

## The Comorbid Condition of the Different Type of Ulcer Inpatient of Surgery and Plastic Surgery Department of Higher Center

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### Abstract

*Background and objective:* The skin surface is important as a biological layer for homeostasis. Restoring the skin surface is therefore critical even if underlying structure can wait later reconstruction. Skin act as a barrier to fluid loss and provide important protection against invasion by micro-organisms. The main objective of the present study is to evaluate the co-morbid condition associated with different type of ulcers. *Research design:* The observational and clinical design was applied in the purpose of the present study. *Method:* total 100 patients who admitted in the department of surgery and plastic surgery ward were included in present study. *Result:* The hypertension was to be most common co-morbid condition, patients were affected in 23% to be associated with the diabetics and infective ulcers. Smoking is the most second co-morbid condition (17%) patients, with the associated of infective, venous and diabetic ulcers. Tobacco-chewing (11%) and alcoholism in (10%) the most common co-morbid condition associated with the traumatic ulcers. *Conclusion:* findings of our study we are concluded that the hypertension, diabetes type 2, smoking, tobacco-chewing and alcoholism was most common co-morbid condition of ulcer.

**Keywords:** Co-morbid condition; Ulcers.

### Introduction

The skin surface is important as a biological layer for homeostasis. Restoring the skin surface is therefore critical even if underlying structure can wait later reconstruction. Skin act as a barrier to fluid loss and provide important protection against invasion by micro-organisms. An ulcer is a break in the continuity of the covering skin or epithelium. Skin loss many occur in full thickness burns, degloving injuries, necrotizing fasciitis, chronic ulcer and after some surgery for tumor and some non-malignant conditions. Without skin wound heals by secondary intention with fibrosis and contracture and underlying structure are vulnerable to necrosis, chronic infection and dysfunction. Early closure of the defect is the best if it can be achieved.

Bacteria colonizing the ulcers are commonly Staphylococous, Streptococous, Pseudomonas, Proteus, E. coli, Klebsiella, Anaerobes. These bacteria's may secrete toxins (exotoxins/endotoxins) or enzymes which are responsible for the skin graft failure. Three group of bacteria have been reported as reducing the success rate of skin grafting: -

1. Betahaemolytic streptococci [2]
2. Pseudomonas [1,3]
3. Staphylococci [1,4]

The prerequisites for successful grafting are known to us an adequately vascularized recipient bed, a good graft, accurate approximation and immobilization of the graft in relation to the ulcer,

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avoiding fluid collection below the graft and good diet and nursing care. Even when these conditions are met, graft may fail due to bacterial colonization of the ulcer either preoperatively or after the procedure [1].

A large portion of the patients were suffering from non-healing ulcers belongs to lower socio-economic status, hence cannot afford state of the art treatment and high grade antibiotics which often go hand in hand with the treatment of above mentioned bacteria. Secondary a great deal of time and efforts is spent in pre-operative care to get rid the ulcer of colonized bacteria.

### *Objective*

The main objective of the present study is to evaluate the co-morbid condition associated with different type of ulcers.

### **Method**

#### *Research design*

The observational and clinical design was applied in the purpose of the present study.

#### *Sample inclusion criteria*

Total 100 samples were selected for the present study, the present sample were selected in some criterion below- non healing ulcers, diabetic ulcers, burn ulcers (electric/thermal), skin grafting after post burn contracture excision, post traumatic ulcers, and post infective ulcers.

#### *Sample exclusion criteria*

Some condition of the patients was not eligible of fulfil the criterion of the study, such as full thickness skin grafts, age less than 15 years and more than 60 years, presence of slough on the recipients site, malignant ulcer, mycetoma, chronic granulomatous disease etc.

#### *Procedure in sampling*

An analytical study was conducted in the Dr. B.R. A. Memorial Hospital Raipur (CG) associated with Pt. J.N.M. Medical College Raipur over a period of Dec. 2011 to Sept. 2013 on patients who were admitted with the ulcers and underwent skin grafting of the department of general surgery.

#### *Technique, Clinical observation and examination of selected sample*

Detailed history of cases recorded at the time of admission in the following proforma, name and address, age and sex, patients chief complain and presenting illness, past history in any illness, personal history, family history, socioeconomic status, history of diabetes mellitus, anaemia, chronic renal failure, tuberculosis, nutritional status of the patients, drug history.

An elaborate clinical examination was done of the patients, conducted and findings were noted in the following proforma.

*General examination-* pulse rate, blood pressure, respiration, pallor, oedema, lymph node status.

*Ulcer examination-* site of the ulcer, size of the ulcer, margin, edge, base of the ulcer, discharge from the ulcer-colour, odour, amount, extent of infection, examination of surrounding parts, examination of draining lymph nodes.

The ulcers measured at its greatest length and breadth. The two measurement are them multiplied to give an approximate area of the ulcers in cm<sup>2</sup>. Each patient was investigated their fitness.

*Blood examination-* haemoglobin, blood urea, creatinine, serum electrolytes, fasting and post-prandial blood sugar level, serum total protein level, other tests as indicated by the patients, condition or co-morbidities.

*Radiological examination-* plain X-ray indicating the bony injury present or not, colour Doppler (arterial and venous) to rule out vascular abnormalities.

#### *Bacteriological examination-*

Method of sample collection- pus discharge was collected from the ulcers with cotton swab culture stick on admission, 48 hrs before grafting and post operatively at the time of first dressing with maintaining sterile condition than sample send to the lab for culture and sensitivity test.

Culture of bacteria- pus sample collected was inoculated in blood Agar and Mac Conkey media for growth and isolation of pure culture using streak plate method, the inoculated petriplate were incubated at 37°C for 24 hours.

