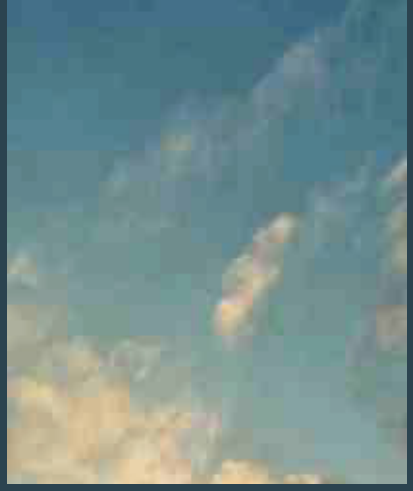
Acelity™

VAC Symposium 2014



LAVIEFARM

Scientific Conference on the treatment of wounds with negative pressure wound therapy

in combination with the 6th CEE VAC Symposium

Hosted by the Serbian Society for Cardio-Vascular Surgery
and the Serbian Society for Vascular Medicine

18 - 19 September, 2014
Hyatt Regency
Belgrade, Serbia

GENERAL SPONSOR

LAVIEFARM

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Dear Colleagues,
Dear Friends and Guests,

It is our great honor and privilege to host the V.A.C.® Symposium 2014 in combination with the 6th Central Eastern Europe V.A.C.® Symposium organized by Serbian Society of Cardiovascular Surgeons and Serbian Society for Vascular Medicine. After previous meetings held in Austria and Hungary we would like to welcome you in Belgrade, capital of Serbia, at the crossroads of the Balkan routes. We are also satisfied that this year meeting aims at an improved scientific format with abstract being published in the Serbian Archives of Medicine; the 10 best papers will be published “in extenso” form.

V.A.C.® therapy is very well recognized among clinicians of different specialties and its' potentials are well known, with every new patient treated possibilities of the V.A.C.® therapy are extended. For this reason there is a need for exchange of ideas and experience among different specialties. The concept of this meeting is to unite cardiac, vascular, general, plastic and digestive surgeons in one place above the same idea – V.A.C.® therapy. During two days 9 key note lectures will be presented by authorities in their fields of expertise and more than 40 abstracts will be presented. Separate sessions for medical nurses and technicians are also organized, for the same reasons.

All submissions will be reviewed by members of local organizing committee and 2 papers from every group will be selected for “in extenso” publications. All submitted papers will be published in the supplement of the Journal, cited on the SCI list.

Besides catching new ideas and experience from your colleagues from different clinics in the area, we hope that you will have time to enjoy our city and all its' beauties. Belgrade is the only European capital on the banks of two international rivers, namely the Sava and the Danube. Belgrade is one of the oldest towns in Europe. It has a 7000-year-old history and the oldest archaeological findings date back to 5th millennium AD. As many as 40 armies have conquered Belgrade and as many as 38 times it rose again from the ashes. As a tourist destination, Belgrade is also famous for its nightlife, gastronomy and excellent restaurants. One can also go for a swim at Ada Ciganlija, an island on the river Sava, with pebbly beaches and numerous sports and recreational facilities, or visit a downtown bohemian quarter of Skadarlija, and can also walk along the most central Belgrade street, Knez Mihailova, which is a pedestrian zone that comes from urban planning, and takes its descent back to Roman times. We hope that you will come back to us again.

Welcome,

Lazar Davidovic
Djordje Radak

LAVIEFARM

Prof Djordje Radak MD, PhD, SASA
Vascular Surgery Clinic, Dedinje Cardiovascular Institute, Belgrade, Serbia
Faculty of Medicine, University of Belgrade, Serbia

NEGATIVE PRESSURE WOUND THERAPY

Wound healing was the primary challenge from the begging of surgery, from the dawn of human civilization! Each wound has become different in time. Non- healing wound problem was, and still is to be comprehended, since it has been influenced by the patient himself, the cause of infection, the immunological response, potential for regeneration, local conditions in the wound, and treatment options. The problem still exists, since nowadays surgical, and non-surgical wound and the patient became older and different, and in number of cases complicated, as well.
Non-healing and infected wounds represent a serious medical problem throughout the world. Traditionally, wound debridement, cleaning and cotton gauze dressing has been the mainstay of wound care and continues to be used in everyday practice. For uncomplicated wounds, gauze dressing serves as an inexpensive tool to absorb the exudate and keep the wound clean and covered. However, in the last two decades new tools and techniques for complex wound treatment emerged. Vacuum Assisted Closure came as a revolution in the treatment of complicated wounds.

Vacuum assisted closure (VAC) is a relatively new technology used for various difficult to manage acute and chronic wounds. Following the application of open cell foam to a suitable wound, adding a seal of adhesive drape, controlled sub atmospheric pressure is applied to the wound, with simultaneous antibiotic perfusion occasionally.

