

PLASTIC SURGERY AND THE TRAUMA PATIENTS

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Abstract:

A prospective observational study was carried out in the Department of Plastic Surgery, Dhaka Medical College Hospital. 261 patients were included as study population that were referred from Casualty Surgery, Dhaka Medical College Hospital. This population represents 15.94% of the total trauma patients admitted in Casualty Department as emergency patient during the year 2009. Among them male patients were predominant (65.52%). On an average nearly 22 patients treated in a month as emergency patients. Most of the patients were between 30+–40 years and 20+–30 years age group. Aetiology of trauma according to history revealed road traffic accident as the cause in highest number of cases about 42.91% followed by machinery injury 34.86%. 41.76% of the injury managed in hand region which was highest. 34.87% of the patients were managed by flap cover and 49.42% patients required skin graft. Other various plastic surgical procedures were done in rest (15.71%) of the patients. Average hospital stay was 19.34±5.24 days among the admitted patients. Follow up of the patients showed that majority of the patients had full recovery (about 55.55%).

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Introduction:

The word “plastic” in “Plastic Surgery” does not mean “artificial,” but is derived from the ancient Greek word “plastikos,” which means to mold or give form. Plastic surgery includes both the reconstructive and aesthetic subspecialties. Bangladesh is a developing country with lots of opportunities. Plastic Surgery is booming specialty in our country. Plastic Surgery is part and parcel of trauma care. Approximately 20% of the casualty patients require plastic surgical procedure¹. Trauma is one of the main causes of upper- and lower-limb defects. Limb injuries frequently result in complex defects, hence reconstruction can be demanding. The majority of hand injuries are caused by industrial or agricultural accidents. About 13.3% of these injuries result in permanent disabilities. Furthermore, approximately half of all permanent disabilities are hand injuries². Road traffic accidents are the main cause of lower-extremity trauma³. Injuries may be multiple. A mangled extremity may require multiple procedures and years to rehabilitate. The management of extensive and complex

defects is challenging and may result in amputation or shortening. Plastic surgery deals with limb trauma, hand injuries, penoscrotal injuries, extensive skin loss and degloving injuries. The basic principles of management of a trauma are aggressive debridement with removal of all devitalized tissue, hemostasis, reduction of fracture, administration of antibiotics and definitive procedure at earliest time⁴. Prevention of accidents and implementation of ATLS (advance trauma and life support) can reduce morbidity significantly⁵. Appropriate management of trauma patients at earliest time can decrease disability and improve quality of life. Burn patients are most of the emergency conditions that are to be treated by plastic surgery but as Dhaka Medical College Hospital has separate specialized burn unit these patients are treated there. Plastic Surgery department in Dhaka Medical College Hospital treats mostly the trauma patients that need emergency care and referred from the Department of Casualty Surgery. Management of trauma care is a very specialized job. Integrated approach towards patients by Casualty, Plastic Surgery,

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Orthopedics and Physical medicine ensures effective care to trauma patients.

Objectives:

General:

- To outline pattern of trauma patients managed by Department of Plastic Surgery Dhaka Medical College Hospital.

Specific:

1. Age and sex distribution of the trauma patients treated in Department of Plastic Surgery, Dhaka Medical College Hospital.
2. Aetiology of the trauma patients
3. Management and outcome of the trauma patients treated by Plastic Surgery.

Materials and Methods:

A Prospective observational study was carried out in the year 2009 in the Department of Plastic Surgery, Dhaka Medical College Hospital. All patients that were referred to Plastic Surgery department from Casualty Surgery within 24 hours of the admission were included in this study. Information about particulars of the patients, causing history, clinical examination, relevant investigation, management and outcome of treatments were noted in data sheet. All of the information were compiled and tabulated in order to obtain statistical and comprehensive results of the study.

