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# Severe Degloving Injury with Covid-19 Infection – Successful Outcome and Hard Lessons Learnt


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**Abstract:** Here we share an interesting case of severe trauma with tissue loss to nearly half of the back and a lacerated perineum in a Covid-19 positive patient in septic shock. This article highlights our experiences and hard lessons learnt in successful management of this complicated injury. Managing severe trauma is a challenge especially with respiratory failure resulting from Covid-19 infection. The patient reported to the hospital during a very difficult period, when proper medical care was difficult as hospitals and wards were filled with Covid positive patients. Managing patients was difficult especially wearing personal protective equipment round the clock. It's a challenge when an entire team of surgeon, anesthesiologist, nursing staff and paramedics, rose above their daily call of duty to save the patient for her children. It was a fight against time and an many unknown enemy over three months for the entire team. The challenge to save a middle-aged patient from the claws of death against all odds was really miraculous. It was highly rewarding to see the patient going back to the family with a smile.

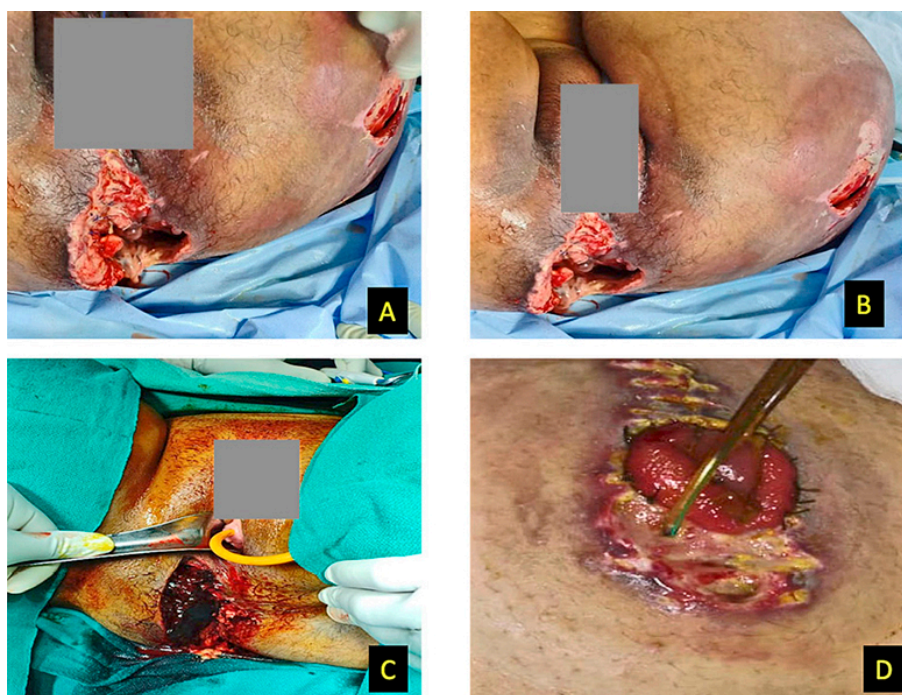
**Keywords:** degloving injury, perineum, Covid-19 infection, vacuum-assisted closure device.

## Introduction

35-year-old female patient transferred from peripheral surgical center to tertiary care hospital in North India during Covid times in Sep 2020. The patient met with a roadside accident on Aug 2020, while riding her two-wheeler. The patient was hit by a speeding vehicle. The patient was thrown on to the ground and sustained injury to bilateral gluteal region, bilateral posterior thigh and lower back. The patient also had deep lacerations in perineum causing disruption of rectum and vagina. The patient was admitted to a local hospital where the patient was operated for laceration of perineal region and rectum. Diversion colostomy was also performed for diverting stool from wound site. The patient was managed there for