Argenta and Morykwas[1,2] studied negative pressure wound therapy in plastic and reconstructive surgery and for the treatment of mediastinitis after sternotomy for heart surgery. Nowdays, it has emerged as a new therapy for chronic and infected wounds, including perivascular and arterial graft infections. Today, negative pressure wound therapy has become a routine in many hospitals worldwide.

It is a simple technique with foam being applied to the wound after its cleaning with antiseptic solution. The area around the wound should be cleansed also in order to facilitate application of transparent adhesive membrane. The entire wound area is then covered with a membrane, which is firmly secured to the healthy skin around the wound margin. The other end of the drain tube is connected to a vacuum source, to drain the fluid from the wound through the foam into a container (figure 1). The default pressure setting for vacuum therapy is 125mmHg .

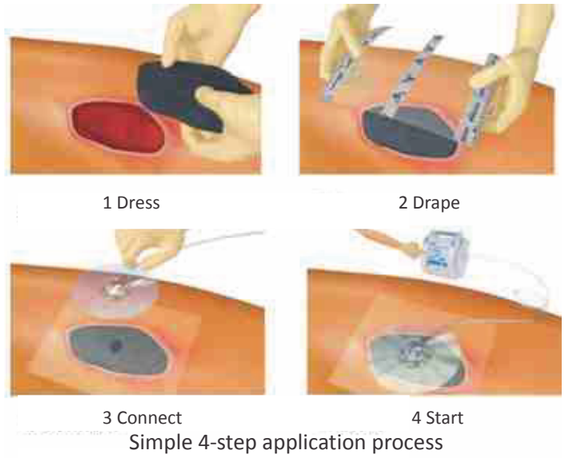

Figure 1. Application of negative pressure wound therapy

Mechanism of action of negative pressure wound therapy [3-8]
Macrodeformation - the open-pore foam brings the wound edges together
Microdeformation - deformation of the wound surface at a microscopic level stretches cells, facilitating division and proliferation
Fluid removal - in many wounds the surrounding tissues are oedematous, and vacuum has the capacity to remove large amounts of fluid from the extracellular space
Environmental control of the wound - provides a warm and moist environment
Granulation tissue formation Cell proliferation
Modulation of inflammation
Change in neuropeptides
Reduction of bacterial levels

Indications for negative pressure wound therapy are:
Chronic wounds
Acute wounds
Traumatic wounds
Subacute wounds
Dehisced wounds
Partial-thickness burns
Ulcers (such as diabetic, pressure or venous insufficiency)
Flaps and grafts

Figure 2. Dressing in situ (reproduced with permission from KCI Medical Ltd).

Precautions when negative pressure wound therapy is used:
- foam dressings should not be placed directly on exposed blood vessels, anastomotic sites, organs or nerves (thick layer of tissue or multiple layers of non-adherent dressing should be placed over exposed structures)
- only one piece of foam should be placed into a single wound, when possible (clinicians must document the number of foam pieces, because in a few cases wounds have not healed due to retained foam)
- debridement of the wound should be performed prior to application of negative pressure which should commence when hemostasis is achieved (usually one or two days after surgery)

Negative pressure therapy is contraindicated for patients with:
Malignancy in the wound
Untreated osteomyelitis
Non-enteric and unexplored fistulas
Necrotic tissue with eschar present
Sensitivity to silver (due to some types of silver dressing)

Advantages of topical negative pressure for wound treatment are:
- Prepares the wound bed over twice as fast
- 71% more effective in reducing wound area
- Cuts treatment costs by a third
- Significantly improves quality of life

From our own experience, the VAC is a promising new technology for wound healing. It may be applied in various types of wounds including those difficult to heal: vascular graft infection, wound necrosis, pressure sores, amputation sites, skin grafts, lower limb ulceration, sternotomy wounds, burns and abdominal wounds. Broadly speaking, the applications are for both salvage procedures or as an adjuvant therapy to improve results of various surgical procedures. Although very useful, negative pressure wound therapy can not replace standard methods of wound treatment such as wound debridement, the treatment of infection, the reduction of pressure in the wound area and ensuring adequate blood supply to the wound.

The general drawback of the studies that analyzed VAC treatment was a small number of patients and short follow-up period. From our experience, VAC seems to be safe for groin vascular graft infections with no early mortality, no complications of its use, and excellent graft patency rate of 95%. Being comfortable, both for the patient and the surgeon it becomes a new and promising therapeutic option in these difficult medical condition. This technique, in our opinion, can be used as a “bridge” from initial wound debridement to definitive wound management, when good local conditions are achieved for graft replacement, either with new synthetic graft with antimicrobial properties or autologous artery/vein. In selected cases of deep groin infection it can be used as the only therapeutic option.

