

Management of a giant carbuncle on the posterior trunk with excision and grafting

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Abstract

Carbuncle is a painful subcutaneous mass of interconnected infected hair follicles with multiple discharging sinuses. It has predisposition in conditions like diabetes, immune-compromised states, chronic skin diseases etc. The authors present a case of a 67 year old diabetic male admitted in July 2020 at Akbar Niazi Teaching Hospital (ANTH) Islamabad, with a giant carbuncle on his back. Due to its large size, systemic co-morbidity, and increased risk of complications in surgical treatment, a multi-disciplinary team approach was employed. Both general and plastic surgeons were involved, who performed excision and soft tissue coverage respectively. The aim of the surgical intervention methods, like wide excision and debridement, application of vacuum assisted wound closure (VAC), and skin grafting was to minimise the healing time and risk of development of post-operative infection. The patient was surgically managed and sent home in a good condition.

Keywords: Carbuncle; Diabetes; Excision; VAC; Grafting.

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Introduction

Carbuncle is a painful subcutaneous mass of interconnected infected hair follicles and is erythematous and swollen in nature with multiple discharging sinuses. It is formed by the coalescence of multiple furuncles: pus-filled nodules of follicular infections, linked by sinus tracts. It may appear anywhere on the body but the dependent parts are especially predisposed due to friction and pressure.¹ Typical locations for its occurrence are at the nape of the neck, back, buttocks, axillae, groin and face.² The predisposing factors are the associated co-morbidities like diabetes, immune-compromised states, chronic skin diseases, poor hygiene and old age.^{3,4} The most common

causative organisms are bacterial pathogens, staphylococcus aureus and streptococcus pyogenes.^{4,5} Prompt treatment leads to a good prognosis, leaving behind only a scar.³ The initial management involves application of warm compresses and antibiotics.⁶ The surgical options include de-roofing debridement and simple incision and drainage (I&D).⁷

A case involving the management of an unusually large carbuncle on the back is presented herein. Informed consent was taken from the patient before writing of this report.

Case Report

A 67-year old male was presented to the ER of Akbar Niazi Teaching Hospital (ANTH), Islamabad in July 2020, with the history of a painful, swollen mass with purulent discharging sinuses on his back for the last one month which gradually increased in size (Figure-1). The pain was localised and aggravated by lying on his back and relieved by application of local topical antibiotic ointment.

The patient was admitted under the care of the surgical unit and his detailed history revealed that he was a known diabetic on insulin treatment and had a history of intermittent dermatological problems. Examination showed the presence of multiple pus discharging sinuses on the painful site. Similar pustules were also present all over his upper torso, excluding the face.

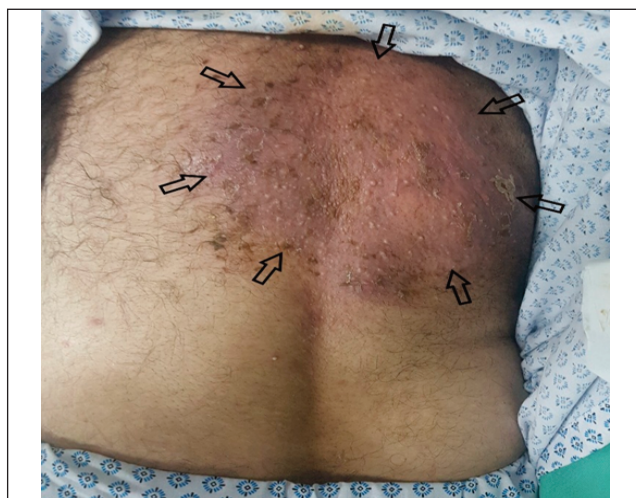


Figure-1: Carbuncle on posterior trunk involving multiple sinuses (pre-operative).

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A diagnosis of carbuncle was made. A 23x21 cm swelling with round, regular edges was found on his posterior trunk which gave a light-brown purulent discharge on the most fluctuant part.