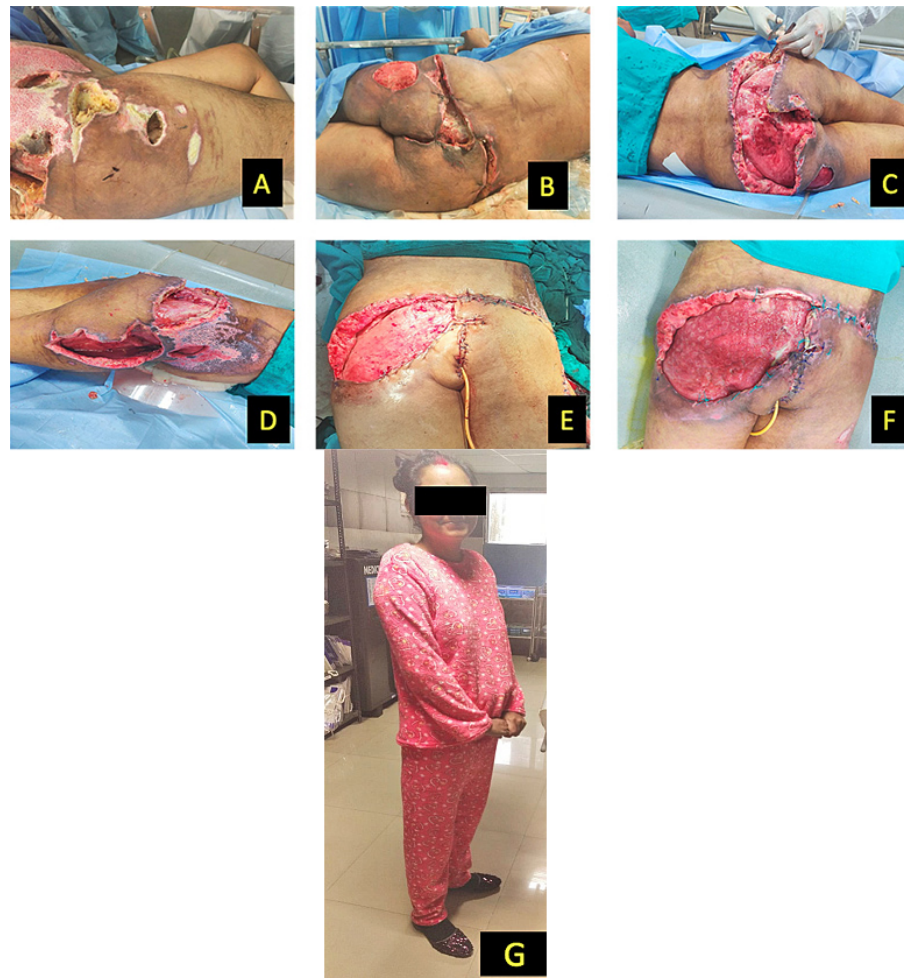
a week. The patient continued to deteriorate and ultimately developed frank sepsis. Her condition was critical and was sent to our center for further management.

On evaluation the patient was found to be Covid RT PCR (Reverse Transcriptase-Polymerase Chain reaction) positive. The patient was admitted in Covid ICU (Intensive care Unit). The patient was in septic shock and critical. Her wounds were foul smelling and necrotic. The patient had tachycardia, tachypnoea and fever of 103° Fahrenheit. Urine output was low. Local examination revealed there was a huge internal degloving injury over the lower back, both gluteal region and both thighs posteriorly with 40x35 cm necrotic skin over the gluteal region bilaterally extending to lower back. There was another deep necrotic skin patch lying vertically from right loin to right upper thigh measuring 50x20 cm. There was collection in deep subcutaneous area with foul smelling discharge. There was no distal neurovascular deficit in bot lower limb. Routine blood investigations revealed elevated leucocytosis. Haemoglobin was 5 gm % there was elevated liver enzymes, urea and creatinine levels. Procalcitonin levels was elevated with toxic granules in peripheral blood picture. Viral markers were Negative. Chest X-ray revealed multiple lower zone opacities. X-ray pelvis and abdomen were normal. USG abdomen was normal [Figure 1].



**Fig. 1.**

A – Devastating perineal wound; B – Area of skin necrosis seen over left gluteal region;  
C – Perineal tear extending to Vagina; D – Temporary diverting loop colostomy



**Fig. 2**

A – Necrotic right flank wound; B – Area of skin necrosis seen over bilateral gluteal region; C – Post debridement of necrotic gluteal skin; D – Right flank wound post debridement; E – reconstruction of neo anal opening using rotation flap from left gluteal region; F – residual wound pos Negative pressure wound therapy; G – Patient after 3 months of hospitalization ambulant without support