Because its mechanisms of action remain partly unclear and because there are still some gaps between evidence-based data and the excellent clinical results, further prospective, randomized, ideally blinded studies are needed. Even so, we may conclude that negative pressure wound therapy, when properly used is an reliable tool to support wound healing and save lives.

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Prof Dr Lazar Davidovic
Head of the Clinic for Vascular and Endovascular Surgery
Serbian Clinical Centre

THE ROLE OF VAC THERAPY IN MY CLINICAL PRACTICE

Developing countries are usually facing new medical technologies much later than developed. Process of registration is cumbersome, market is small and not so cost effective for industry and distributors, while the cost of new products is higher, normally, so economical obstacle is the main reason for the delay. VAC therapy was registered in the Serbian Agency for Drugs and Medical Devices just in 2009. I was privileged to be PI of the first clinical trial in Serbia that proved cost effectiveness and clinical benefits of this therapy. Upon showing that VAC therapy is not only improving treatment of very complex vascular patients, but also is cost-effective in the scenario of the developing country like Serbia, this method was supported by Ministry of Health and recognized by National Health Fund in 2012.Since then physicians, mostly surgeons, begun to use VAC therapy in Serbia.

The team of the Clinic for Vascular and Endovascular Surgery of the Serbian Clinical Centre performs more than 2000 vascular procedures per year. As we are tertiary university hospital, significant number of our patients is complex with extensive and progressive forms of vascular disease when radical treatment is a inevitable. The most demanding are patients with ruptured abdominal aneurysms (70 per year) or patients with thoracoabdominal aortic aneurysm of various extension (30 per year). Also very frequently we see patients with foot infection or severe polytrauma. All these patients require complex, multidisciplinary approach, and their life or limb depends on every little detail that can contribute to success or failure of our therapy. Being usually reserved for revolutionary innovations in medicine until we are convinced in them, we noticed potentials of VAC therapy at the very beginning. Nowadays it is part of common armamentarium in our team and we have set up our main indications for this method - groin infections, abdominal compartment syndrome and infections of thoracolumbotomy wounds after open repair of thoracoabdominal aortic aneurysm. In these conditions VAC therapy is justifying in both clinical and economical way in our scenario.

Vascular graft infection is a nightmare for every vascular surgeon. It is followed by high mortality and morbidity, regardless of new techniques and stronger antibiotics it still happens. Initially we used VAC therapy only for lymphorhea in the groin wounds, than we treated successfully few desperate patients with deep groin infection and since then VAC therapy is our first choice for groin graft infections.

Open repair of thoracoabdominal aneurysm is complex procedure routinely performed in our institution. This procedure requires thoracolumbotomy, very extensive surgical wound, that if complicates with infection or dehiscence can lead to severe deterioration of the patient condition and even be fatal. We found VAC therapy very effective in these patients. It is not only wound that get improves, but also patients' general condition after treatment with negative pressure.

Abdominal compartment syndrome is devastating condition after repair of ruptured abdominal aortic aneurysm suffered by 2-6% out of 70 patients that we treat annually at our clinic. Since we got opportunity to use VAC abdominal closure survival of these patients is dramatically better.

Beside these three main indications that we incorporated in our algorithms for VAC treatment, there are multiple other individual cases when negative pressure therapy is important contributing factor, so important that eventually becomes decisive.

Chair of Organizing and Scientific Committee

Prof Dr Lazar Davidović
Clinic for Vascular and Endovascular Surgery Serbian Clinical Centre

Prof Dr Đorđe Radak
Institute for Cardiovascular Diseases "Dedinje"

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Dr Slobodan Tanasković	Institute for Cardiovascular Diseases "Dedinje"
Dr Srđan Babić	Institute for Cardiovascular Diseases "Dedinje"

Scientific Conference on the treatment of wounds with negative pressure wound therapy in combination with the 6th KCI CEE VAC Symposium

CHAIRMEN:
Prof. dr Lazar Davidovic,
Clinic for Vascular and Endovascular Surgery, Clinical Center of Serbia, Belgrade
Prof. dr Djordje Radak,
Institute for Cardio-Vascular Diseases "Dedinje", Belgrade

Program
Thursday, September 18th

Morning:	Arrival of Attendees
10:00 – 13:00	Registration
13:00 – 13.15	Opening ceremony

SESSION 1 – VASCULAR SURGERY AND TREATMENT OF THE DIABETIC FOOT

Chairmen:

KEY NOTE LECTURE

13.15 – 13.30 Abdominal compartment syndrome after abdominal aortic surgery
Martin Björck,
Department of Surgical Sciences, Section of Vascular Surgery, University Hospital Uppsala, Sweden

