

Deroofing and Excision vs Incision and Drainage; A Comparative Study in Diabetic Carbuncle

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ABSTRACT

Background: Carbuncle is a clump of pus-filled lumps that create a linked region of infection beneath the skin. Carbuncle treatment necessitates the use of antibiotics as soon as possible, as well as surgical surgery. Carbuncles are managed by incision and drainage, as well as deroofing and excision. **Objective:** To compare incision and drainage with deroofing and excision for carbuncles. **Study Design:** Randomized controlled study. **Settings:** Department of Surgery, Allied Hospital Faisalabad Pakistan. **Duration:** 01-07-2020 to 31-12-2020. **Methods:** After diagnosis, patients were divided in two groups by simple random sampling. Group A underwent I & D under GA. Group B underwent deroofing and excision under local anesthesia. All the surgeries were performed by consultant with minimum 3 year post fellowship experience. The wounds healed within two to four weeks, without major cosmetic appearance. Both the groups were compared for efficacy. All the data was entered on predesigned proforma. **Results:** Mean age of patients was 39±8 years. There were total 77.78% males and 22.22% females. Size of carbuncle was >5cm in 44.44% patients and <5cm in 55.56% patients. Efficacy was 77.78% in group A and 88.89% in group. **Conclusion:** In treating carbuncle, the De-roofing and excision is a preferable technique as compared to Incision and drainage.

Keywords: Carbuncle, De-roofing and excision, Incision and drainage, Efficacy.

INTRODUCTION

Carbuncle refers to a cluster of pus-filled lumps forming a contiguous area of infection beneath the epidermis. An infection of the hair follicle(s) that extends to the nearby epidermis and subcutaneous tissue below is known as a carbuncle. A carbuncle is an accumulation of two or more contiguous furuncles. A carbuncle is an infection of one or more hair follicles that extends into the adjacent epidermis and subcutaneous tissue.^{1,2} Basically, the word "carbuncle" comes from the Latin word "carbunculus," which meaning "charcoal." Charak and Sushruta (c. 600–400 BC) identified it as a diabetic consequence.² Furuncles contaminated with *Staphylococcus aureus* are a common source of these lesions. The cosmetic results of surgery can be

unpredictable, particularly when dealing with big wounds or the face.³

In addition to optimizing the patient's underlying pre-existing co-morbidities, treatment for carbuncles involves the prompt administration of antibiotics and quick surgical surgery. If there is a soft tissue defect after therapy, reconstructive surgery may be necessary in the future.⁴ Antibiotics are often used in conjunction with surgery to treat carbuncles, which often entails incision and drainage (I&D) and, in severe cases, a split skin transplant to close the wound.⁵ The typical procedure for removing a carbuncle is an I&D with local anesthetic. A #11 scalpel blade, a curette, and some iodoform packing strips are the standard instruments for I&D. After making an incision with a #11 blade into the carbuncle cavity, the purulent contents are manually expressed.⁶ Deroofing,

which was initially reported in 1959 by Mullins *et al.*, is an easy, conservative, low-cost operation procedure.⁷ The technique entails removing the "roof" from any abscess or sinus tracts and exposing the floor of the afflicted lesions. Deroofing is a straightforward and less intrusive operation. Deroofing has several advantages, including the ability to be performed under local anesthetic, the minimal morbidity and cosmetically acceptable outcomes, and the prevention of contractures.⁸

It is advantageous to have an early clinical diagnosis and rapid surgical care. It is remarkable that research on Carbuncles is so little. The purpose of this study is to compare I&D with carbuncle deroofing and excision based on our experience. Previously, no carbuncle study has been conducted at our hospital. In this study, we collected and evaluated data from our surgical patients.

METHODS

This Randomized controlled study was conducted at the Department of Surgery, Allied Hospital, Faisalabad Pakistan. The duration of the study was 6 months from 01-07-2020 to 31-12-2020.

90 patients (50 in each group) are calculated by WHO calculator at 5% level of significance, 80% power of the study.

Patients of both genders, age from 30 to 60 years undergoing surgery for all carbuncles admitted and treated in our unit were included in the study.