Results:

Total number of patients treated in casualty surgery during the year 2009 from January to December was 1637. Among them 261 patients were included in the study with above mentioned criteria. It shows that about 15.94% of the total trauma patients needed plastic surgical management. On an average nearly 22 patients was treated in each month. 28 patients were managed in the month of March which was highest and 16 patients in the month of February which was least. Monthly patients distribution is plotted as bar diagram in Fig: 1. Most of the patients were between 30+-40 years about 25.67% followed by 20+-30 years age group about 24.90%. Male patients were predominant about 65.52% in contrast to

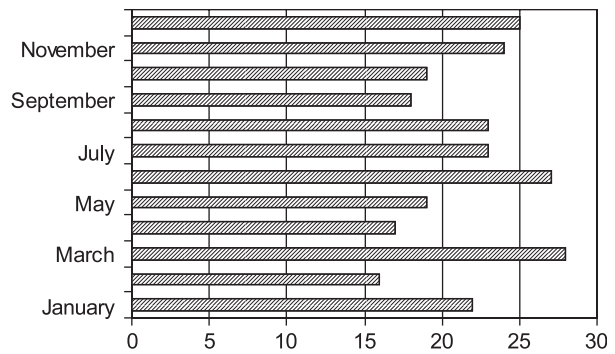


Fig.-1: Bar diagram showing monthly distribution of the patients (n=261)

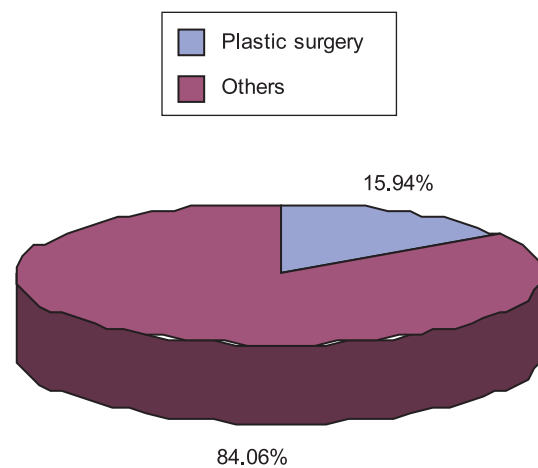


Fig.-2: Pie chart showing percentage of the total patients treated in plastic surgery

the female about 34.48%. Detailed age and sex distribution of the patients are shown in Table:1. Patient's aetiology of trauma according to history revealed road traffic accident was the highest about 42.91% followed by machinery injury 34.86%. Other causes were assault about 13.03%, bomb blast 6.90%, dog bite 0.77% and self inflicted 1.53%. This picture is well documented in tabulated form in Table:2. 41.76% of the injury managed in hand region which was highest followed by upper extremity excluding the hand about 13.41%. Lower extremity (12.26%) and penoscrotal injury (11.11%) were other leading cause of trauma patients treated in plastic surgery department. Detailed injury distribution among the study group are plotted in Table: 3. Detailed types of wounds and injury picture is presented in Table:4 and Table:5. Regarding the

Table-I
Age and Sex distribution of the patients (n-261)

Age	Sex		Number of patients	Percentage
	Male	Female		
0-10 years	17	9	26	9.96
10+-20 years	23	11	34	13.03
20+-30 years	41	24	65	24.90
30+-40 years	45	22	67	25.67
40+-50 years	21	13	34	13.03
50+years and above	24	11	35	13.41
Total	171	90	261	100
Percentage	65.52	34.48	100	

Table-II
Aetiology of injury (n-261)

Aetiology of Injury	Number of patients	Percentage
Road traffic accident	112	42.91
Machinery injury	91	34.86
Bomb blast	18	6.90
Self inflicted	4	1.53
Dog bite	2	0.77
Assault	34	13.03
Total	261	100

Table-III
Distribution of Trauma (Anatomically) (n-261)

Distribution of Injury	Number of patients	Percentage
Finger	109	41.76
Upper extremity	35	13.41
Lower extremity	32	12.26
Trunk	21	8.05
Facial	12	4.60
Penoscrotal	29	11.11
Multiple	23	8.81
Total	261	100