13:30 – 15:00 **VASCULAR SURGERY ABSTRACT PRESENTATIONS**
7 minutes presentation
3 minutes discussion

13:30 – 13:40 The applicability of Negative Wound Pressure Therapy in the treatment of complicated wounds after amputation of the lower extremities in patients undergoing surgery due to critical limb ischemia
Krzysztof Wachal
Department and Clinic of General and Vascular Surgery, Medical University of Poznań, Poland

13:40 – 13:50 The applicability of Open Abdomen Negative Pressure Therapy (V.A.C. ABThera, KCI, USA) in a patients after surgery with rupture of abdominal aortic aneurysm
Krzysztof Wachal
Department and Clinic of General and Vascular Surgery, Medical University of Poznań, Poland

13:50 – 14:00 The comparison between patients treated by negative pressure wound therapy with installation and negative pressure wound therapy without installation in diabetic foot associated with phlegmon
Krzysztof Wachal
Department and Clinic of General and Vascular Surgery, Medical University of Poznań, Poland

14:00 – 14:10 The appliance of negative pressure in diabetic foot treatment
Čedomir Vučetić
Faculty of Medicine, University of Belgrade; Orthopedic and Traumatology Institute of the Clinical center of Serbia

14:10 – 14:20 Diabetic foot ulcers treated with Negative Pressure Wound Therapy - East Tallinn Central Hospital experience
Veronika Palmiste
East Tallinn Central Hospital, Tallinn, Estonia

14:20 – 14:30 Management of stump complications after Above-the-Knee Amputation using vacuum-assisted closure therapy in a consecutive patient series
Srdjan Babic
Clinic for Vascular Surgery, Institute for Cardiovascular Diseases Dedinje, Belgrade, Serbia

14:30 – 14:40 Vacuum assisted closure treatment for Szilagyi grade ii groin infection
Dario Jocic
Clinic for Vascular Surgery, Institute for Cardiovascular Diseases Dedinje, Belgrade, Serbia

14:40 – 14:50 NEGATIVE PRESSURE wound therapy for deep groin vascular infections
Predrag Matić
Clinic for Vascular Surgery, Institute for Cardiovascular Diseases Dedinje, Belgrade, Serbia

14:05 – 15:00 The Role of V.A.C in the Treatment of Vascular Groin Infections
Milos Sladojevic
Clinic for Vascular and Endovascular Surgery, Serbian Clinical Centre, Belgrade, Serbia

15:00 – 15:30 Coffee Break – Time for check in for guests from abroad

6th KCI CEE VAC SYMPOSIUM
Session chaired by Twan Wackers
Senior Manager International Medical Affairs KCI

15:30 – 15:50 Instillation therapy with VACUlta/VeraFlo – An evolution of NPWT
Lars Kamolz

15:50 – 16:10 ABThera – An effective method to manage open abdomen
Martin Björck

16:10 – 16.30 Prevena – The concept of incision management
Danijela Semenič

16:30 – 16:45 A combination of the advanced wound care products of Systagenix with KCI's V.A.C. Therapy
Klemen Kerin

16:45 – 17:00 Health economy impact of VACUlta/VeraFlo, ABThera and Prevena
Frauke Greggersen

SESSION 2 – CARDIAC SURGERY

Chairmen:

KEY NOTE LECTURE

17:00 – 17:15 Value of Surgical Incision Management in cardiothoracic surgery
Ted Elenbaas
St Catharina Hospital Eindhoven, Netherlands

17:15 – 18:15 **CARDIAC SURGERY ABSTRACT PRESENTATIONS**
7 minutes presentation
3 minutes discussion

17:15 – 17:25 Use of the negative pressure wound therapy in immunosuppresed patient after heart transplantation: a case report
Aleksejus Zorinas
Vilnius University Faculty of Medicine Clinic of Cardiac and Vascular disease, Vilnius, Lithuania

17:25 – 17:35 Graft Infection After Ascending Aorta et Aortic Arch Replacement – The Impact of V.A.C. Ulta on a Therapy
Radovan Jursa
Department of Cardiac Surgery,University Hospital Ostrava, Czech Republic

17:35 – 17:45 Topical Negative Pressure for the Treatment of Surgical Site Infection After Cardiac Surgery
Saša Borović
Dedinje Cardiovascular Institute, Belgrade, Serbia

17:45 – 17:55 Treatment of Sternal Wound Defect with V.A.C. VERAFLO® Therapy After Cardiac Surgery
Matija Milić
Department of Cardiac Surgery, Clinical centre Split, Croatia

17:55 – 18:05 Serious complications and mortality of negative wound pressure therapy in the treatment of deep sternal wound infection after cardiac surgery
Martin Šimek
Department of Cardiac Surgery and Department of Plastic and Aesthetic Surgery, University Hospital and Palacky University Faculty of Medicine, Olomouc, Czech Republic

