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RESEARCH ARTICLE

MANAGEMENT OF TRAUMATIC HAND DEFECTS

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Abstract

Introduction:-

Hand is one of the most important parts of human body due to its mechanical and sensory functions and it is one of the most developed structures in the human evolution. Intricate in design and function, hand is an amazing work of anatomic engineering. Injury to the underlying structures of the hand carries the potential for serious handicap. loss of function of the hand, or both. The loss of one's ability to work and to provide can lead to chronic depression as well as social isolation. It is therefore important that acutely injured hand is managed adequately to prevent infection, salvage the injured part, promote primary healing and restore its function [2]. The hand is at risk of injury from number of causes for example, road traffic accidents, burns,occupational hazards, sporting and domestic accidents. reconstruction of soft tissue defects of the hand is a challenge. The choices are local flaps or distant flaps or free flap using using microvascular techniques. Free flaps are time consuming, require specialized equipments and intensive postoperative care. Distant flaps may require multiple stage reconstruction, prolonged hospitalization and immobilization. single stage procedure to reconstruct soft tissue defects of the hand minimize infection, allow early mobilization and reduce hospital stay [3]. The decision on which method of wound closure should be used depends entirely on the geometry of the wound and on the local wound factors.

To reduce this risk, even the smallest hand injuries require proper and prompt intervention

Materials and Methods:-

This is a prospective study conducted in the Osmania General Hospital,Hyderabad ,Telangana.,from august 2013 to august 2015.all the patients who presented with the injury of the hand and wrist requiring reconstructive procedures were included in the study.severe mutilating injuries were excluded.

Results:-

Age wise Distribution:

According to the above table (Table I), most common age group affected by hand injuries was 21-30 years. The youngest patient in our study was 4 years old and the oldest patient was of 60 years age.

Age Group	Number of patients	Percentage
Upto 10 yrs	04	11.43%
11 - 20 yrs	05	14.28%
21-30 yrs	10	28.57%

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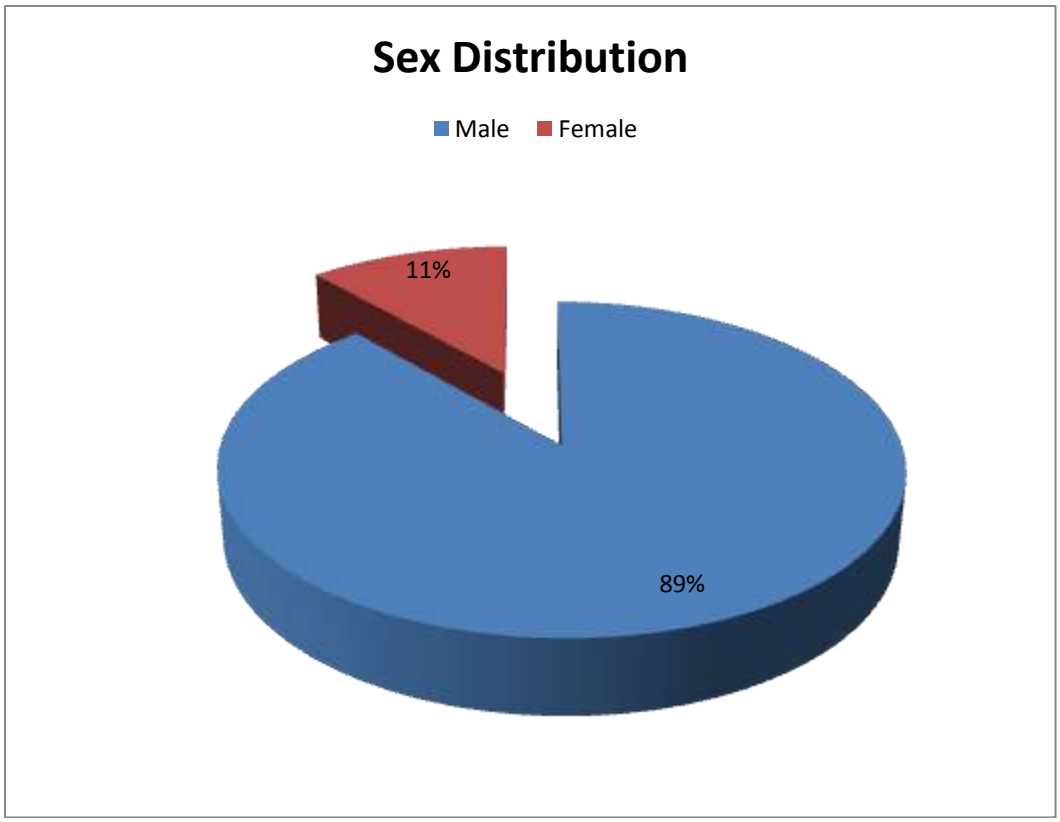
31-40 yrs	08	22.86%
41-50 yrs	05	14.28%
51-60 yrs	03	8.58%
> 60 yrs	00	00
Total	35	100%

