

[OP172] SAFETY AND EFFECTIVENESS OF THERAPEUTIC MAGNETIC RESONANCE (TMR) IN THE MANAGEMENT OF POST-SURGICAL LESION OF THE DIABETIC FOOT.

Alberto Piaggese¹, Pisa, Italy , Lorenza Abbruzzese¹, Pisa, Italy , Chiara Goretti¹, Pisa, Italy , Elisabetta Iacopi¹, Pisa, Italy , Alberto Coppelli¹, Pisa, Italy

¹*Azienda Ospedaliero-Universitaria Pisana; Sezione Dipartimentale Piede Diabetico - Dipartimento DI Area Medica*

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Free Paper Session: Devices and Intervention 3

Aim: To evaluate the safety and effectiveness of therapeutic magnetic resonance (TMR) in the management of the diabetic foot (DF).

Method: We treated a group of consecutive type 2 diabetic inpatients with wide post-surgical lesions (Group A - N. 10; age 67.7±18.9 yrs, duration of diabetes 22.3±6.6 yrs, 8.1±1.1%, BMI 29.4±2.1 kg/m²), for two consecutive weeks, while admitted, with a low-intensity magnetic resonance equipment, on top of standard treatment. Patients, compared with a matched control group with the same clinical characteristics (Group B), were then followed monthly for 6 months to evaluate healing rate (HR), healing time (HT), rate of granulation tissue (GT) at three months, and adverse events.

Results / Discussion: HR was of 90% in Group A and 30% in Group B (p<0.05); GT was 73.7±13.2% in Group A vs. 51.84±18.77% in Group B (p<0.05). HT in Group A was 84.46±54.38 days vs. 148.54±78.96 days in Group B (p<0.01). No difference in adverse events (5 in Group A and 6 in Group B) was observed throughout the study period.

Conclusion: TMR proved to be effective and safe, on top of standard treatment in the management of the post-surgical lesion of the diabetic foot.

[OP173] DO WE HAVE TO LEAVE THE ABDOMEN OPEN WHEN USING NEGATIVE PRESSURE WOUND THERAPY IN ABDOMINAL SEPSIS?

Olof Jannasch¹, Magdeburg, Germany , Christiane J. Bruns¹, Magdeburg, Germany , Ihle Peter², Mühlhausen, Germany , Pawel Mroczkowski¹, Magdeburg, Germany

¹University Hospital Magdeburg; General, Abdominal & Vascular Surgery

²Hufeland Hospital ; General, Abdominal, Thoracic Surgery and Proctology

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Aim: Negative pressure wound therapy (NPWT) is established in therapy of abdominal sepsis. Prolonged use of NPWT leads to non closure of the abdominal fascia and development of further complications and ventral hernia formation. The aim of this study was evaluation of the novel PLV-Woundrainage – a modification of the usually used NPWT - and introduction of an universal connector for NPWT in patients with abdominal sepsis.

Method: From 1 August 2011 to 30 September 2013 the PLV-Woundrainage was used for treatment of secondary and postoperative peritonitis. In contrast to the usually applied NPWT an adhesive mesh and 1-2 drains are placed between two polyurethane foams (380 x 250 x 15 mm). Drains are diverted laterally of the laparostomy wound. Afterwards the abdominal wall is closed over the foams. For NPWT a novel universal connector ensures compatibility with every commercially available suction pump/system.

Results / Discussion: PLV-Woundrainage was used in 14 patients so far. Duration of treatment ranged from 7 to 25 days. Time interval for changing of dressing and foams was 3 to 5 days. Fascia and skin closure was achieved in all patients. Surgical reinterventions for bleeding, intraabdominal abscess or injury of internal organs were not necessary. We did not observe formation of an intestinal fistula.

Conclusion: PLV-Woundrainage is an interesting alternative for treatment of peritonitis using NPWT. The device can be combined with commercially available NPWT systems using the universal connector. Main advantage is prevention of fascial retraction during therapy compared to conventional open abdomen management or classic NPWT in abdominal sepsis.