18:05 – 18:15 The necessity of plastic surgery reconstruction after extensive mediastintis following cardiac surgery
Boglárka Juhász
Gottsegen Hungarian Institute of Cardiology, Department of Adult Cardiac Surgery, Budapest, Hungary

Friday, September 19th

SESSION 3 – GENERAL/DIGESTIVE SURGERY

Chairmen:

KEY NOTE LECTURE
08:30 – 08.45 Abdominal wall clousure in open abdomen – problems and solutions
Blaž Trotovšek
Department of Abdominal Surgery,University Medical Centre Ljubljana, Slovenia

08:45 – 10:05 **ABDOMINAL SURGERY ABSTRACT PRESENTATIONS**
7 minutes presentation
3 minutes discussion

08:45 – 08:55 Negative pressure therapy with washout: new treatment modality in patient with severe acute necrotizing pancreatitis/ feasibility study
Miha Petrič
Clinical department of abdominal surgery, University medical centre Ljubljana, Ljubljana, Slovenia

08:55 – 09:05 Ileostomy closure with V.A.C.: lower rate of SSI
Mihajlo Đokic
Clinical department of abdominal surgery, University medical centre Ljubljana, Ljubljana, Slovenia

09:05 – 09:15 Management of open abdomen
Blaž Trotovšek
Clinical department of abdominal surgery, University medical centre Ljubljana, Ljubljana, Slovenia

09:15 – 09:25 Use of Vacuum Assisted Closure(VAC) in open abdomen: our experience
Krstina Doklestic
Faculty of Medicine, University of Belgrade; Clinic of Emergency, Clinical Center of Serbia, Belgrade, Serbia

09:25 – 09:35 Negative pressure wound therapy in the treatment of extensive skin necrosis with mesh infection after major abdominal hernia repairs
Skach Jirl
General Surgery Department - Hernia Centre, Regional Hospital Liberec, Czech Republic

09:35 – 09:45 Vacuum Assisted Abdominal Closure in the Management of Abdominal Compartment and Peritonitis
Haralds Plaudis
Riga East Clinical University Hospital, Department of General and Emergency Surgery
Riga, Latvia

09:45 – 09:55 Vacuum assisted closure therapy of patients with infected mesh following hernioplasty of complex abdominal wall defects
Marinko Zuvela
Clinic for digestive diseases, Serbian Clinical Centre

09:55 – 10:05 Vacuum treatment of laparotomy wound dehiscency in diffuse peritonitis
Jelena Petrovic
Clinic for Digestive Surgery, Serbian Clinical Centre

10:05 – 10:30 Coffee Break and Check-out for the guests from abroad

SESSION 4 – PLASTIC SURGERY

Chairmen:

KEY NOTE LECTURE
10:30 – 10.45 The role of VAC therapy in treatment of burns
Lars Kamolz
Division of Plastic, Esthetic and Reconstructive Surgery,
Head of Research Unit for Tissue Regeneration, Repair & Reconstruction, LKH University Hospital Graz, Austria

10:45 – 11:55 **PLASTIC SURGERY ABSTRACT PRESENTATIONS**
7 minutes presentation
3 minutes discussion

10:45 – 10:55 Comparison: Negative Pressure Wound Therapy Against Modern Coating
Dragan Babuder
Department of traumatology, Intensive care unit, University medical centre Ljubljana, Ljubljana, Slovenia

10:55 – 11:05 Minimally invasive therapy of necrosis of the upper limb: a case report
Istvan Juhasz
University of Debrecen, Clinical Center, Department Dermatology, Burn and Dermatosurgery Unit and UD Faculty of Dentistry Coordinating Department of Surgical Specialties, Debrecen, Hungary

11:05 – 11:15 Longterm V.A.C. treatment in complicated posttraumatic wound healing
Mladen Duduković
Clinical Hospital Center Zagreb, Medical school, University of Zagreb, Croatia
Department of plastic and reconstructive surgery and breast surgery

11:15 – 11:25 V.A.C. therapy as a solution in a reconstruction of complex firearm injury of the calf-case report
Jelena Nikolić
Department of plastic and reconstructive surgery and Department of vascular surgery, Clinical center of Vojvodina, Novi Sad, Serbia

11:25 – 11:35 V.A.C. VeraFlo treatment of exposed orthopedic osteosynthetic material: case report after Harrington Instrumentation
Srećko Budi
Department for Plastic, Reconstructive and Aesthetic Surgery, University Hospital Dubrava, Zagreb, Croatia

