

## Management of Carbuncle; Prognosis of Surgical Treatment

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### ABSTRACT

**Aim** To study the presentation and prognosis of the patients with carbuncles presenting in surgical department of Allama Iqbal Memorial Teaching hospital, Sialkot.

**Study Design:** Prospective study.

**Place & duration of study:** Department of General Surgery, Khawaja Muhammad Safdar Medical College, Sialkot from June 2016 to February 2018.

**Methods:** All patients serially presented in the surgery Department of Allama Iqbal Memorial hospital with Carbuncle of any size and presenting symptoms & Male and female patients of all age groups were included. The patients were classed in two groups: Group I-Big Carbuncles size measuring >5cm in one direction and Group II-Small Carbuncles size less than 5 cm. Patients were admitted and managed according to nature and indications for surgical intervention. Secondary intention of healing was the approach in all cases while some patients required partial thickness skin grafting. Minimum of three months of follow up was must for inclusion in the study.

**Results:** We had 183 patients, having age 14-67 years, with mean age of 39+8 years, out of which 44 patients were males and 139 were females and Male to female ratio was 1:3.15, Duration of lesions at presentation was 3-45 days with average of 9+12 days, 156 patients were diabetics and 9 patients had immunosuppressive therapy, 29 were underweight, 71 were obese, 13 were smokers and 13 had poor hygiene with skin diseases. In Group-I patients having Big Carbuncles, Fever was in 74(100%) patients, Pain was also in 74(100%), Swelling was in 65(87.83%) and Pus Discharge was in (56.75%). In Group-II patients with Small Carbuncles, Fever was in 75(68.80%), Pain was in 92(84.40%), Swelling was in 101(92.66%) and Pus Discharge was in 21(19.26%).

**Conclusion:** Though the treatment of carbuncles is generally have good prognosis if treatment is sought in time but big carbuncles may follow a chronic course.

**Key words:** Carbuncle, Excision, Secondary intention, Split skin grafting

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### INTRODUCTION

Carbuncles are not uncommon even in this post-antibiotic era especially in those with uncontrolled diabetes. Early clinical diagnosis and prompt surgical management is rewarding. It is quite surprising that the studies on Carbuncles are quite sparse with hardly a handful of series over last 2-3 decades. The aim of this study is to provide our experience on Carbuncle in diabetics. Carbuncle is an infective gangrene of the skin and subcutaneous tissue<sup>1,2</sup>. The word carbuncle basically originated from the latin: Carbunculus which means charcoal<sup>3</sup>. It was recognized as a complication of diabetes by Charak and Sushruta (600-400 BC)<sup>4</sup>.

Staphylococcus aureus continues to be the commonest bacteria isolated. The bacteria penetrates the skin and the subcutaneous tissues to form a series of communicating abscesses, which often form a broad, swollen, erythematous, deep and painful mass, that is drained by multiple channels & opens through separate openings on the surface (sieve like appearance). There is often a central large slough, surrounded by a rosette of small areas of necrosis, due to destruction of small blood vessels<sup>5</sup>.

The carbuncle affects adults, children are spared. It occurs more commonly in diabetics due to impaired leucocytes function. Majority of the carbuncles occurs over the nape of the neck (40%) & other common sites are shoulders, hips etc<sup>6</sup>. Earlier, carbuncles were arbitrarily classified into localized nontoxic, localized toxic and spreading. This classification is not used now<sup>7</sup>.

Most patients present to the hospital 2 weeks after the onset of the symptoms. There is no mortality in this series. The classical treatment of carbuncle is excision of all the necrotic tissue with adequate surgical drainage of pus and broad spectrum antibiotics<sup>8</sup>. The wound is allowed to heal and later a with uncontrolled diabetes. Early clinical diagnosis and prompt surgical management skin local skin flap may be employed to close the defect<sup>9</sup>. We did not include the secondary procedures like skin grafting, local flap, etc in our study as most of our patients are lost for follow up once the acute problem of the patient is dealt. The commonest surgical approaches are: Saucerization, and incision and drainage (I&D). Although these two techniques are vastly different, there is a lack of evidence to determine which one produces a better outcome<sup>10</sup>.

No research regarding carbuncles has been carried in our hospital previously. In the present study, we collected the data of our patients undergoing surgery and analyzed the incidence of comorbid pathologies in patients being treated done at Allama Iqbal memorial teaching hospital affiliated with Kh.M Safdar Medical College, Sialkot.