Figure-2: Shaved surface and outline of the Carbuncle.



Figure-3: Marked outline of the Carbuncle.

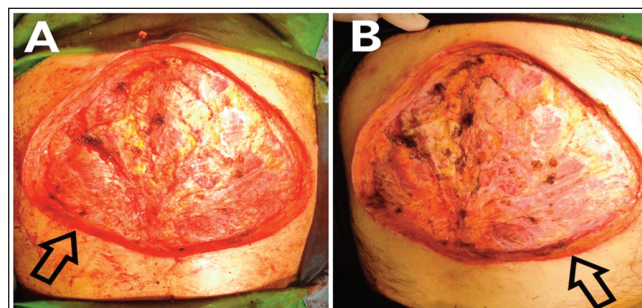


Figure-4: Excised site of Carbuncle: A. Before wound washing, B. After saline irrigation of the wound.

A surgical excision and debridement was planned and all baseline investigations and anaesthesia fitness tests were done. The patient was prepared for surgery under general anaesthesia. The hair hindering the view of the carbuncle were shaved off using a clipper (Figure-2) and the carbuncle boundary was marked (Figure-3).

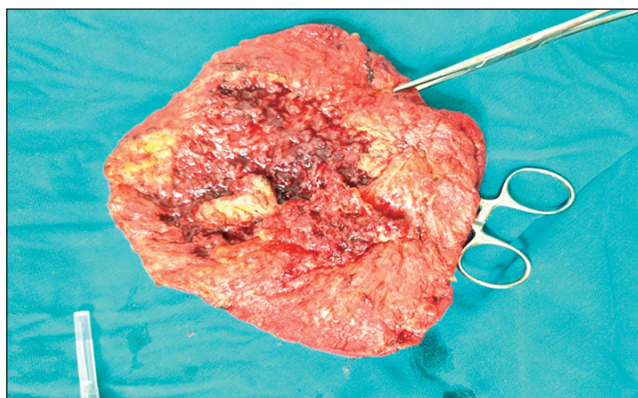


Figure-5: Excised mass of the Carbuncle.



Figure-6: Image showing wound state on the 1st Post-operative day.



Figure-7: Wound dressing after application of V.A.C.

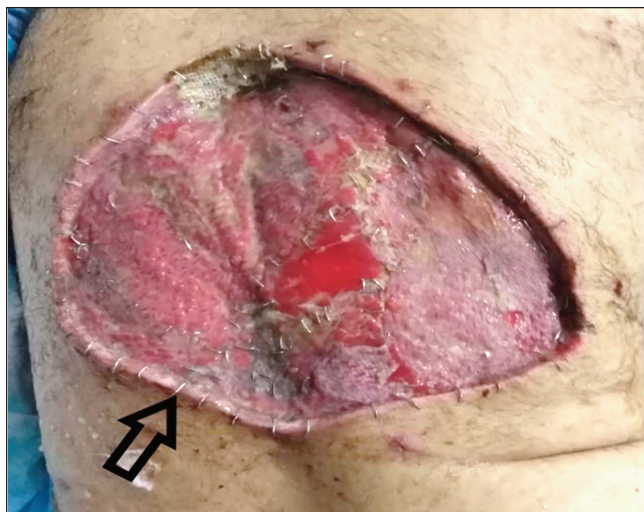


Figure-8: Post-Operative appearance of Skin Graft on the wound site.