11:35 – 11:45 Appliance of negative pressure in orthopaedic surgery
Čedomir Vučetić
Faculty of Medicine, University of Belgrade; Orthopaedic and Traumatology Institute of the Clinical center of Serbia

11:45 – 11:55 Vacuum assisted closure in treatment of lower extremity injuries- case report
Edgar Domini
Department for abdominal and pediatric surgery, General hospital, Zadar, Croatia

11:55 - 12:05 Role of vacuum-assisted compression therapy in covering defects of the lower leg skin
Saša Milićević
Military Medical Academy, Clinic for plastic surgery and burns, Belgrade, Serbia

12:05 – 12:15 Closing Remarks

12:15 – 12:40 **HANDS-ON WORKSHOP FOR SURGEONS**

SESSION 5 – NURSES AND TECHNICIANS

14:00 – 14:10 Basic presentation about VAC Therapy
Tanja Knežević

14:10 – 15:50 **ABSTRACT PRESENTATIONS FOR NURSES AND TECHNICIANS**
7 minutes presentation
3 minutes discussion

14:10 – 14:20 NPWT As The Bridge Between Debridement and Definitive Closure of Infected Post-Thoracotomy Wounds
Ana Turina, dipl.med.techn
Clinic for thoracal Surgery Jordanovac-KBC Zagreb

14:20 – 14:30 Use of the NPFT as a treatment of the lower right injuries
DanielaMiljanic, dipl.ms/dipl.med.tech
Zadar General Hospital, Department of Surgery, Department of General Surgery and Traumatology

14:30 – 14:40 Vacuum assisted closure therapy of patients with infected mesh- the role of a nurse: report of three cases
Katarina Stokuca
Clinic for Digestive surgery, Clinical Center of Serbia

14:40 – 14:50 Merenje intraabdominalnog pritiska – uloga medicinske sestre na odeljenju intenzivne nege
Mihajlovic Marija
Department of Vascular and Endovascular Surgery, Clinical Center of Serbia

14:50 – 15:00 Prednosti primene VAC terapije kod udružene povrede kolena i poplitealne arterije
Mihajlovic Marija
Department of Vascular and Endovascular Surgery, Clinical Center of Serbia

15:00 – 15:10 Wound Care
Mirjana Marinkovic
Clinical Center Nis, University of Nis, Serbia

15:10 – 15:20 Treatment of chronic wounds with the negative pressure after open heart surgery: the role of nurses
SlavicaPopović dipl.ms.
University Medical Centre Ljubljana, Slovenia, Department of Cardiovascular Surgery

15:20 – 15:30 Primena terapije negativnim pritiskom u kardiohirurgiji
Mirjana Nesovic
Institute for Cardiovascular Diseases Dedinje, Belgrade, Serbia

15:30 – 15:40 Primena topikalnog negativnog pritiska u lecenju medijastinitisa
Sanja Rajic
Institute for Cardiovascular Diseases Dedinje, Belgrade, Serbia

15:40 – 15:50 Primena topikalnog negativnog pritiska u vaskularnoj hirurgiji
Ivana Zivancevic
Institute for Cardiovascular Diseases Dedinje, Belgrade, Serbia

16:00 – 16:30 **HANDS-ON WORKSHOP FOR NURSES AND TECHNICIANS**

ACCREDITATION
Upcoming Scientific Symposium on negative pressure wound therapy in combination with KCI sixth meeting for Central and Eastern Europe is accredited by the Health Council of the Republic of Serbia by the decision of the accreditation program CE Number: 153-02-1979 / 2014-01 of 18.08.2014. year., under document number: A-1-1964 / 14 with the following number of points:

SPEAKERS: 13 points
PARTICIPANTS: 7 points

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The redesigned SensaT.R.A.C.® Pads easier than ever to use.

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v.a.c.® therapy | SensaT.R.A.C.™ TECHNOLOGY

LAVIEFARM

An Essential Component of V.A.C.® Therapy

What is SensaT.R.A.C.™ Technology?

The patented SensaT.R.A.C.™ Technology continuously monitors, measures and maintains the prescribed negative pressure at the wound site for optimal healing outcomes.

