

RESEARCH ARTICLE

FOCUSED PRESSURE OVER THE SURGICAL WOUND IMPROVES THE AESTHETIC OUTCOME.

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ABSTRACT

The pressure focused on a wound leads to its healing, by the effect of the stimulation of arteriogenesis and angiogenesis in the affected area, with a surprising aesthetic outcome. The antibacterial and debriding properties of compression make it a fundamental therapeutic tool in wound management. I checked this effect, treating vascular leg ulcers by means of compression therapy, using a modality which I named “double focal compression bandaging”. The pressure is achieved using a pad-gauzes putted over the wound and fixing it to the skin with adhesive -tape. No signs of infection were detected, and the debridement no was necessary, because the technique involves an autolytic debridement. As an example, we show the aesthetic result of more relevant cases, in 45 patients treated with surgical minor, applying this technique (photographic sequence of the clinical course until its full healing).

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INTRODUCTION

Molndal technique consisted of wound dressing with Aquacel Ag - Hydrofiber. Traditional technique was performed using gauze compresses and hypoallergic adhesives. This technique prevents infection (1). When I started to treat vascular leg ulcers, for many years ago (in 2002), by compression therapy with a modality that I named “Double focal compression bandaging”, I could check the same effect. Applying focused pressure on the wound bed, the infection did not happen. Daily follow-up of the clinical course is necessary to detect any signs of infection, such as cellulitis and/or fever, in which case, if we would prescribe antibiotics (2). Ulcers, excluding neoplastic ulcers, are produced by a tissue perfusion deficit. Reversing it is a condition for its healing, and this can be achieved generating focused pressure in the ulcer, which stimulates arteriogenesis, causing the formation of collateral vessels to correct this perfusion deficit. Infection it doesn't happen. The explanation could be in the antibacterial action of monocytes by increased blood flow at the edges of the wound.

MATERIAL AND METHOD

“Double focal compression bandaging” (Fig.1) is a compression therapy modality, which consists of using two bandages: The first bandage is used to perform focal compression of the wound bed, and the second covers to the first one, to achieve a gradual external compression, from the toes to below the knee, each turn of the band covers the previous turn by 50-70%.

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This way, the area of the ulcer receives the pressure of 3 layers (that of the pressure over the wound bed, and the double effect of the external gradual compression) (3).

The pressure focused on a surgical wound, facilitates the approximation of the edges, avoiding infection and achieving surprising aesthetic outcome. We can achieve this outcome by means of using a simple pad of gauze, placed over the surgical wound, fixing it to the skin with adhesive tape (Fig. 2).

Physiopathology, by means of arteriogenesis and angiogenesis, explains outcomes achieved using the compression. Arteriogenesis is the rapid proliferation of the pre-existing collateral arteries and angiogenesis is a process by which new capillary blood vessels sprout from a pre-existing blood vessel (4). This clinical fact can be explained by a similar effect in the obstruction of a myocardial artery. An obstruction in the myocardial vessels leads to a decrease in blood pressure, behind the stenosis. Blood flow is redistributed through the pre-existing arterioles, that now connect a high-pressure region (pre-obstruction) to a low-pressure region (post-obstruction) (5). This leads to an increase in flow velocity and, therefore, greater shear stress on the pre-existing collateral arteries. This causes a marked activation of the endothelium, which increases in the expression of MCP-1 and of endothelial surface receptors involved in monocyte tethering, rolling, and migration (6,7,8,9). The upregulation of cell adhesion molecules in the proliferating collateral arterioles under conditions of elevated shear stress was confirmed (10). The resulting increased adhesion of monocytes and their transformation into macrophages are required for the growth of these vessels, as these cells produce numerous cytokines and growth factors involved in arteriogenesis. We have not

observed wound complications. Early detection of wound complications is crucial to improving patients' quality of life. GP competency in the proper application of complex dressings is one component that can improve these factors. Effective communication, including documentation, between hospitals, community nurses and GPs ensures smooth management of wound care for patients (11).



Fig. 1. Double focal compression bandaging technique



Fig. 2. Padding-gauzes putted over surgical wound, after minor surgery

In the following picture, we can observe how there is an increase of blood flow, after applying focused pressure on the wound bed (Fig. 3).

RESULTS

We apply compression in surgical wounds (45 patients) with a surprising aesthetic outcome. We apply a padding of gauzes over the wound for increasing the pressure on the surgical suture, and to approximate the edges of the wound. As an example, we report some clinical cases with the photographic sequence of the clinical course of the surgical wound till full healing.

Case report 1 (Fig. 4): A 84-year-old man with a surgical wound on the right superciliary area. We practice minor surgery and surgical points are removed 6 days later. The

photographic sequence shows the clinical course of the wound at 2, 9, 45, 75 and 120 days. We thought that being an elderly patient, could suppose a handicap for the end-outcome, but as you can see this was not so. For best results, pressure should be maintained for the first few weeks.



Fig. 3. In this photographic sequence, we can observe an increasing of blood flow in the wound bed, after applying compression



Fig. 4. Clinical course of surgical wound for fourth months

Case report 2 (Fig 5): A34-year-old man who suffered a trauma on left superciliary area that required surgical suture. Ten months later we can observe the aesthetic outcome.



Fig. 6. Clinical course of surgical wound for ten months.

We compared with another similar patient in which compression was not used. In both cases the surgical suture was performed in a delicate area, and we can see the differences aesthetic outcome, between applying compression or not (Fig. 7).

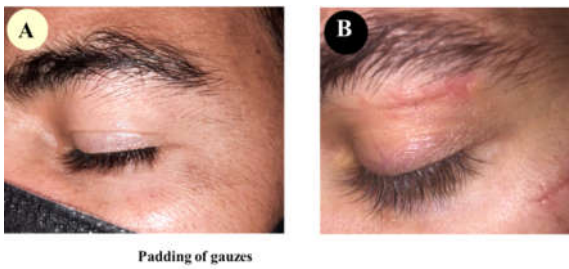


Fig. 7. A/ Patient in which it was used focused pressure over the surgical suture. B/ Patient in which it was used only surgical suture. Observe the differences between the two results

Case report 3 (Fig. 8): A 58-year-old man who suffered a cut on the thumb of his right hand and required minor surgery (Fig. 8).



Fig. 8. Fifteen days later surgery and focused compression on surgical suture

Case report 4 (Fig. 9): A 78-year-old male who suffered a cut on the thumb of his left hand and required minor surgery.



Fig. 9. Five months later surgery and focused compression on surgical suture

Case report 5 (Fig 10): Another similar case.



Fig. 10: Six months later surgery and focused compression on surgical suture

Case report 6 (Fig. 11): A 38-year-old man with an abrasion wound on the right-hand index finger. Surgical suture was not possible, then, we apply focused compression on the wound. The aesthetic outcome is surprising after applying pressure over the wound.



Fig. 11. 3 months later, by applying only focussed compression over the abrasive wound.

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