Case report

Novel use of fibrin sealant in the treatment of Morel-Lavallée lesions

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1. Introduction

A Morel-Lavallée lesion occurs as a result of a closed degloving injury that is not adequately managed in the acute setting. Patients report a localised swelling following trauma, often over a boney prominence, which causes pain and may have associated overlying skin changes and numbness. Traumatic shearing forces separate the skin and subcutaneous tissue from the underlying fascia. This disrupts perforating vessels and nerves and creates a potential space that acutely fills with blood, lymph and fat, both necrotic and viable. The acute haematoma, if not evacuated, may necrose the overlying skin if large or, if smaller and the skin survives, will develop into a chronic swelling with a well defined capsule – the Morel-Lavallée lesion. Victor Morel-Lavallée, a French surgeon, was the first to describe post traumatic subcutaneous ‘effusions’ of the tissues over the greater trochanter in 1853. Since this description has been synonymous with all degloving type injuries regardless of location.

The imaging modality of choice is magnetic resonance imaging (MRI). Findings include a well-defined lesion with tapering margins that fuse with adjacent fascial planes. The MRI may demonstrate a fluid-fluid level, a loculated collection and frequently a capsule.

The management of Morel-Lavallée lesions has included conservative compressive dressings, percutaneous drainage and surgical debridement. More recently, sclerodermosis using doxycycline or alcohol has been described.

None of the management strategies described to date have been particularly successful. We propose the use of Tisseel®, a fibrin sealant, as a treatment option and report two cases. Tisseel® is a two-component fibrin sealant made from pooled human plasma. When combined, the two components mimic the final stage of the blood coagulation cascade. It is currently indicated for use as an adjunct to haemostasis and is often used in the application of skin grafts as it renders them more resistant to shearing forces that could result in graft loss. The theory behind recurrence of Morel-Lavallée lesions is incomplete excision of the lesion or obliteration of the potential space leading to re-accumulation of the haem-serous fluid. We hypothesized that after excision of the lesion capsule, the use of a fibrin sealant would enhance successful elimination of the space therefore preventing recurrence.

2. Technique

A preoperative MRI scan was performed to delineate the internal anatomy of the lesions and plan the surgical approach.

The surgical procedure involved incision through the soft tissues directly over the lesions with subsequent excision of the lesion and capsule whole. Haemostasis was assured and the cavity thoroughly washed out. A percutaneous drain was inserted before the application of Tisseal® to the entire surface of the cavity. Manual compression was then applied for 5 min before the skin was closed in layers and a pressure garment was fitted. Post-operatively the patients were mobilised early and the drains were

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removed after 48 h. The pressure garment remained in situ for three weeks in total. Follow-up consisted of reviews at 1, 3, 12 and 24 weeks after discharge.

3. Case report

Case 1 – a 52 year-old gentleman who presented with a large, uncomfortable swelling on his left flank secondary to a road traffic collision 18 years prior to referral. Previous surgical drainage had been undertaken at the time of the injury but the swelling had recurred (Figs. 1 and 2).

X-rays taken by the Orthopaedic surgeons revealed no bony abnormality and he was referred to the plastic surgery team with the preliminary diagnosis of a soft-tissue sarcoma. An MRI revealed a two ‘multi-loculated haemorrhagic fluid collections with features consistent with a Morel-Lavallée lesions’ (Figs. 3–6).

Histology reported a cystic lesion with no evidence of cellular atypia or malignancy. The patient did not develop any
post-operation complications and was discharged with complete clinical resolution at 6 months post-operation (Figs. 7 and 8).

4. Discussion

Morel-Lavallée lesions are problematic for both patients and surgeons alike. Successful management of such lesions is difficult. Extensive debridement alone often results in post-operative complications and recurrence. Although recalcitrant Morel-Lavallée lesions can successfully be treated with doxycycline or alcohol sclerodesis, these management strategies do not stimulate the natural wound healing process and entail the introduction of a synthetic compound. There are potential complications with the use of alcohol or doxycycline such as skin burns and allergic reactions that are not risks with the use of a fibrin sealant. Given the promising results we have seen, a combination of surgical excision of the lesion and the application of a fibrin sealant represents a viable option in the management of Morel-Lavallée lesions.

References