Monitoring and Adjusting Software

- Continuously monitors and maintains prescribed negative pressure at the wound site
- Adjusts pump output, compensating for wound distance, wound position, exudate characteristics, and patient movement
- Safety alarms alert caregivers if target pressure is not met or therapy is interrupted

SensaT.R.A.C.™ Tubing

- Efficiently draws exudate away from the wound through the large inner lumen
- Independently monitors target pressure at the wound through outer sensing lumens

SensaT.R.A.C.™ Pad

- Distributes negative pressure to individual sensing lumens
- Helps reduce tubing blockages and false alarms
- Enhances patient comfort with a low profile design

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v.a.c.ulta™
KCI Healing by design

The evolution of V.A.C.® Therapy

One unit, three therapies*

V.A.C.Ulta™ Negative Pressure Wound Therapy System

- V.A.C.® Negative Pressure Wound Therapy
- V.A.C.™ VeraFlo Instillation Therapy
- ABThera™ Open Abdomen Negative Pressure Therapy

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Choose V.A.C. VeraFlo™ Therapy

ADDITIONAL THERAPEUTIC BENEFITS

V.A.C. VeraFlo™ Therapy is for wounds that would benefit from instillation therapy, such as:

- **Contaminated** wounds with instillation of topical wound cleansers.
- **Infected wounds** with instillation of appropriate topical wound solutions; these wounds also benefit from the removal of infectious materials in the V.A.C.® Therapy cycle.

Bench and preclinical studies:

- **In a bench top study evaluating the potential for cross contamination:** V.A.C. VeraFlo™ Therapy provided contained controlled wound irrigation without bacterial aerosolization. Standard manual cleansing techniques demonstrated significant bacterial aerosolization 6 inches from the simulated wound site ($p<0.05$).

- **In a porcine study with saline instillation:** 7 days of V.A.C. VeraFlo™ Therapy using V.A.C. VeraFlo™ Dressings showed a 43% increase in wound fill compared to NPWT using V.A.C.® GranuFoam™ Dressings ($p<0.05$). V.A.C. VeraFlo™ Therapy cycles utilized a 5-minute soak time followed by 2.5 hours of V.A.C.® Therapy.

  These results have not yet been confirmed in human studies.

V.A.C. VeraFlo™ Therapy provides:

Volumetric Delivery
With a pump for automated delivery of topical wound solutions.

Fill Assist
Helps determine the correct instill volume.

Dressing Soak
Instills topical wound solutions into the wound for easier dressing removal and increased patient comfort.

V.A.C. VeraFlo™ Therapy combines the benefits of V.A.C.® Therapy with automated solution distribution and removal. V.A.C. VeraFlo™ Therapy can:

Cleanse
the wound with instillation of topical wound cleansers in a consistent, controlled manner

Treat
the wound with the instillation of appropriate topical antimicrobial and antiseptic solutions and the removal of infectious material

Heal
the wound and prepare for primary or secondary closure

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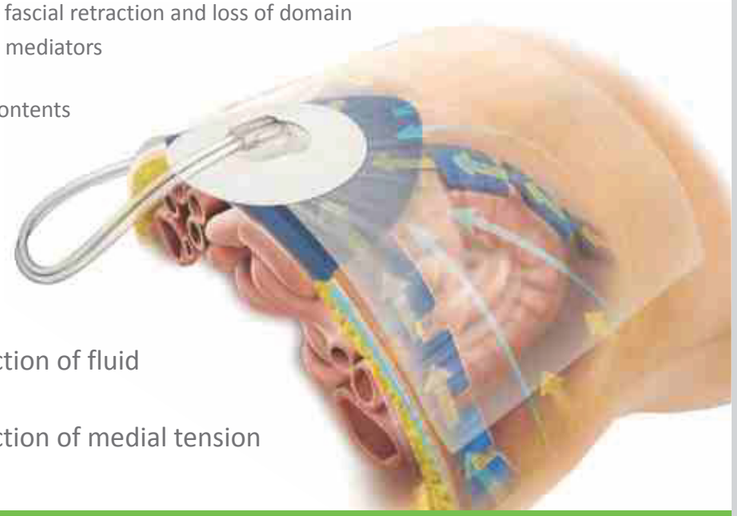
ABThera™
Active Abdominal Therapy

Laviefarm

ABThera™ Open Abdomen Negative Pressure Therapy

(ABThera™ Therapy) is designed to actively manage the open abdomen by:

- Removing peritoneal fluid from deep within the paracolic gutters and helping reduce oedema
- Providing medial tension, which helps minimise fascial retraction and loss of domain
- Removing infectious material and inflammatory mediators in peritoneal fluid
- Helping isolate viscera and protect abdominal contents from external environment
- Providing separation between abdominal wall and viscera, protecting abdominal contents
- Allowing rapid access for re-entry without requiring sutures for placement



Direction of fluid

Direction of medial tension

KCI
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Abstract book

SESSION 1 – VASCULAR SURGERY AND TREATMENT OF THE DIABETIC FOOT

THE APPLICABILITY OF NEGATIVE WOUND PRESSURE THERAPY IN THE TREATMENT OF COMPLICATED WOUNDS AFTER AMPUTATION OF THE LOWER EXTREMITIES IN PATIENTS UNDERGOING SURGERY DUE TO CRITICAL LIMB ISCHEMIA