[OP174] EPIDERMAL AUTOGRAFT - FUTURE APPLICATION FOR WOUND AND BURN TREATMENT

Moti Harats¹, Ramat Gan, Israel , Marie Jaeger¹, Ramat Gan, Israel , Ariel Tessone¹, Ramat Gan, Israel , Alon Liran¹, Ramat Gan, Israel , Oren Wiessman¹, Ramat Gan, Israel , Josef Haik¹, Ramat Gan, Israel

¹*Sheba Medical Center; Department of Plastic and Reconstructive Surgery, and Burn Unit*

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Aim: Skin grafting for closure of wounds is one of the most common and basic surgical procedures performed and many times require Operating Room and general anesthesia. Complicated wounds, morbid patients and systemic wound healing problems present a greater treatment challenge. Epidermal autografts constitute a superior challenge to the surgeon and permit an easier and faster take with minimal donor site morbidity. Primary examination as well as future application and indications for treatment were evaluated.

Method: Series of patients presented with chronic wounds, burns and scars were initially treated according to standard of care and evaluated on daily basis. Wounds and burns found compatible for skin graft closure were grafted bed side using Automated Epidermal Harvesting System. Suitable burn scars and post STSG underwent dermabrasion followed by an application epidermal autograft. This method use the application of heat and negative pressure supporting the formation of blisters cleaved at the lamina lucida and providing autologous epidermal keratinocytes micrograft with minimal donor site trauma and without anesthesia.

Results / Discussion: Epidermal autografts were used for acute and chronic wounds, burns and post burns scars involving torso, face, breast and lower extremities. Improved or complete wound healing was noticed in most of the patients, treated scars presented improvement of texture and pigmentation, mean follow up was 8 months. Donor site closure was significantly shorter than traditional grafting methods. Similar to other reports, a lack of graft survival in the majority of patients suggests different healing mechanism than traditional skin grafting. Low or absent of donor site pain was reported during and after the procedure. No donor site complications were found. Long term donor site hyper pigmentation and scars were minimal.

Conclusion: Epidermal micrografts present a safe, bed side pain free and efficacious method for STSG. This minimally invasive epidermis harvesting lower donor site morbidity, less likely to provoke an inflammatory response, reduce pain tremendously and enable rapid donor site closure. according to our primary experience in these cases each case will be presented suggesting the pros and cons for the use of the Automated Epidermal Harvesting System

[OP175] SPY TRANSCUTANEOUS ANGIOGRAPHY - A WOUND HEALING PROGNOSTICATOR

Rumneek Sodhi¹, Gurgaon, India

¹Medanta - The Medicity, Division of Peripheral Vascular & Endovascular Sciences, 5th Floor, Opd Block, Sector - 38,

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Free Paper Session: Devices and Intervention 3

Aim: To investigate whether the engagement of Transcutaneous angiography by the SPY imaging technology* in diabetic foot ulcers can be a useful diagnostic parameters to prognosticate wound healing.

Method: The SPY fluorescent imaging technology* consists of a charged coupled device (CCD) camera, a laser light source and a distance sensor. Once the camera is positioned, 5cc of diluted ICG (Indocyanine green dye) is pushed through an IV line and is flushed immediately; simultaneously the room lights are dimmed and camera images are captured.

41 patients with diabetic (ischemic & Non-ischemic) foot ulcers were included in this study. Transcutaneous oxygen tension (T_{cp}O₂), Ankle Brachial Index, peripheral arterial ultrasound and serial photographs of the wound were also studied.

Follow up with the SPY imaging machine was done on baseline, 2 weeks, 4 weeks and 8 weeks respectively. Improvement in perfusion was recorded in numeric percentage (%). 27 patients had to undergo endovascular revascularisation and 14 were treated with local wound care.

Results / Discussion: The difference in fluorescence was recorded in all 41 patients and it indicated relative blood flow change (increase or decrease) accompanying the perfusion. This information enabled us to revise what had already been done, or considers adjunct therapies that may have otherwise not been recognized as needed, in other words optimize outcomes of procedures performed.