Table-IV
Types of wounds in patients (n-261)

Types of wounds		Number of patients	Percentage
Tidy	26	9.96	
Untidy	Bruise	5	1.92
	Puncture/Bite	7	2.68
	Abrasion	5	1.92
	Laceration	67	25.67
	Avulsion	56	21.46
	Crush	43	16.47
Multiple	52	19.92	
Total	261	100	

Table-V
Detailed injury presentation of the patients (n-261)

Distribution of Injury		Number of patients	Percentage
Finger 41.76%	Tendon injury	23	8.81
	Fracture With soft tissue loss	7	2.68
	Exposed bone	17	6.51
	Exposed tendon	13	4.98
	Pulp loss	27	10.35
	Amputation	22	8.35
Upper extremity 13.41%	Degloving injury	23	8.81
	Exposed bone	4	1.53
	Soft tissue loss	8	3.07
Lower extremity 12.26%	Degloving injury	15	5.75
	Exposed bone	7	2.68
	Soft tissue loss	6	2.30
	Tendon injury	4	1.53
Trunk 8.05%	Avulsion injury	17	6.51
	Soft tissue loss	4	1.53
Facial 4.60%	Laceration	6	2.30
	Puncture	2	0.77
	Sharp cutting	4	1.53
Penoscrotal 11.11%	Degloving injury	27	10.35
	Sharp cutting	2	0.77
Multiple		23	8.81
Total	261	100	

management 49.42% of the patients were managed by skin graft which was most. Other plastic surgical procedure like various flap cover and replantation done in rest of the patients. Detailed management procedure is

shown in Table: 6 and Fig-3. Among 261 patients 142 patients were admitted and transferred under plastic surgery and treated. Other 119 patients were treated as a daycase and treated on the day of referral and follow up

Table-VI
Treatment of the patients (n-261)

Treatment		Number of patients	Percentage
Skin Graft		129	49.42
Primary closure		41	15.71
Flap Cover	Rotation flap	6	2.30
	Groin flap	6	2.30
	Gastrocnemius flap	3	1.15
	Soleus flap	2	0.77
	Chest flap	4	1.53
	Cross leg flap	4	1.53
Finger	Cross finger flap	15	5.75
	Moberg flap	3	1.15
	V-Y advancement	25	9.58
Replantation of penis		2	0.77
Others		21	8.04
Total		261	100

done as an outpatient basis. Average hospital stay was 19.34 ± 5.24 days among the admitted patients. Follow up of the patients showed that most of the patients had full recovery about 55.55% but 37.55% patients had recovery with some deformity mostly due to their deformity during the injury. 6.13% patients referred to other department or hospital after management in plastic surgery for further treatment. Outcome of the patients are shown in Table:7.

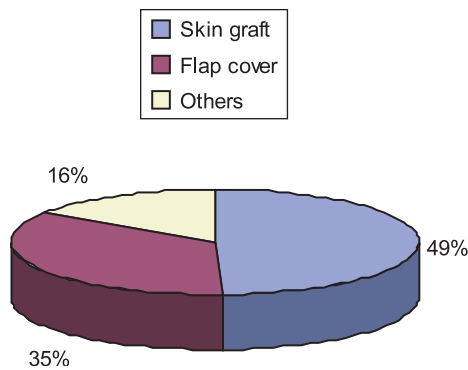


Fig-3: Pie chart showing management of the patients (n-261)

Table-VII

Outcome of patients after treatment (n-261)

Outcome of patients	Number of patients	Percentage
Complete recovery	145	55.55
Recovery with some deformity	98	37.55
Referred to other hospital/ Department	16	6.13
Death	2	0.77
Total	261	100

Discussion:

