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## A cause of severe sacral injury, sledding with a plastic bag: Case report



Tahsin Görgülü\*, Merve Torun

Bulent Ecevit University Medical Faculty Department of Plastic, Reconstructive and Aesthetic Surgery, A blok Kat:3 Kozlu-Zonguldak, Turkey

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## ABSTRACT

**INTRODUCTION:** Various injuries are associated with winter sports, of which the most frequently encountered are traumas to the extremities. Sledding on hills using plastic-based materials appears to be one of the major forms of entertainment for children living in cities during winter. However, this can lead to injury because such areas are inappropriate for winter sports.

**PRESENTATION OF CASE:** We herein document a case of a 32-year-old male who presented to the emergency department following severe injury to the sacral region, caused by contact with a metal object while sledding with plastic bags. Patient had sacral defect including coccyx and sacral vertebrae and soft tissue. Primary closure, vacuum assisted closure and reconstruction with de-epithelized skin flap techniques were performed in 35 days period after injury.

**DISCUSSION:** Winter sports are associated with a wide variety of injuries, but tissue defects are rare. Seroma formation due to dead spaces can occur in traumas causing bony and soft tissue loss in sacral region as seen in our case. In order overcome this problem primary closure can be delayed or defect can be filled with a bulky flaps.

**CONCLUSION:** This case represents the first report of this particular combination of injury and treatment.

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## 1. Introduction

Various types of injury can occur during winter sports participation, but fractures and subluxations of the upper and lower extremities are the most-frequently reported, and vary according to the equipment used and the location of the activity [1–6]. Certain “slushy” areas, in city centers following snowfall, are used extensively as virtual “ski resorts”, particularly by children. However, inappropriate materials, such as plastic bags and basins, are frequently employed as sleds. The majority of the injuries associated with this winter activity that we encounter are blunt traumas due to crashes. However, life-threatening injuries are rare. In the present case, the patient presented to the emergency service with a severe sacral injury caused by contact with a metal object while sledding using a plastic bag.

## 2. Case

A 32-year-old, otherwise-healthy male patient was transferred to our emergency service by ambulance from the site of the accident. According to the patient, the injury occurred while sledding at high speed in a “slushy” area using a plastic bag. However, the

patient was unaware of the precise means by which the injury was incurred. During field research, a metal object of 7-cm diameter and ~10-cm height that had been nailed to the ground to prevent landslides was discovered. According to the patient, contact occurred after he left the ground during a period of particularly high-speed sledding. Tissue particles and traces of blood located in the immediate vicinity of the object confirmed this contact. The patient was conscious, cooperative and responsive, and presented with a tissue defect measuring approximately 15 × 6 cm, without active bleeding, at midline beginning 1 cm posterior to the anus (Fig. 1).

The patient's hemoglobin level was recorded as 6.0 g/dL. Blood pressure was 90/70 mm-Hg, pulse rate: 145/min, respiratory rate: 15/min, and temperature: 36.7 °C. Oxygen saturation taken with pulse oxymeter was 90%. 3 units of fresh blood transfusion was initiated immediately.

Computerized tomography indicated loss of the coccyx and sacral vertebrae, and multiple particle fractures of the sacral hiatus and left lower dorsal sacral foramen (Fig. 2). The patient was subjected to an operation, together with general exploratory surgery.

## 3. Operative procedure

The patient was placed under general anesthesia, following which the sacral defect was irrigated using 3000-cc saline. During exploration, it was discovered that the soft tissue of the rectum

\* Corresponding author. Tel.: +90 532 351 60 64; fax: +90 372 222 09 99.  
 E-mail address: [tahsinmd@gmail.com](mailto:tahsinmd@gmail.com) (T. Görgülü).



Fig. 1. Sacral defects during the emergency procedure.

was exposed, and that the coccyges and sacral bones were partially absent. The spinal canal was open, but there was no sign of cerebrospinal fluid leakage. Bone debris observed in this area was debrided. Sharp bone endings were excised. A negative pressure drainage tube was placed into the defect area, and cutaneous and subcutaneous layers were repaired, following which the operation was terminated. Our general surgeon did not suggest loop colostomy in this emergency surgery.

**4. Postoperative follow up**

Upon observing minimal drainage, drainage tubes were removed on postoperative day 5, with pressured dressing then applied. On all previous days, fresh dressings had been applied. The patient was in good general condition when discharged on postoperative day 10. On postoperative day 20, the patient reapplied to

our clinic citing fluid collection following excess effort. Seroma was present at the site; wound detachment had occurred and a pouch was detected in the injured region. Minimal necrotic tissue and sacral bone remnants were present at the floor of the pouch. Negative pressure wound dressing was applied during three sessions (Woundex©, Ankara-Turkey). At the end of day 15, granulation tissue covering the deep tissues inside the pouch had developed, such that reconstruction using de-epithelized skin flaps was planned. The patient was then subjected to a further operation. Under local anesthesia, skin flaps surrounding the wound were de-epithelized and advanced to fill the pouch, following which the skin was closed (Fig. 3). No complications were encountered during the 2-year follow-up period (Fig. 4).