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## PATIENTS AND METHODS

All patients serially presented in the surgery Department of Allama Iqbal Memorial hospital with Carbuncle of any size and presenting symptoms & Male and female patients of all age groups were included. The patients were classed in two groups: Group I-Big Carbuncles size measuring >5cm in one direction and Group II-Small Carbuncles size less than 5 cm. Patients were admitted and managed according to nature and indications for surgical intervention. Secondary intention of healing was the approach in all cases while some patients required partial thickness skin grafting and secondary suturing. Minimum of three months of follow up was must for inclusion in the study. Data was entered and analysis done by SPSS v 22.

## RESULTS

The basic demographic data of our patients is shown in Table I

Table I: General data

Total no of patients in Study	183	100%
Age	14-67 yrs	Mean age 39±8 years
Males	44	
Females	139	
Male: Female	1 : 3.15	
Duration of lesions at presentation	3- 45 days	Average 9±12 days
Diabetics	156	
Immunosuppressive therapy	9	
Malnutrition/underweight	29	
Obesity	71	
Smokers	29	
Poor hygiene with skin diseases	13	
Group I- Big Carbuncles	74	
Group II- Small Carbuncles	109	
Conservative treatment	13	
Excision of carbuncle	170	
Split skin grafting	22	
Secondary suturing	12	
Local flap	7	
Pus for culture and sensitivity	245	

Table II: Site of involvement

	Group I	Group II
Nape of neck	7(9.4%)	25(22%)
Back thoracic region	8(10%)	6(5%)
Back Lumbar region	19(25%)	17(15%)
Axilla	4(5%)	2(1.8%)
Shoulders	1(1%)	5(4%)
Inguinal region	4(5%)	11(10%)
Gluteal region	8(10%)	9(8%)
Anterior abdominal wall	13(17%)	18(16%)
Thigh	2(2%)	9(8%)
Chest wall- front	3(4%)	6(5%)
Scalp	6(8%)	2(1%)

Table III: Presentation and management

	Group I	Group II
Fever	74(100%)	75(68.80%)
Pain	74(100%)	92(84.40%)
Swelling	65(87.83%)	101(92.66%)
Pus Discharge	42(56.75%)	21(19.26%)

Table IV: Morbidity and mortality data

	Group I-	Group II
Septicemia	23(31.08%)	2(1.83%)
Persistent discharge	14(18.91%)	2(1.83%)
Ugly scarring	15(20.27%)	1(100%)
Failure of conservative treatment	-(0%)	7(6.42%)
Failure of grafting	9(12.16%)	-
Recurrence	11(14.86%)	-
Multi organ dysfunction	9(12.16%)	-
Mortality	3(4.05%)	-

## DISCUSSION

Skin and soft tissue infections are common in diabetics, especially when uncontrolled. Carbuncle belongs to a group of superficial soft tissue infections related to infection of hair follicles. The common sites of carbuncle include nape of the neck and the back. The skin over these areas is coarse and vitality of the tissue is less. The other sites include shoulders, hips, thigh and over the abdomen. The most common organism is staphylococcus aureus, both methicillin sensitive and methicillin resistant strains.

Our study presents septicemia rate to be 31.08% and 1.83% in Big and small Carbuncles respectively; while the study of Chelliah et al<sup>11</sup> reported a rate of 24%. We report incidence of persistent discharge as 18.91% and 1.83% in big and small Carbuncles respectively; while the study of Bhatt<sup>12</sup> reported a rate of 30%.

In studies by Das et al<sup>13</sup>, the ugly scarring was in 80% patients, while these complications are 20.27% and 100% in Big and Small carbuncles respectively in our study. Failure of conservative treatment was in 6.42% in Small Carbuncles; while the study of Franklin et al<sup>14</sup> reported a rate of 3%.

We had the failure of grafting in 12.16% in patients with big carbuncles, while study in Tripathy et al<sup>15</sup> had the graft failure in 7% patients. Big Carbuncles had a recurrence rate of 14.86% in our study, while study of Hee et al<sup>16</sup> showed that recurrence occurred in only 2%. 12.16% patients with big carbuncles suffered from multi organ dysfunction according to our data, while data of Sarita et al<sup>17</sup> had 20.5% patients with this problem.

Our study had the mortality figure of 4.05% in big Carbuncles, while mortality was in 1% in study of Doherty et al<sup>18</sup>. The mortality can be explained on ground of poor nutritional status leading to immunocompromise and delay in seeking the appropriate treatment.

## CONCLUSION

Though the treatment of carbuncles is generally have good prognosis if treatment is sought in time; but big carbuncles may follow a chronic course.

**Disclosure:** The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper

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