The patient was taken for urgent debridement of the necrotic tissue. All dead skin and soft tissue were excised and wound kept open. The cavities below gluteal regions bilateral thigh and lower back were communicating with each other. The patient subsequently underwent multiple debridement of devitalized tissues over 5 times with an interval of 4–5 days between each surgery for next one month. The patient was transfused with 15 units of Packed blood and 24 units of fresh frozen plasma and 8 units single donor platelets. All surgeries and daily dressings were done under PPE cover. The patient was admitted in the Covid ICU for 20 days till her RT PCR became negative. Meanwhile the patient received multiple blood and blood product transfusion. The patient was on ventilatory support for respiratory failure and pressure support for circulatory failure. The patient was given culture sensitive antibiotics intravenously for the time in intensive care unit. The patient was given low molecular weight Heparin 60IU once daily with antiembolic stockings to prevent deep vein thrombosis. Once the patient was weaned

off from ventilatory and cardiac support the patient was shifted to acute surgical female ward. There the patient was kept on nutritional support. Wound dressings were done later using vacuum-assisted closure (VAC) device. The patient was continued with nutritional support and deep vein thrombosis prophylaxis. After two sittings of negative pressure wound dressings residual wounds contracted and showed signs of good granulation tissue. The anal opening was reconstructed using rotation flap from the left gluteal region. Right sided raw area and the sacral region was reconstructed with rotation advancement flap from left thigh posteriorly. Rest of the wound was closed with split skin graft [Figure 2]. The patient was later managed in prone position till the graft settled. The patient was made ambulant after 9 days post grafting with support. Presently the patient is discharged and is happy with her family.

## Discussion

Post-traumatic closed degloving injuries or internal degloving injuries occur deep to subcutaneous tissue. In 1853 French physician Maurice Morel Lavallee described this lesion [1]. These injuries result due to abrupt tangential separation of skin and subcutaneous tissue from deep fascia. The space arising of such an injury, over a period of time gets collected with blood and serous fluid. A great amount of clinical suspicion is required for diagnosing these type of lesion. Most of the time these injuries are missed and only to be found later in course of admission. The collection in these spaces may resolve spontaneously or become encapsulated and persists. If the collection persist it may lead to infection or superficial skin necrosis over period of treatment.

Literature review suggests that these lesions are rare to be seen bilaterally [2]. However, we are faced with the challenge of managing a infected extensive degloving injury over the weight bearing areas of back and bilateral upper thigh. Injuries like internal degloving needs to be looked for and managed at the earliest to prevent later devastating complications like we encountered here [3]. Here together with disruption of perineum the patient was in septic shock and Covid positivity. Dressings and wound management were difficult and cumbersome due to extensive tissue damage and requirement of dressing changes in supine position. In addition, the presence of a colostomy many a time resulted in wound soiling and dressing problems.

Management involved wearing of personal protective equipment [PPE] by staff and doctors increased the financial cost of treatment. It also made dressings difficult and surgical procedures to last longer than normal. Difficulty was experienced with debridement and suturing due to fogging of googles and sweating of surgical team wearing PPE for longer duration. We also required ventilatory support for 4 days due to patient not maintaining saturation. This invasive airway management was very dangerous for the paramedics and doctors especially with Covid infection.



There was requirement of multiple blood and blood product transfusion. Together with sepsis and an ongoing Covid scenario there was a paucity of donors. We have to screen many potential donors for Covid and then permitted to donate blood. Patient was not able to see the faces of care givers due to wearing of PPE and family members were not permitted to visit the ward. This had a great psychological toll on the psyche of the patient. The patient precipitated with emotional break downs and depression [4]. This had a very negative impact on wound healing and compromised the co-operation of patient during dressings. The help of psychiatrists was constantly sorted, and support was given with medication and counselling sessions after the patient was extubated by treating surgeon and nursing staff. Multiple surgeries over repeated successions results in severe catabolism and decreased immunity and poor wound healing. The patient was taken up for debridement and other surgeries for 8 times. Valuable Time was achieved between surgeries were obtained by using vacuum assisted closure for 4 to 5 days [5]. This was more beneficial physically and financially due to lesser dressing changes using PPE. This also resulted in lesser exposure of medical staff to Covid infection.

The patient was initially depressed, and her nutritional intake was poor. However, with motivational talks and her willing to live to see her family the patient began to accept the nutritional challenge. After 3 months of coordinated and combined efforts of the entire hospital team and her wish to live resulted in a positive outcome.

## Conclusion

Degloving injury is a major trauma and we need a great amount of suspicion in early identification and management. Managing complex wounds like this, will improve if we do not stop treatment, step by step and by day-by-day improvement happens in small increments. Covid infection do resulted in exponential increase in cost of management. Technical and practical problems do exit in wearing PPE and managing patient dressings and doing surgeries. Psychiatric problems are high in patients admitted to intensive care units seeing only PPE donned care providers and not seeing faces of their near and dear. With consisted hard work and determination and a concentrated teamwork we can save many of these critical patients and send them back home with a smile.

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