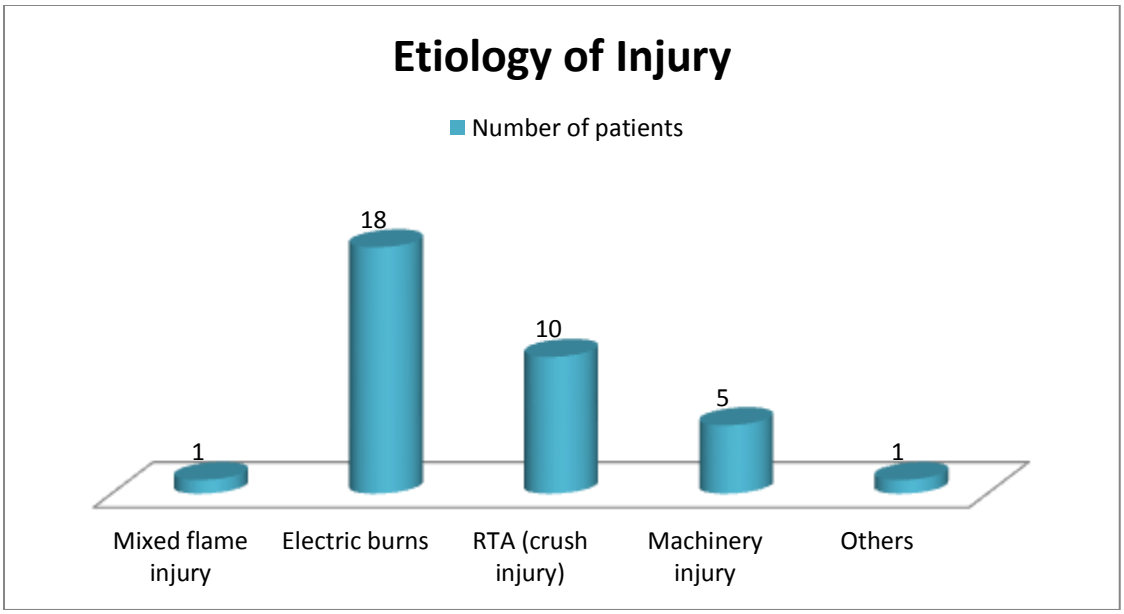
Sex distribution:
in our study 88.57% (31 out of 35) patients presented with hand injury were male and only 4 patients were female.



Sex of patients	Number of patients	Percentage
Male	31	88.57%
Female	04	11.43%

Etiology of Injury:
According to Table III, most common cause of hand injury in our study was electric burns which was seen in 51.43% patients. Second most common cause was road traffic accident which was seen in 10 out of 35 (28.57%) patients.

Type of injury	**Number of patients**	**Percentage**
Mixed flame injury	01	2.86%
Electric burns	18	51.43%
RTA (crush injury)	10 (04)	28.57%
Machinery injury	05	14.28%
Others	01	2.86%
Total	35	100%



Site of Injury:
Most common site involved in different type of hand injuries was dorsum of the hand (in 62.86%). Fingers were the second most commonly affected site seen in 28.57%. Wrist was affected in 8 out of 35 patients. Thumb was involved in 2 patients while in only one patient fingertips were injuredIn our study we found that, right hand was affected in 19 patients (54.28%) and left hand was affected in 15 patients (42.86%). Only one patient hand injury involving both hands.

