73%)	4 (5.27%)	76

Table II.

	Male	Female	Total
Rural	54	3	57
Urban	18	1	19
	72	4	76

thresher machines, chopping machines, water pumps and other agriculture machines. In remaining cases it was present since birth. After 5th decade lesser people were affected in general.

#### Site of amputation

Out of 76 upper limb amputees, majority of the cases (42 cases) were below elbow, followed by above elbow (19 cases). Finger and wrist involvement were found in ten and four cases respectively.

In above elbow amputees, stump was of adequate length and shape in 11 out of 19 cases while in 7 cases it was short stump. Among below elbow amputees more than half of the cases were of adequate length and shape.

In below elbow amputees it was normal length and shape in 19, short in 16 and long in 4 cases, out of 42 cases. It was too short in two and too long in one case only.

#### Occupation

43% of upper limb amputees were farmers while 26.3% were engaged in some service. It was relatively uncommon among teachers and students. Prevalence was less in self employed persons (Table 6).

#### Prosthetic fitting

In all the 42 below elbow & 19 above elbow amputees functional Prosthesis were fitted. The cosmetic Prosthesis was given in all other cases.

### DISCUSSION

Upper limb amputations are less common as compared to lower limb amputations. During the last many years, there has been increase in the number of upper limb amputees. The upper limb amputations are generally caused by trauma like rail-road accidents, mechanisation in agriculture etc. Blast injury, accidents in factories, electrical injuries and other causes of trauma leading to upper limb amputations were relatively less causative factor (PE 1988). The overall male and female ratio was 18.2:1. Hla (1988) had also reported the similar incidence. Narang and Jape (1982) had observed reversal of the ratio. The male predominance may be due to more exposure to farm mechanisation and traffic accidents etc. The mean age of the amputees was in early 30's (PE1988) unlike in HongKong where the males were slightly older than the females (Chan et. al., 1984).

Mostly the amputees (75%) were from rural areas. The reason may be that more than 80% of our population lives in rural areas. Further due to increase in the number of rural based cottage industries and farm mechanisations, the upper limb amputations have increased considerably in rural areas.

55.26% of upper limb amputees were below elbow. This may be due to badly crushed hands in thresher, oil expellers etc. leading to

**Table III. Cause of amputation**

Age group	Trauma							Total
	Road	Agri.	Blast	Fact	Ele.	Misc.	Cong.	
1-10	—	—	—	—	—	—	2	2
11-20	—	1	1	1	2	14	—	19
21-30	3	3	2	7	2	15	3	35
31-40	1	—	—	—	—	7	1	9
41-50	1	—	—	—	1	5	—	7
51-60	—	—	—	—	—	2	—	2
Above 60	—	—	—	—	—	2	—	2
	5	4	3	8	5	45	6	76

**Table IV. Site of amputation**

Age group	A.E.	B.E.	Dist. Wrist	Finger	Thumb	Total
1-10	—	1	—	1	—	2
11-20	4	10	1	3	1	19
21-30	6	23	1	5	—	35
31-40	4	3	1	1	—	9
41-50	2	4	1	—	—	7
51-60	2	—	—	—	—	2
Above 60	1	1	—	—	—	2
	19	42	4	10	1	76

**Table V. Site Vs. Size**

SITE	2"	2"-5"	5"-7"	7"-9"	9"-11"	11"	Total
A. E.	1	7	9	2	—	—	19
B. E.	2	16	19	4	1	—	42
D. W.	—	—	—	—	3	1	4
Finger	7	1	—	1	1	—	10
Thumb	1	—	—	—	—	—	1
	11	24	28	7	5	1	76



**Table VI. Occupation Vs. Site**

	A.E.	B.E.	Dist. Wrist	Thumb	Finger	Total
Service	6	10	—	1	3	20
Farmer	8	18	4	—	3	33
Self Emp.	5	8	—	—	3	16
Teacher	—	2	—	—	1	3
Student	—	4	—	—	—	4
	19	42	4	1	10	76

**Table VII. Prosthesis Prescribed**

	Functional	Cosmetic
A. E.	19	—
B. E.	42	—
Dist. Wrist	—	4
Finger amp.	—	10
Thumb amp.	—	1
	61	15

below elbow amputations. The above elbow amputations were as a result of fracture and or dislocations around elbow, fractures of forearm bones added with infection and vascular insufficiency.

Mostly above and below elbow stumps

(44.7%) were ideal in length and shape for Prosthetic Rehabilitation. Seven out of 19 above elbow were short and one was very short stump. These stumps were bad stumps for fitting of a prosthesis. There is not much awareness amongst the treating surgeons regarding ideal stump for prosthetic fitting.

Adherence of scar, bony projection, flabby muscles & neuroma etc. are some of the complications in the stumps leading to revision of stump and thus make them suitable for prosthesis.

The incidence of accidents in the upper limb are mostly preventable. General awareness, proper medical facility and legislation are the few methods by which this incidence can be minimised.

#### REFERENCES

1. Chan, K. M., Cheung, D., Sher, A. Leung, P. G., FU, K. T., LEE, J. C., : A 24 years survey of amputees in Hong Kong, Prosth. Orthot. Int. 8, 155-158, 1984.
2. Hla, P. E. : A 15 year survey of Burmese amputees. Prosth. Orthot. Int. 12, 65-72, 1988.
3. Narang, I. C., Jape, V. S. : Retrospective study of 14,400 civilian disabled (new) treated over 25 years at an Artificial Limb Centre, Prosth. Orthotics. Int. 6, 10-16, 1982.