Identification of bacteria- Gram staining- the staining technique consists of four steps- 1) primary staining with a dye gentian violet, 2) application of dilute solution of iodine, 3) decolourisation with an ethanol, 4) counterstaining with a dye carbol fushin or safranine.

The gram stain differential bacteria into two groups-

Gram positive- those bacteria that retain primary stain and appear violet.

Gram negative- those bacteria that decolorized by organic solvents and take counter stain, appearing red.

*Statistical Analysis* purpose of the present study descriptive analyses was done.

## Results

Purpose of the present we are analyzed in the descriptive analyses technique. The result of present study is shown below of some tables-

**Table 1:** Shown the age wise distribution of the patients

Ages in years	Number of cases	Percentage
16-25	08	8
26-35	30	30
36-45	25	25
46-55	22	22
56-60	15	15
total	100	100

A total of 100 patients were included in our study ranges between the ages of 15-60 years. The maximum incidence of ulcers in which skin grafting was seen in patients age group 26-35 years 30/100 (30%). The younger patients were 16 years and the oldest was 60 years of age.

**Table 2:** Shown the type of ulcers in sex wise distribution

Type of ulcers	Male	Female	Total
Infective ulcers	13	11	24
Traumatic ulcers	16	4	20
Venous ulcer	9	2	11
Burn ulcers	9	8	17
Diabetic ulcers	23	5	28

**Table 4:** Shows the comorbid conditions associated with the ulcers

Associated co-morbid condition	Infective ulcers	Traumatic ulcers	Venous ulcers	Burn ulcers	Diabetic ulcers	Total
Hypertension	12	1	-	1	9	23
Smoking	8	-	4	1	4	17
Tobacco chewing	3	3	2	3	-	11
Underlying fracture	-	4	-	-	-	4
Cardiac disease	3	1	-	-	3	7
Sickle cell anaemia	-	-	-	2	-	2
Alcohol use	4	4	-	1	1	10
Neuroarthopathy	-	-	-	-	2	2
Microvasculopathy	-	-	-	-	1	1

Reveal the table 2 shows the all types of ulcers were more common in males than the female patients in our study.

Types of ulcers included in our study in males were diabetics ulcers in 23/100 (23%) patients, traumatic ulcer in 16/100 (16%), infective ulcer in 13/100 (13%), venous ulcers in 9/100 (9%), burn ulcers was almost equal in both sex group, in males 9/100 (9%) patients and in females 8/100 (8%).

**Table 3:** Shown the etiology of ulcers

Etiology	Number	Percentage
Infection	28	28
Diabetic	25	25
Trauma	17	17
Burn	19	19
Varicose veins	11	11

Table 3 shows the infective ulcer was most common etiology in all type of the ulcers 28%, diabetic ulcers was the second most common etiology of the ulcers in 25% of the patients, burn in 19%, trauma were 17% and varicose veins in 11%.

Table no. 4 shows the various co-morbid condition associated with the ulcers in our study. We found that the hypertension was to be most common co-morbid condition, patients were affected in 23% to be associated with the diabetics and infective ulcers. Smoking is the most second co-morbid condition (17%) patients, with the associated of infective, venous and diabetic ulcers. Tobacco-chewing (11%) and alcoholism in (10%) the most common co-morbid condition associated with the traumatic ulcers.

## Discussion

The present study included in 100 cases of ulcers admitted in the department of surgery and plastic surgery wards of Pt. Jawaharlal Nehru Memorial

Govt. Medical College and Associated Dr. Bheemrao Ambedkar Memorial Govt. Hospital Raipur, the capital of the Chhattisgarh State. This study was done to be find out of the co-morbid condition of ulcers with the associated condition. Very few studies are available in the similar findings. Some find studies were approving our result.

In our study (Table 4) there were various co-morbid conditions associated with ulcers formation. In our study we observed hypertension (23%) to be the most common co-morbid condition associated with the diabetic and infective ulcers. Smoking (17%) was the second most common co-morbid condition associated with the venous, diabetic and infective ulcers. Tobacco chewing (11%) was associated with venous and diabetic ulcers.

Anderson and Wallin (2012) [5] in his study found that co-morbid condition for diabetic's ulcers were smoking 5.6%, alcohol 4.7%, rheumatoid arthritis 6.5%, cardiac disease 2.8%, peripheral vascular disease 6.5%, charcot Neuroarthropathy 0.9% and hypertension 24.5%.

In another study by Mukhopadhyay and Saha (2011) [6] investigated the co-morbid factors associated with ulcers included diabetes, chronic alcoholism, immune suppression, AIDS, malignancy, chronic venous or lymph insufficiency, obesity, peripheral vascular disease, tuberculosis and leprosy.

Similar study Abott et al. & Boyko et al. (1999) [7] in his analysis found that the most common co-morbid condition for diabetic foot ulcers were long duration of diabetes, association of peripheral neuropathy, association of peripheral vascular disease. 30-50% of all diabetic patient's present peripheral sensory neuropathy. Sensory neuropathy is the most common predictor of foot ulceration in a patient with diabetes (Nather et al., 2011) [8]. The development of foot ulceration reported in sensory neuropathy occurs in 78% of cases. Peripheral neuropathy initiates a series of events that together with peripheral motor and autonomic damage eventually result in foot ulceration. The motor neuropathy typically presents structural alteration of the dynamic anatomy of the foot and joints,

causing weakness and wasting of small intrinsic muscles. This causes a loss of balance in the gait because of damage to the muscles and clawing of toes and plantar flexion of the metatarsal head (Carine et al., 2004).

### Conclusion

Findings of our study we are concluded that the hypertension, diabetes type 2, smoking, tobacco-chewing and alcoholism was most common co-morbid condition of ulcer.

*Conflict of interest:* Authors are declaring that no conflict of interest.

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