Conclusion: The SPY Imaging Technology* is actually a surgeon's delight that produces clinically relevant visual images of blood flow indicating tissue perfusion, when captured in real-time, pre & post intervention to prognosticate wound closure, level of amputation, and limb salvage.

*SPY imaging technology used is by NOVODAQ

[OP176] EFFECTS OF SHORT-TERM IMPINGING WITH VACUUM THERAPY – VACUUMED IN DIABETIC FOOT ULCER PATIENTS

Rumneek Sodhi¹, Gurgaon, India

¹Medanta - The Medicity, Division of Peripheral Vascular & Endovascular Sciences, 5th Floor, Opd Block, Sector - 38,

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Free Paper Session: Devices and Intervention 3

Aim: To investigate the effects of short-term impinging with TNP* on skin microcirculation in patients suffering from diabetic foot ulcer by using transcutaneous oxygen tension measurements (T_{cp}O₂) & wound healing parameters.

Method: 19 diabetic foot ulcer patients underwent TNP* for 40 minutes each, variable number of times (1 to 3 times a week) depending on the size and extent of the wound (3 to 10 sessions in total). The leg was positioned in an air-tight plexiglass cylinder in which hypobaric (-110 mm Hg) and hyperbaric (70 mm Hg) pressure could be generated alternately, in order to improve peripheral circulation and also supposedly to clear the infected & necrotic tissues. All these wounds were dressed daily with non adhesive foam dressing** impregnated with silver.

The effect on skin microcirculation was investigated using parameters of transcutaneous oxygen tension measurements (T_{cp}O₂) and serial photographs to observe wound healing.

Results / Discussion: 3/19 patients experienced ischemic symptoms during TNP*, probably because the leg was pinched off through the inflation of the cuff. Patient's capillary microscopic parameters changed slightly at first vacuum. After several therapy sessions, T_{cp}O₂ improved significantly in most patients (3 to 19 mmHg) with progressive wound healing.

Conclusion: TNP* significantly improves skin perfusion and oxygenation level as evident with the increase in transcutaneous oxygen tension measurements (T_{cp}O₂) which in turns stimulates wound healing. We therefore conclude that this modality is a useful tool in the armamentarium of diabetic foot care professionals.

*VACUMED used is by Weyergans

**Biatin-Ag by Coloplast

[OP177] HEALTH ECONOMIC BENEFITS OF CYANOACRYLATE SKIN PROTECTANTS IN THE MANAGEMENT OF MOISTURE ASSOCIATED SKIN DAMAGE

Kevin Woo¹, Kingston, Canada

¹*Queen's University; Nursing*

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Aim: Moisture associated skin damage is common across the entire spectrum of health settings. The purpose of this paper is to provide a preliminary cost analysis of a skin barrier for moisture associated skin damage.

Method: Twenty individuals participated in the study. All participants were assessed for 7 days following usual care for the treatment of superficial skin lesions. All participants were assessed for another 7 days using cyanoacrylate film barrier. Cost analysis was conducted comparing the cost of care seven days before and seven days after the cyanoacrylate barrier was used. The total cost analysis took into consideration the time, products, and supplies to manage the skin problem. Clinical improvements, if any, were noted but the economic impacts of these improvements are not monetized in this study.

Results / Discussion: After a 7-day use of cyanoacrylate barrier, significant improvement was noticed in erythema ($p=0.003$), erosion ($p=0.006$), and exudate ($p=0.017$). The average cost for the traditional treatment, per patient, per week, was estimated to be \$ 46.20. The cost for the management with the cyanoacrylate was \$ 12.26. This represents a potential saving of 73.5% with a cyanoacrylate as compared to traditional methods.

Conclusion: All superficial lesions improved over time with the treatment of cyanoacrylate barrier. Taking into account the healing outcomes, the cyanoacrylate barrier may be more cost effective than the alternative treatment approaches. Potential cost savings were related to reduction in labour cost or staff time incurred by the frequency of dressing change or application of topical treatment.