



The Morel-Lavallée lesion: a conservative approach to closed degloving injuries

Morel-Lavallée lezyonu: Kapalı soyulma yaralanmalarında konservatif yaklaşım

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Amaç: Pelvis ve alt ekstremitelerde kapalı soyulma tarzı cilt yaralanmaları (Morel-Lavallée lezyonu) saptanan hastalarda konservatif yaklaşım ile tedavi sonuçları değerlendirildi.

Çalışma planı: Beş erkek hastada (ort. yaş 25.6; dağılım 6-40) Morel-Lavallée lezyonu tanısı kondu. Lezyon nedeni üç hastada araç altında ezilme/sıkışma, ikisinde araç içi trafik kazası idi. Lezyonların üçü pelvis kuşağında (2 lumbosakral, 1 lateral lomber), ikisi gluteal ve trokanterik bölgede yer almaktaydı. Tüm hastalarda lezyon bölgesi elastik sargılarla veya elastik korse ile komprese edildi. Üç hastaya eşlik eden pelvis kırıkları nedeniyle cerrahi tedavi de uygulandı. Fluktuasyonun ortadan kalkması ve cildin sağlam cilt ile aynı hareketliliğe kavuşması lezyonun iyileşmesi olarak değerlendirildi. Hastaların ortalama izlem süresi 23.6 ay (dağılım 10-41 ay) idi.

Sonuçlar: Femur diafiz kırığı ve anal bölgede derin cilt kesisi olan bir hastada lumbosakral bölgedeki lezyon geç fark edildi ve sakrum üzerinde bası yarası ve enfeksiyon gelişti. Gluteal ve trokanterik bölgede yaralanması olan bir diğer hastada aspire edilen serohemorajik sıvı tekrar ortaya çıktı. Elde edilen aspiratta üreme saptanmadı. Bası yarası olan hasta hariç tüm olgularda soyulan cilt bölgesinde nekroz veya enfeksiyon görülmedi ve ortalama altı haftada (dağılım 4-12 hafta) iyileşme sağlandı. Son kontrollerde hastaların hiçbirinde kronikleşme veya nüks saptanmadı.

Çıkarımlar: Lezyon üzerindeki cildin sağlam olduğu ve aşırı sıvı birikiminin olmadığı pelvis ve gluteal bölgedeki kapalı soyulma yaralanmalarında konservatif tedavi ile iyileşme sağlanabilmektedir.

Anahtar sözcükler: Kaza, trafik; bandajlama; debridman; deri/yaralanma; yumuşak doku yaralanması/tanı/komplikasyon/terapi; yaralanma, penetran olmayan/etioloji/tanı.

Objectives: We evaluated the results of conservative treatment for closed degloving injuries (Morel-Lavallée lesion) of the pelvic girdle and lower extremities.

Methods: The Morel-Lavallée lesion developed in five male patients (mean age 25.6 years; range 6 to 40 years) due to crush under a vehicle (n=3) and traffic accidents (n=2). The lesions were localized in the pelvic girdle in three cases (2 lumbosacral, 1 lateral lumbar) and gluteal and trochanteric regions in two cases. Treatment was performed with compressive elastic bandages or corsets in all the patients, three of whom also underwent surgery due to accompanying pelvic fractures. Healing was defined as the loss of fluctuation and elicitation of the normal mobility of the injured skin on manual examination. The mean follow-up period was 23.6 months (range 10 to 41 months).

Results: Sacral decubitus ulcer developed in a patient in whom the detection of the lesion was obscured because of an associated femoral fracture and a perianal deep soft tissue lesion. Another patient with a wide fluctuating lesion in the gluteal-trochanteric region required aspiration, which yielded a negative culture. However, the lesion recurred early. Except for the patient with a sacral decubitus ulcer, all the lesions healed within a mean of six weeks (range 4 to 12 weeks) without any infections or necrosis. No recurrences were detected during the follow-up period.

Conclusion: Closed degloving lesions in the pelvic and gluteal regions can be managed conservatively when the overlying skin is intact and the fluid accumulation is not excessive.

Key words: Accidents, traffic; bandages; debridement; skin/injuries; soft tissue injuries/diagnosis/complications/therapy; wounds, nonpenetrating/etiology/diagnosis.

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Morel Lavallee lesion is defined as the detachment of skin and subcutaneous tissues from underlying fascia with resultant a closed space in which haematoma and liquefied fat tissues accumulates. As a result of the detachment of subcutaneous tissues from underlying aponeurotic tissues due to direct, tangential trauma, transaponeurotic vessels are subjected to shear which results with hematoma or lymphocel formation.

Closed degloving skin lesions (Morel Lavallee lesion) which may be associated with pelvic fractures, frequently appears as a fluctuating fluid accumulations around the pelvic girdle and trochanter major. Since it may threat a wide skin area by developing necrosis, and may cause a delay on early surgical approaches, closed degloving skin lesions are considered as a severe clinical entity. On the other hand underlying fractures were at severe risk since these lesions may become infected.