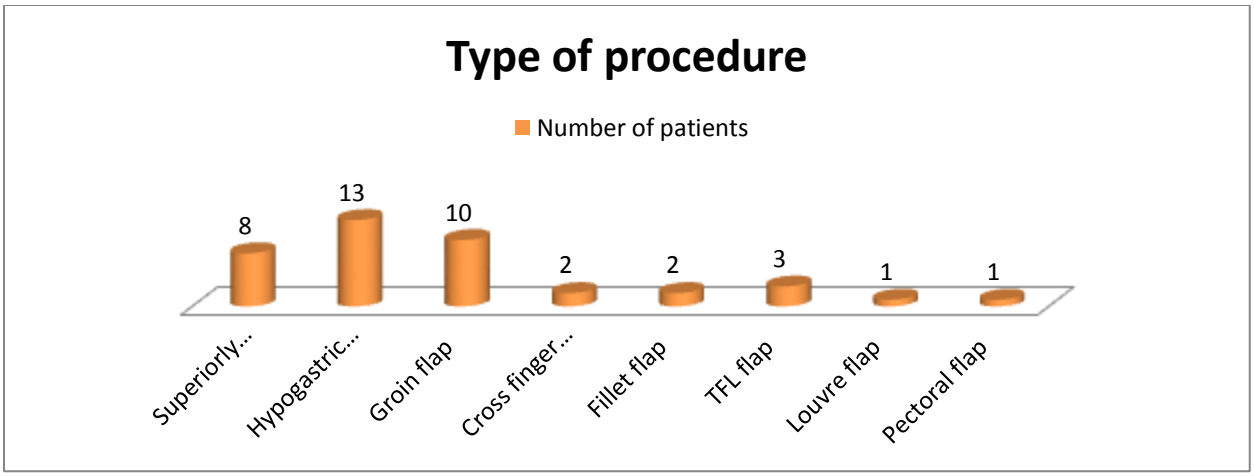
Site of Injury	Number of patients	Percentage
Dorsum of hand	22	62.86%
Volar aspect of hand	01	2.86%
Wrist	08	22.86%
Fingers	10	28.57%
Thumb	02	5.71%
Fingertips	01	2.86%

Note: more than one site is involved in some patients.

Type of Procedure:
In our study, earliest flap procedure was performed on day of injury in 4 patients. And the most delayed procedure was performed on 62nd day of injury because of the late presentation and multiple associated injuries. . In our study , most common flap procedure performed was Hypogastric flap (37.14%). Groin flap was the second most common procedure performed in 10 patients(28.57 %). Superiorly based abdominal flap was performed in 8 out of 35 patients. In 3 patients we performed TFL flap and in 2 patients who underwent amputation of the digit, Fillet flap was performed. Louvre flap and Pectoral flap was performed in one patient each.

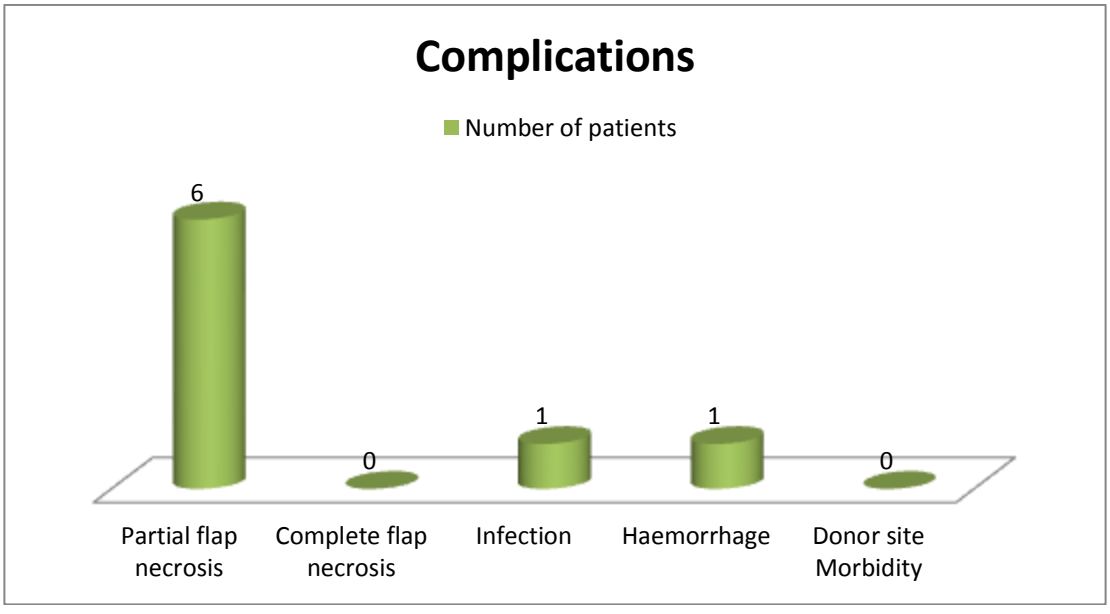
Type of procedure	Number of patients	Percentage
Superiorly based Abdominal flap	08	22.86%
Hypogastric flap	13	37.14%
Groin flap	10	28.57%
Cross finger flap	02	5.71%
Fillet flap	02	5.71%
TFL flap	03	8.58%
Louvre flap	01	2.86%
Pectoral flap	01	2.86%

Note: more than one procedure performed in some patients.



Post operative Complications:
In our study, 6 out of 35 patients (17.14%) had partial flap necrosis. Of these 6 patients, four had partial necrosis of Groin flap and 2 had partial flap necrosis of inferiorly based Hypogastric flap. Only one patient had radial artery blow out and another had infection of the flap cover.