**5. Discussion**

Winter sports are associated with a wide variety of injuries, which generally involve the extremities and typically onset in response to falls and crashes. Upper and lower extremity injuries, as well as fractures to the pelvic region, are reported frequently. However, these injuries are typically characterized by closed fractures; they are usually blunt rather than penetrating [1–6]. Although the injury described in the present case is very unfortunate, the absence of rectal injury, cerebrospinal fluid leakage (despite the spinal canal being open) and functional loss due to neural damage is noteworthy. Furthermore, seroma formation due to dead spaces can occur in traumas causing bony and soft tissue loss in sacral region as seen in our case. In order overcome, this problem primary closure can be delayed or defect can be filled with a bulky flap. Reconstruction using de-epithelized skin flaps is commonly employed in operations such as breast reconstruction [7]. However, the use of surrounding skin flaps to effect soft tissue reconstruction by de-epithelizing is rare. Because soft tissue defects are almost always observed in skin defects, such repairs in the sacral region have not been documented previously for traumatic defects [8].

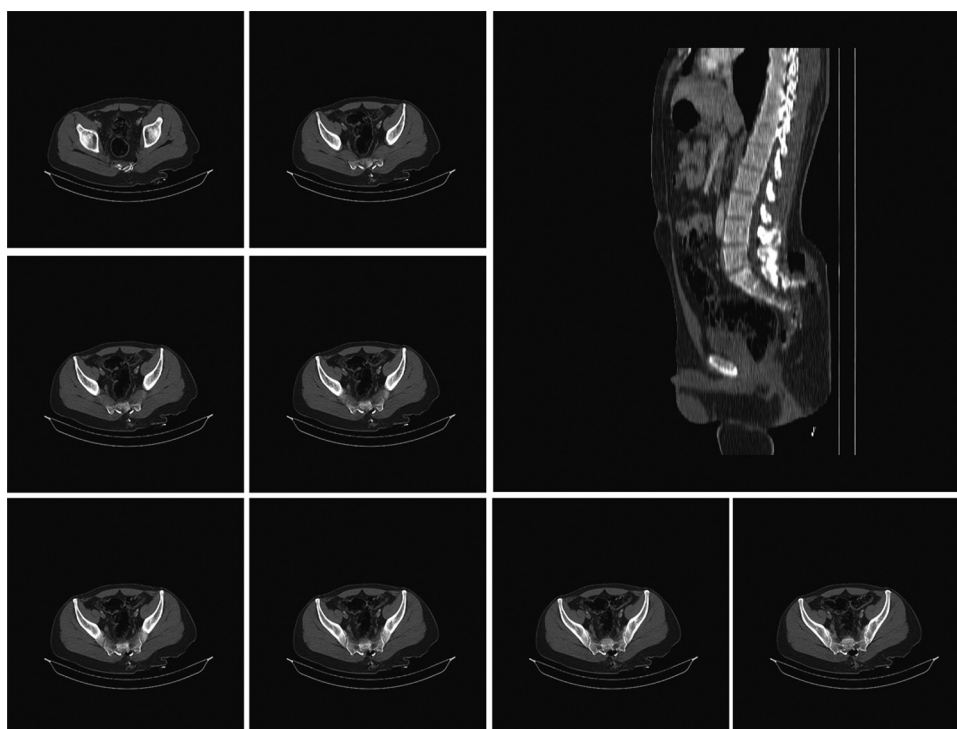
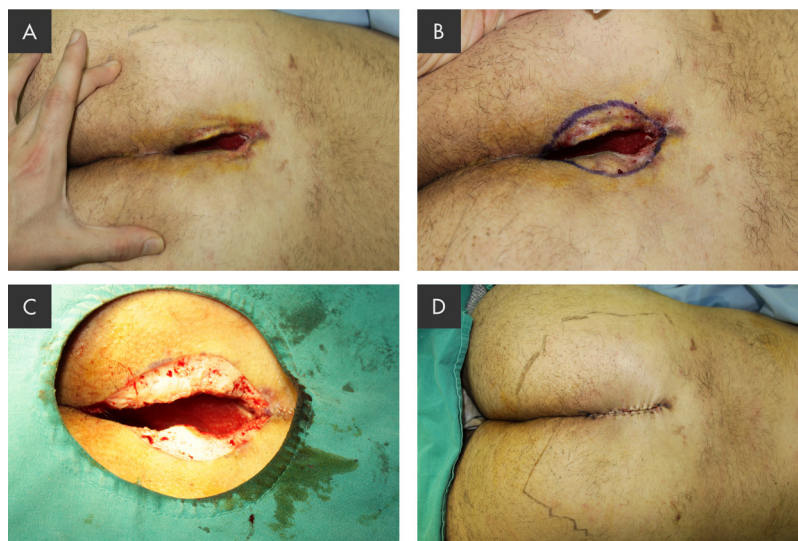


Fig. 2. Computed tomography images of the sacral region.



**Fig. 3.** Planning of the preoperative reconstruction (A and B); preparation of de-epithelized flaps; and (C); the closed skin defect (D).



**Fig. 4.** Appearance following the second operation at week 6 (A); and after 2 years (B).

Our case is the first in the literature by the type of injury. According to our present experience, we believed that, primarily skin closure can cause seroma formation in sacral traumas with massive bone and soft tissue lost. Therefore, reconstruction with soft tissue flaps or waiting to fill dead spaces with granulation tissue can shorten healing time and de-epithelized skin flaps are good option in where soft tissue lost is the greater than skin loss.

## 6. Conclusion

We believe that this case was important to present, given both the type of injury and the reconstruction technique employed.

## Conflict of interest

The author declared no potential conflicts of interest with respect to the research, authorship, and publication of this article.

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