As a clinical rarity and accordingly the possibility of overdiagnosing, five patients with Morel Lavallee lesion were reviewed with their management strategies in this study.

Patients and Method

Morel Lavallee lesion was diagnosed in five patients between January 2000 and December 2002 (Table 1). All patients were male and the mean age was 25.6 (range 6-40). Mean follow-up time was found to be 23.6 months (range 10-41).

Lesions were localised on the pelvic girdle (n=3) (lumbosacral in two, lumbar lateral in one) and gluteal and trochanteric regions (n=2). Crush under an automobile (n=3) and in a car traffic accident (n=2) was found to be responsible in the etiology. Except a case (#3) who was crushed between the tractor tyre and soil basement, pelvic fractures were present in all cases. While this patient with another one (case #5) who was a Tile type B1 pelvic fracture were treated conservatively the remaining three cases were surgically treated for their pelvic lesions. Posterior sacral bar and anterior pelvic external fixator was applied in a 6 yrs-old boy (case #1) who has a Tile type C2 pelvis fracture. Plate-screw osteosynthesis via anterior approach was performed in a Tile type C1 pelvic fracture of a 14 yrs-old patient who were crushed under an automobile (case #2). Anterior pelvic external fixator was applied for a 38 yrs-old patient (case #4) with Tile type B2 pelvic injury.

Conservative treatment was performed with elastic bandages or corsets in closed degloving skin lesions. In one case the lesion was aspirated also. Disappearing of the fluctuating lesion and the loss of excessive skin mobility with manual examination was accepted as the healing of the lesions. Local findings of the infection aswell as local skin circulation over the lesions were searched during the management of these lesions.

Table 1: Clinical details of five cases with Morel-Lavallee Lesion.

Case	Age/ Sex	Aetiology	Site of lesion	Associated orthopaedic injuries	Other associated injuries	Treatment of the M-L L	Healing time of the M-L L	Other treatment	Complication
1	6/M	Crush under automobile tyre	Lateral lomber	Type C2 pelvic fracture	Bladder neck rupture	Conservative	3 weeks	Sacral bar+ bladder neck repair	–
2	14/M	Crush under automobile	Lumbo- sacral	Type C1 pelvic and +femoral diaphysis fracture	Perianal soft tissue injury	Debridement + local flap	10 weeks	ORIF for the pelvis and femur	Sacral decubitus
3	40/M	Crush under tractor tyre	Lumbo- sacral	–	–	Conservative	5 weeks	–	–
4	38/M	In a car traffic accident	Gluteal- trochanteric	Type B2 pelvic fracture	–	Aspiration (Conservative)	12 weeks	Anterior pelvic external fixator	Recurrence of the lesion
5	30/M	In a car traffic accident	Gluteal- trochanteric	Tip B1 pelvic fracture	–	Conservative	4 weeks	–	–

*M-L L: Morel-Lavallee Lesion, ORIF: Open Reduction and Internal Fixation .

Results

Infection was developed in a patient with Tile type C1 pelvic fracture. This patient was injured due to crush under an automobile as a result of sudden release of the floor jack. Decubitus ulcer was developed over the skin lesion which was initially overdiagnosed and the infected wound was closed with a local flap. The patient has also a femoral diaphysis fracture and a deep perianal wound.

In a patient (case # 4) who has Tile type B2 pelvis fracture with associated Morel Lavallee lesion on his gluteal and trochanteric region, excessive serohemorrhagic fluid was aspirated from the lesion but was repeated in a short time (Figure 1 a and b) and remained sterile. In all cases the fluctuating lesions were compressed with elastic bandages or corsets. Except the case that was complicated by decubitus ulcer, no wound necrosis or infection was developed over the degloving skin wounds. Mean time of hospital stay for the noncomplicated four cases was found to be 17.2 days (range 5-40). Lesions were considered to be healed in a mean time of six weeks (range 4-12). In all cases managed conservatively, intralesionary content was fully resorbed and the detached skin was reattached with the underlying tissues. Lesions were not repeated or became chronic.

Discussion

When polytraumatised patients were seen at the emergency service, generally trauma teams concentrate on severe injuries or hemodynamic stability at first, but possible associated injuries which are not

so severe or not life threatening may be overdiagnosed especially in patients who were unconscious or in a bad general status. Contusions or abrasions of the skin over the different sites of the body when overdiagnosed initially, may result as severe decubitus ulcers in the following days. In one of our cases with pelvis fracture and associated femoral fracture and perianal wound, our trauma team was overdiagnosed the sacral Morel Lavallee lesion which might be more innocent initially. This might be due to the obligatory supine position of the patient due to the associated injuries or our fixed concentration to the perianal wounding with the pelvis fracture. During the initial management of the patient since the precautions against decubitus ulcer were not employed earlier, the development of the decubitus ulcer might be facilitated.