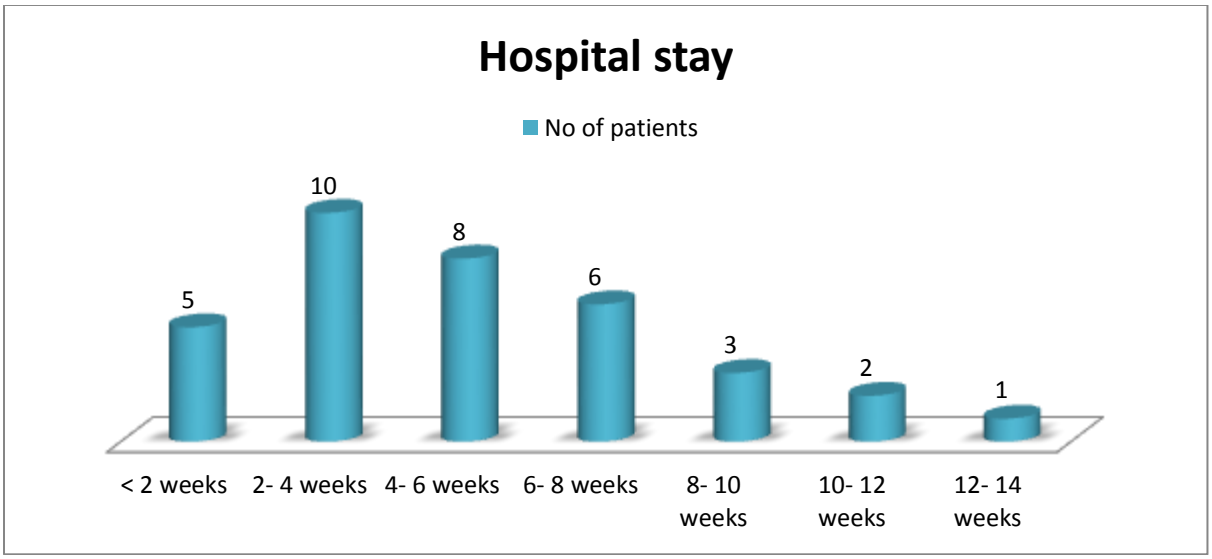
Complications	Number of patients	Percentage
Partial flap necrosis	06	17.14%
Complete flap necrosis	00	00.00
Infection	01	2.86%
Haemorrhage	01	2.86%
Donor site Morbidity	00	00.00
Total	08	22.86%



Hospital stay:
Hospital stay of the patients in our study ranged from 9 to 92 days, Most (10) of the patients were there in the hospital for 2 to 4 weeks.

Hospital stay in weeks	No of patients	Percentage
< 2 weeks	05	14.28%

2- 4 weeks	10	28.57%
4- 6 weeks	08	22.86%
6- 8 weeks	06	17.14%
8- 10 weeks	03	8.58%
10- 12 weeks	02	5.71%
12- 14 weeks	01	2.86%



most common cause of hand defects in our study was electrical burns followed by road traffic accidents.Hypogastric flap is the commonest flap done .delay between the incident and the presentation influences the outcome .these injuries require many additional procedures.and result in morbidity.

Discussion:-

Any particular soft tissue defect of the hand can be managed in a variety of ways. Often the simplest procedure with the fewest potential complications suffices. Soft tissue coverage is merely one component in the management of complex hand injuries, which also may require bony stabilization, neurovascular repair and tendon reconstruction.the role of aggressive hand therapy with oedema control, early active motion, and functional retraining cannot be overemphasized. Providing stable soft tissue coverage with the potential for sensibility expands the subsequent reconstructive options and enhances the ultimate functional result.

The ideal flap procedure to reconstruct the hand defects must provide same tissue match, sensibility, low donor site morbidity, minimal scar contracture, unrestricted mobilization, easy wound care, a one stage outpatient operation and one operative field. Although this is the ideal for flaps, there is yet to be a flap that provides most of these terms [28]. The anatomy of the hand allows cover of small skin defects with a great variety of local pedicle and island flaps. However, for larger defects it is necessary that flaps from distant donor sites be used, either as free or pedicle flaps. most common cause of hand defects in our study was electrical burns followed by road traffic accidents. The common age group in our study was 21-30 years, with the age of the patients ranged from 4- 60 years. most common site of injury was dorsum of hand in 20 cases (62.86%) followed by fingers. In our study, eight types of flap procedures were performed in 35 patients. The type of flap procedure was decided depending on patient's comfort, site and size of defect.

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