Efficient Reduction of Swelling and Bruising on Severe Sports Injuries when using Polymeric Membrane Dressings*

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Introduction

In the Swiss Alps we have several major sports events such as the Gigathlon and the Swiss Alpine Marathon. Every year several people are injured. Typical injuries are contusions, road rash, sprains etc. Our hospital takes care of a majority of these patients and since 2007 we have used polymeric membrane* dressings to help reduce swelling and haematomas / bruising caused by these injuries. Based on the positive experiences we had with patients who suffered sports injuries, we started to use polymeric membrane dressings in post-op situations where we often get swelling and haematomas. The goal was to see if the polymeric membrane dressings would also reduce haematomas and swelling in these situations which would lead to both better and faster healing.

Example of a common injury, abrasions on the thigh after a fall in the mountains. Polymeric membrane dressings were applied over the broken skin. Two days later the excoriated skin is clean and beginning to epithelialize. The pale yellowish discolouration is the area that was under the dressing showing the resorption of the haematoma.

Aim

To evaluate the use of polymeric membrane wraps after 12 surgical procedures in regards to reduction of haematoma, oedema and pain as well as patient comfort and ease of handling. (The wraps are an unsterile version of polymeric membrane dressings).

Example 1

54-year old HIV positive patient with tibial fracture complicated by a compartment syndrome after a ski accident. The swelling in the extremity caused postoperative blistering and massive haematoma of the lower leg. Massage for the purpose of lymphatic drainage could not be performed due to the inflamed tissue so we decided to try using polymeric membrane wraps to decrease the swelling. This was the first post-op patient we used the dressings on, prior to this patient we had only used them on sport related injuries that didn't require surgery.

7 days post surgery
(First application of polymeric membrane dressings).
The entire leg was swollen and there were visible signs of infection over the knee. We cleaned the area with an antiseptic solution, polymeric membrane silver dressing was applied over the blistered area, with dry gauze over the suture line, and covered the rest of the leg with polymeric membrane wrap fixated with elastic bandage.

9 days post surgery
2 days later we observed a decrease in tension and a change in the colour of the haematoma. The patient could now begin physiotherapy in the gym.
We continued with the same dressing regime, covering the broken skin with a polymeric membrane silver dressing and the rest of the leg with polymeric membrane wrap.

12 days post surgery
After 5 days treatment with polymeric membrane dressings the skin damage is cleaning up and beginning to granulate. The patient had an elevated temperature but the infection signs were decreasing and the blood culture was negative. The incision which had been associated with the compartment syndrome (not shown here) no longer shows any signs of bruising.

22 days post surgery
15 days with polymeric membrane dressings/wraps and the skin damage is practically healed. Swelling and signs of inflammation are non-existent. The haematomas are totally absorbed. The patient left our hospital the next day after the doctor had removed the black crusts covering the healed suture line. The patient was very impressed by the positive results. The only negative comment was the discomfort of increased heat under the dressings during physiotherapy.

*SportsWrap® and *PolyMem® Wound Dressings with and without Silver
Manufactured by Ferris Mfg Corp, Burr Ridge, IL 60527 USA. This case study was unsponsored.
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Method

The dressings are wrapped or applied in strips onto the injured area without covering the suture line (request from surgeons who want to cover the suture line with dry sterile gauze). Everything was secured by an elastic bandage. The wounds were monitored and redressed daily.

Results

The most impressive results of this treatment is the effect on the haematomas. After only 1-2 days we could see a dramatic change of the colour from blue to yellow in 10 of the 12 patients. The affected tissue became softer and the swelling and tension decreased. In the other two patients the responsible nurse reported no major difference in the resorption of haematoma and oedema.
The evaluation of the pain was a little more difficult, since we treat most post-op patients with pain catheters. In spite of this, 8 patients answered that the dressing was comfortable and that they felt a substantial decrease of tension in the affected area. Two patients said there was no difference and 2 patients felt the warmth of the dressing was uncomfortable.
The dressing was judged as simple to handle by 11 of the 12 patients. The patient who found it difficult to apply had surgery performed on his shoulder.

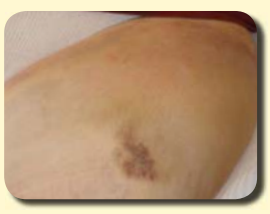
Example 2

A 79 year old woman had a total knee replacement on her left knee. She also had a huge haematoma with subsequent swelling on her thigh due to a punctured vein as a result of placement of a post op pain catheter. The entire leg was stiff due to the massive swelling. Application of polymeric membrane wrap was initiated on the 5th post-op day; prior to that, the patient had lymphatic drainage massage performed by our physiotherapists.

5 days post-surgery
First application of polymeric membrane dressings. Left photo shows the knee after total knee replacement. Right photo shows the thigh with a massive haematoma causing stiffness and pain.

Left photo shows application of polymeric membrane wrap. Suture line covered with standard surgical dressing.
Right photo shows how we covered the large haematoma on her thigh.

9 days post surgery
After 4 days with polymeric membrane wrap. The swelling of the knee and leg has subsided and there are only a few faint traces left of the massive haematoma caused by the pain catheter.



Discussion

Due to our close location to the annual sport events, our hospital is specialized to take care of sports injuries. We used polymeric membrane dressings with acute sports injuries such as haematomas, bruises, contusions and swellings. Due to our positive experience in managing sports injuries we extended the use to the post surgical phase, for the treatment of haematomas and swelling. The positive effects of the polymeric membrane dressings are:

- Faster resorption of haematomas,
- Measurable decrease of swelling, leading to:
  - Decrease of tension
  - Decrease of pain
  - Faster wound healing.

The only negative aspect we have encountered so far is that a few of our patients have reported the increased warmth under the dressing as uncomfortable, especially during physiotherapy. Our staff is also under time pressure, and therefore, filling out feedback forms and test protocol questions is not high on the list of priorities. With these dressings however, the nurses called me with requests of including their patients in the trial. According to them it would be absolutely necessary to treat their patient with polymeric membrane dressings because they have seen such outstanding results with other patients. Additionally, several nurses requested samples for the treatment of contusions or sports injuries for themselves or their relatives. This can only be due to the positive results of these dressings.
Our next plan is to trial the dressings immediately after surgery to see if we can avoid post surgical swelling.