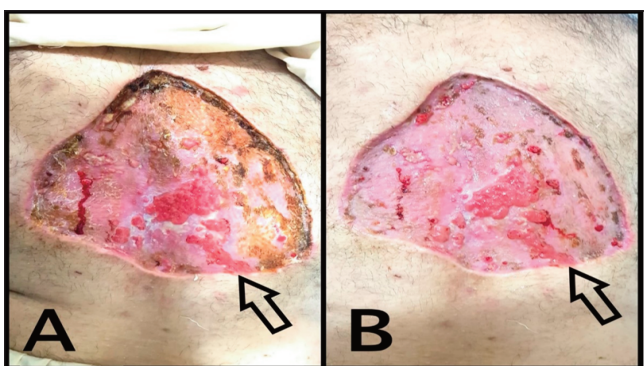


Figure-9: Appearance of 95% granulation tissue on Post-operative follow-up:
(A) Before and (B) After cleansing of the wound site

An incision was made around the marked boundary and an en-block wide local excision of the carbuncle was done till the muscular plane. Part of the infected muscle and infected tissue was also debrided by sharp surgical excision (Figure-4&5).

A pressure dressing was applied on the excised site. After a day (Figure-6), a VAC (vacuum assisted wound closure) dressing was applied at the excision site (Figure-7).

An intermittent pressure of -75 to -100 mmHg was used for VAC application. This negative pressure allowed the suction of all the inflammatory exudate and micro-deformation of the wound, and promoted migration of fibroblasts and quick healing. All these lead to the formation of a healthy granulation tissue, early wound closure and healing, therefore minimising the chances of infection at the wound site.

After five days of VAC application, the patient was prepared for another surgery under general anaesthesia. A split thickness skin graft from the right thigh was harvested and

meshed in a ratio of 1:1.5 by skin Mesher and applied over the wound site with the help of staples (Figure-8).

Bolster's tie was applied over the grafted site with reinforced multi-layered absorption dressing. The dressing was changed on the 5th post-operative day and stapled pins were removed on the 7th day. Post-operative recovery was uneventful and the patient was discharged. On follow up, appearance of 95% granulation tissue was seen on the wound site (Figure-9). On follow up at 3 months, the wound healed completely.

Discussion

Infections of the skin leading to necrosis and gangrene are commonly associated with uncontrolled diabetes. Carbuncle stems from infection of hair follicles residing in the superficial skin and soft tissue.⁸ Untimely diagnosis and treatment can lead to complications like toxemia, sepsis and systemic spread or in most severe cases death. Therefore early diagnosis and treatment with antibiotics and conservative management is the ideal course of action. For surgical treatment, an incision & drainage and debridement is performed.⁹ This is done in order to preserve viable skin, subcutaneous tissue, associated vessels and nerves as much as possible. Subsequently, the surrounding cellulitis is treated with culture specific antibiotics leading to swift recovery and seldom leaving the need for a graft.¹⁰ However, our case presented with a giant mass on his back which got complicated with copious purulent discharge and severe distress.

Due to the exceptionally large surface area of the carbuncle, all conventional surgical treatment methods were dismissed and a wide local excision and debridement was performed. The resultant tissue gap was planned to be filled by skin grafting due to its large magnitude. Pressure bandage was applied on the surgical site, followed by coverage with a VAC dressing after a day. An intermittent negative pressure was applied which ranged between -75 to -100 mmHg. This negative pressure helped drain the wound exudate and deleterious bacterial enzymes and stimulated wound healing.

After five days of VAC dressing, a skin graft harvested from the patient's right thigh was applied to fill the tissue gap. Bolster's tie was applied and multi-layered absorptive dressing was done. As the granulation tissue was considered to be enough for the application of a skin graft and no vital structures were present at the wound site, a skin flap application was rendered unnecessary.

The application of the VAC and the opted surgical interventions enabled swift wound healing and patient recovery, shortening the healing time to a minimum of two weeks.

Conclusion

Carbuncle associated with diabetes mellitus can lead to severe systemic complications. Thus, large post-excision tissue defects need plastic reconstruction. The purpose of presenting this case is to elucidate the wound healing process and the surgical methods opted due to the giant size of the lesion.

Disclaimer: Personal privacy of the patient was not breached during the imaging of the carbuncle.

Conflict of Interest: None.

Funding Sources: None.

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