Patients of less than 30 years of age and not consenting to participate in study were excluded from the study.

After an ethical review committee approved the research and informed consent was acquired, patients who met the inclusion criteria had a thorough history and clinical examination as well as baseline tests. After diagnosis, patients were divided in two groups by simple random sampling. Group A underwent I & D under GA. Group B underwent deroofing and excision under local anesthesia. All the surgeries were performed by consultant with minimum 3 year post fellowship experience. The wounds healed in two to four weeks with no aesthetic impact. Both the groups were compared for efficacy. All the data was entered on predesigned proforma.

SPSS version 25 was used to evaluate data obtained. Numerical variables were expressed as mean and standard deviation. Frequency and percentage were used to represent categorical statistics. Chi-square test was employed taking p value less than 0.05 as significant.

RESULTS

Mean age of patients was 39±8 years. There were total 77.78% males and 22.22% females. Size of carbuncle was

>5cm in 44.44% patients and <5cm in 55.56% patients. Both the groups were comparable in terms of basic characters.

Table 1: Basic characteristics of patients (n=90)

Age	39 ± 8 years
Males	70 (77.78%)
Females	20 (22.22%)
Group I- Big Carbuncles (>5cm)	40 (44.44%)
Group II- Small Carbuncles (<5cm)	50 (55.56%)

Table 2: Symptoms number percentage

	Group A	Group B
	N (%)	N (%)
Swelling	45(100%)	30(66.67%)
Pain	45(100%)	40(88.89%)
Fever	38(84.44%)	41(91.11%)
Pus discharge	25(55.56%)	12(26.67%)

Efficacy was 77.78% in group A and 88.89% in group B as shown in table 3.

Table 3: Efficacy in both groups

		Efficacy		Total	P Value
		Yes	No		
Group	Group A	35 77.78%	10 22.22%	45 50.0%	0.042
	Group B	40 88.89%	5 11.11%	45 50.0%	
Total		75 85.71%	15 14.3%	90 100.0%	

DISCUSSION

Diabetics are prone to skin and soft tissue infections, especially if their diabetes is uncontrolled. Carbuncle is a kind of super-ficial soft tissue infection that is associated to hair follicle infection.⁹ Carbuncle is most commonly found in the base of the neck and the back. The skin over these places is coarse, and the tissue's vitality is low. Other locations include the shoulders, hips, thigh, and across the belly.¹⁰ Different people have different ideas about how to treat this old problem with surgery. One group of doctors thinks that carbuncles should be cut out in a wide circle. This is called saucerisation. This includes

cutting out the dead part and the cellulitis around it. When the edges of the surgery are healthy and have no signs of inflammation, the resection is considered to be enough.¹¹ After the wound has healed, a skin graft, secondary suturing, or a local skin flap may be used to close the hole.¹

No research regarding carbuncles has been carried in our hospital previously. Most of international data available on this topic is limited to case reports.^{11,12} Guan Hee T *et al* presented 3 cases treated with I&D. They were followed for 8 weeks to see how they fared. Wound healing was accelerated as a result of I&D. To find the optimal surgical method for the treatment of carbuncles, a randomized controlled trial is required.¹¹ So, the aim of Current study is to provide our experience to compare incision and drainage with deroofing and excision of carbuncle. This is the first study from the tertiary care hospital of Faisalabad, Pakistan. Mean age of patients was 39±8 years. There were total 77.78% males and 22.22% females. Size of carbuncle was >5cm in 44.44% patients and <5cm in 55.56% patients. Efficacy was 77.78% in group A (I&D) and 88.89% in group B (De-roofing and excision). So, this study provides an important insight on two surgical procedures for treatment of carbuncle.

CONCLUSION

In treating carbuncle, the De-roofing and excision is a preferable technique as compared to Incision and drainage.

LIMITATIONS

The study include data from single institution with limited sample size.

SUGGESTIONS / RECOMMENDATIONS

Multicenter trials are required to have more generalizable results.

CONFLICT OF INTEREST / DISCLOSURE

None.

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