In a polytraumatised patient whose fractures and hemodynamic status was stabilised, open or closed skin lesions on the whole body or over the possible surgical sites should be evaluated carefully^[4,5]. Overdiagnosed or despised closed degloving wounds may result with severe complications.

Different treatment modalities of closed degloving wounds were reported in the literature. While some authors advocated compressive bandaging or open drainage^[6,7], more invasive methods such as open debridement from a small incision followed by compressive bandaging were also advocated since the accumulated fluid was found to be infected initially by some others^[1,8]. In order to prevent the widening of central skin necrosis over the lesion site the evacuation of the lesion was also advocated^[9].

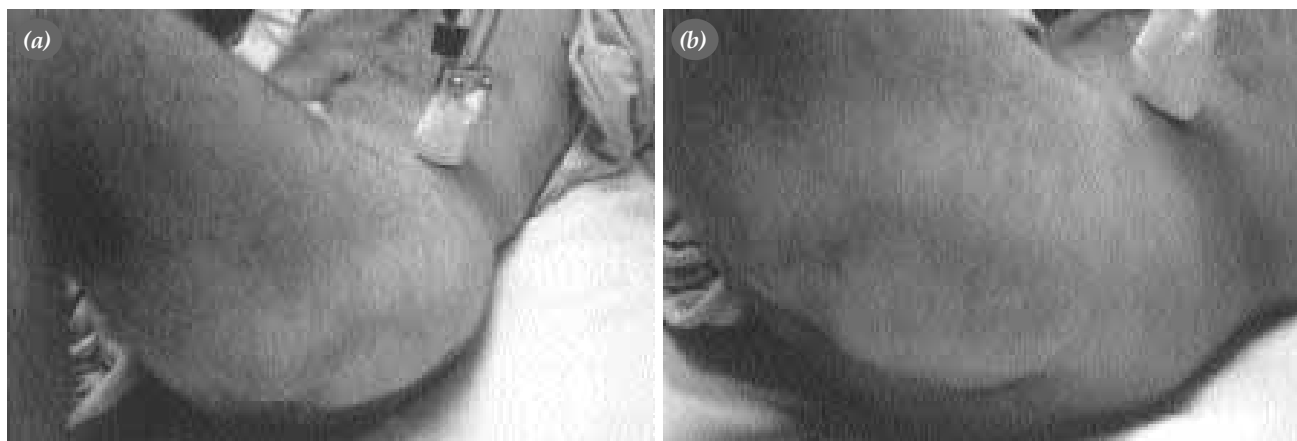


Figure 1. Closed degloving skin lesion (Morel Lavallee) which is lying from the left gluteal and trochanteric region to the lateral side of the thigh (A and B). The patient has Tile type B2 pelvis fracture and treated by anterior pelvic external fixator.

Injection of sclerosing substances or internal drainage with surgical fascial fenestration was also reported in the management of closed degloving skin lesions^[2,6]. Although such skin lesions were reported to be infected by some authors^[1,8], we did not perform invasive methods since there were no severe skin lesions that might be infected in our case series. We applied compression over the affected skin site by using elastic bandages or corsets. In only one case we aspirated the fluid from the lesion since its relatively excessive amount. The fluid accumulation was repated in a short time and the aspirate remained sterile. Because our limited clinical experience and our fears about creating an open wound from a closed and localised injury which has a decreased local tissue resistance, we avoided to perform aggressive methods. The late onset of similar skin lesions which is named as contour deformity in the literature is determined as the residuals of overdiagnosed closed degloving injuries. These injuries were reported to treat with suctioning or with open surgical procedures^[10]. According to such clinical data we think that closed degloving skin lesions can progress without complicated by infection. None of our patients developed contour deformity during follow-up examinations.

Closed degloving skin lesions which were typically referred as Morel Lavallee lesion when developed over the trochanter major^[1,2], may lead to wide skin necrosis and when infection was added this may lead to more severe clinical situations that may complicate the underlying fractures. Unexpected changes may require during any surgical intervention due to overdiagnosed closed degloving injuries. Accordingly, in poltraumatised patients blunt skin trauma should be searched and the body parts which were planned for surgery should be evaluated carefully against closed degloving skin wounds.

A well response to the conservative treatment without further complication may be explained by

the absence of open wounding or necrosis over the skin lesions of four of our cases which were healed by a mean of 6 weeks (range 4-12). In the case that was complicated by decubitus ulcer and infection, initially intact but overdiagnosed sacral Morel Lavallee lesion could not be taken under control despite the measures in the following days. Such complications can be explained by the loss of hygiene due to the obligatory in-bed malposition or associated injuries of the patient.

In conclusion we thought that closed degloving injuries in which there were no excessive fluid accumulation and has an intact overlying skin initially, may respond well to conservative management with compressive bandages or corsets.

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