Case Report

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Amniotic Membrane: Innovative Use in the Coverage of Severe Injury

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Introduction

In severe wounds in which primary closure is not feasible, intervention with alternative coverage is warranted. Success will depend on bed revascularization, graft take, and immobilization in the wound bed. Adherence may be hindered in different anatomical locations, such as limbs or back, leading to graft loss. Several methods have been described for fixation.

Case Report

We report the case of a pediatric multiple-trauma patient with an exposed pelvis wound and extensive fractures in the dorsolumbar region.

Clinical Case

A 9-year-old patient was referred to our center because of a pelvic fracture type C2 according to the Tile classification, also called a Morel–Lavallee lesion: a closed degloving soft tissue injury caused by the abrupt separation of the skin and subcutaneous tissue from the muscle fascia, creating a space filled with blood, lymphatic fluid, and liquified fat (Figures 1).

Classification	Stability	Study definition
Tile A	Stable	A fracture in the os pubis was created 2 cm lateral from the symphysis pubis combined with a large fracture of the os ilium, ranging from the spina iliaca up to the tuber
Tile B1 (50 mm) (100 mm)	Partially stable	A fracture in the os pubis was created through the symphysis pubis and displaced (50 or 100 mm) with a Finochietto rib spreader, causing unilateral rupture of the anterior ligaments of the SI-joint
Tile C	Unstable	Complete pelvic ring instability was created through a fracture of the os pubis and a unilateral rupture of the SI-joint, including disruption of the soft tissue and rupture of the sacroiliac and sacrotuberous ligaments

Figure 1: Tile classification for pelvic fracture.

Morel–Lavallee lesions are common in patients with acetabular and pelvic fractures secondary to high-energy trauma (Figures 2 and 3).

Figure 2: Type C2 pelvic fracture.

Figure 3: Skin injury.

Treatment

AO anterior pelvic stabilization with modular type supraacetabular splint with nails; Debridement of skin lesion after exposure of the right sacroiliac joint fracture; Stabilization of both sacroiliac joints with cannulated screws; Rotation of muscle flaps to cover exposed defects and

placement of a free skin graft; Sealing of the recipient area with human amniotic membrane (Figures 4,5 and 6A-6C).

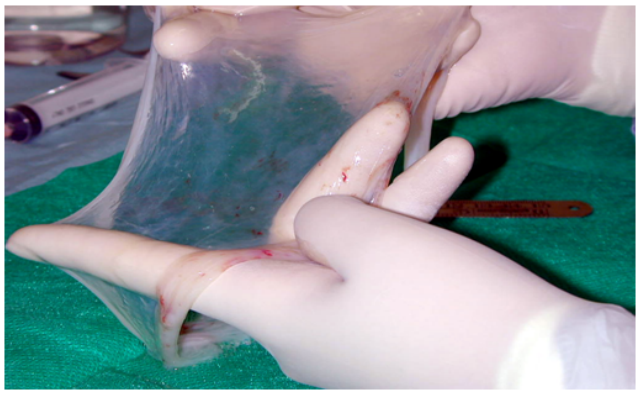

Figure 4: Amniotic membrane.

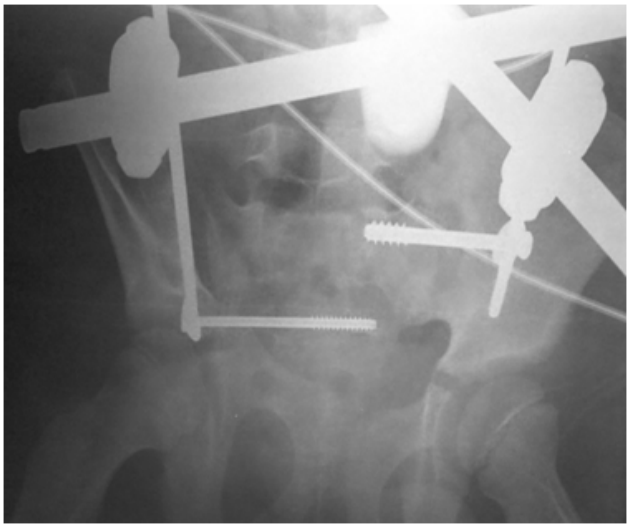

Figure 5: Pelvis stabilization.

Figures 6A-6C: Treatment of exposure.

Results

The use of amniotic membrane allowed restoring the integrity of the skin by fixing the free flap in an anatomical location of difficult adherence.

Conclusion

Amniotic membrane is a highly [1] versatile tissue that is relatively cheap, easy to obtain and to use, process, and store. It is an excellent biological [2-4] dressing to promote healing of the skin in large and deep wounds. It promotes adhesion of the graft because of its tensile strength and induces reepithelialization through chemical mediators. It has anti-inflammatory, antibacterial and antiviral properties [5] and functions as a scaffold in which cells can proliferate and differentiate as it has pluripotent cells among its layers. Amniotic membrane does not cause tumor effects.

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