Total of 261 patients were treated in Department of Plastic Surgery, Dhaka Medical College Hospital during the year 2009 as an emergency patients those were referred from Department of Casualty Surgery which is about 15.94% of the total trauma patients treated in casualty surgery. It should be worth mentioning there is a separate specialized burn unit in Dhaka Medical College Hospital

that have 24 hour emergency so a large number of patients with burn are treated there thus obviating the need for treating burn pts in casualty. There is no other study done previously in our country to outline the pattern of trauma patients managed in Plastic Surgery. Moreover there is also very few study to outline the emergency patients treated for trauma and injury. In our study mean age of the patient's was $29.72 \pm SD (21.37)$ year ranging from 1 month to 68 years. Most of the patients were between 30+-40 years about 25.67% followed by 20+-30 years age group about 24.90%. Male patients were predominant about 65.52% in contrast with the female about 34.48% male female ratio was nearly 2:1. Similar study to outline the trauma patients that carried out in Iran⁶,2009 reveals patients mean age was 34.7 (standard deviation 19.9) years that is close to our study. The male to female ratio was 3.66 slightly higher numbers of male patients in contrast to our study but it reflects male female sex distribution of the peoples of Iran⁶. Another study carried in Assam, India⁷, 2009 reflects the mean age of emergencies was 28 (± 14 years) similar to our study. A higher prevalence of emergencies was noted among males (55%) and in the most of the patients was distributed in 19-30 year age group and 31-45 year age group. These results are very similar to our study as we have similar socioeconomic condition and literacy rate in relation to India. Patient's aetiology of trauma according to history revealed road traffic accident was the highest about 42.91% followed by machinery injury 34.86%. Other causes were assault about 13.03%, bomb blast 6.90%, dog bite 0.77% and self inflicted 1.53%. In a study in Iran⁶ stated RTA, falls and interpersonal violence were the three most common mechanisms of trauma. In our study fall from height patients were excluded as these patients were usually managed by neurosurgery department but other results are pretty similar. In our study 41.76% of the injury managed in hand region which was highest followed by upper extremity excluding the hand about 13.41%. Lower extremity (12.26%) and penoscrotal injury (11.11%) were other leading cause of trauma patients treated in plastic

surgery department. In Iran⁴ in contrast to our study 27.6% patients experienced head injury but these patients were excluded in our study so comparison can not be done. More over hand injury is leading cause of injury in our country but there was only 9.2% hand injury in Iran⁶ probably due to protective measure taken by people. 49.42% of the patients were managed by skin graft in Plastic Surgery followed by other various flaps. Procedure like microvascular flap cover or replantation of digits were not done in emergency management as in Dhaka Medical College Hospital there is no such facility and infrastructure though many of the surgeons can perform this procedure with infrastructural support. Most of the patients had full recovery with no deformity (55.55%) followed by recovery with some deformity (37.55%). Deformities were mostly due to type and nature of injury like traumatic amputation of fingers, mangled extremity or self inflicted amputation of penis which could not be managed with highest effort and procedure. Only 0.77% patients died mostly due to length of time elapsed before the patients arrived in emergency. 6.13% of the patients were consulted other department for better management.

Conclusion:

So far the Establishment of the Department of Plastic Surgery, there was no practice for immediate referral and management of trauma victims in Plastic surgery. Trauma patients those who required plastic surgical intervention were usually referred later on. In 2009 considering the interest of the patients both the department of Plastic Surgery and Casualty Surgery agreed to manage the patients with a coordinated effort and patients were referred to Plastic Surgery at '0' hour of arrival in the Casualty Surgery. Management of trauma patients with expertise and knowledge at appropriate and earliest time can reduce morbidity and improves quality of life. Total of 261 patients treated in plastic surgery which was 15.94% of the total trauma patients

with male predominance. A large number of trauma patients required Plastic surgical intervention. Road traffic accidents were the leading cause of injury and hand and upper extremity were affected mostly. Average hospital stay of the admitted patients was reduced. Most of the patients had early and satisfactory recovery which reflects early management is the key to reduce morbidity. The limitation of study is that the study period was only 1 year which is short. and the procedure, outcome and follow up of the patients are not elaborated in the study. Further study with longer duration, detailed management may reveal actual picture of trauma patients treated by Plastic Surgery in our country.

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