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Introduction: The Negative Pressure Wound Therapy (NPWT) became a standard in the treatment of infected surgical wounds. Patients who underwent amputation of the lower limbs due to ischemia are a group of particularly risk of wound infection and the difficulty in stumps treating.
Aim of study: The aim of the study was the applicability of Negative Wound Pressure Therapy in the treatment of complicated wounds after amputation of the lower extremities in patients undergoing surgery due to critical limb ischemia.
Materials and methods: The study group consisted of 24 subjects who in 2007-2012 were performed amputations at different levels: group I – transtibial amputations, group II – transfemoral amputations, group III - hip disarticulation. Preoperatively, the degree of vascular changes was assessed on the basis of ABI and imaging studies. Four amputations were the primary treatment of critical ischemic of the lower limb, and 20 procedures were secondary to performed earlier ineffective vascular surgery. NPWT was used in cases of non-healing wound or wound with infection of the stump.
Results: The results of treatment with NPWT: 18 patients – wound closed with primary suture, 2 patients - amputation at a higher level, 2 patients – wound closed with a skin-muscle flap, 2 patients – wound closed with a dermal graft. The duration of the therapy ranged from 7 to 26 days.
Conclusions: NPWT give a opportunity to total or partial reduction of infection, improve the degree of tissue perfusion and the patient quality of life.
Key words: negative pressure wound therapy, diabetic foot syndrome, infected wounds, amputation of the lower extremities, critical limb ischemia

THE APPLICABILITY OF OPEN ABDOMEN NEGATIVE PRESSURE THERAPY IN A PATIENTS AFTER SURGERY WITH RUPTURE OF ABDOMINAL AORTIC ANEURYSM

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Introduction: Open surgery treatment of ruptured abdominal aortic aneurysm is associated with possibility of many various postoperative complications. The most important and the most common of which include: re-bleeding, organ damage, parenchymal necrosis of the sigmoid colon.
Aim of study: The aim of study is assessment of the applicability of Open Abdomen Negative Pressure Therapy in a patients after surgery with rupture of abdominal aortic aneurysm.
Materials and methods: In the years between 2013 and 2014 we used a Open Abdomen Negative Wound Therapy in five patients undergoing emergency open surgery for ruptured abdominal aortic aneurysm. The patients selection for Open Abdomen Negative Wound Therapy was random. Routinely, Open Abdomen Negative Wound Therapy was maintained for 24 hours, and then the abdominal cavity was controlled again. The drain secretions and intra-abdominal pressure were monitored during negative pressure wound therapy.
Results: Open Abdomen Negative Wound Therapy did not cause any local and systemic complications. The postoperative pulmonary ventilation of patients proceeded without problems. There was no increase in intra-abdominal pressure compared with a group of patients treated in a conventional technique. In all cases there was a reduction of abdominal hematoma.
Conclusions: The postoperative Open Abdomen Negative Wound Therapy may be an alternative for a group of patients at increased risk for the "second-look" operation. This therapy allows you to decreases the time of surgery procedure, reduces the risk of secondary complications.
Keywords: ruptured abdominal aortic aneurysm, Open Abdomen Negative Pressure Wound Therapy, V.A.C. ABThera dressings, intra-abdominal pressure.

THE COMPARISON BETWEEN PATIENTS TREATED BY NEGATIVE PRESSURE WOUND THERAPY WITH INSTALLATION AND NEGATIVE PRESSURE WOUND THERAPY WITHOUT INSTALLATION IN DIABETIC FOOT ASSOCIATED WITH PHLEGMON

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Introduction: The various drainage flow systems in infected wounds have been known for a long time. These systems were also used in the treatment of patients with diabetic foot syndrome. However, drainage flow systems are still not using on a routine procedure.
Aim of study: The aim of the study was the comparison between patients treated by negative pressure wound therapy with installation and negative pressure wound therapy without installation in diabetic foot associated with phlegmon.
Materials and methods: In this paper two groups of patients were presented. The first group - in which were used a negative pressure wound therapy with installation, and second group in which were used a negative pressure wound therapy without installation. All of the patients were treated in few stages. The first stage - surgical revascularization, in the second stage resection of abscess and necrotic tissue was made. Finally, negative pressure wound therapy with or without installation was applied.
Results: In both groups a similar end result were gained and all limbs were saved. The average length of hospitalization in the first group amounted 13 days and in the second 18 days. The cost of using drugs and antibiotics was lower by nearly 40% in the first group.
Conclusions: Due to application of V.A.C. Ulta system (KCI, USA), more effectiveness treatment outcomes in patients with diabetic foot syndrome and infected wounds was received. The length of hospitalization was shortened, the cost of using drugs and antibiotics were significantly reduced.
Key words: negative pressure wound therapy with installation, negative pressure wound therapy, V.A.C. Ulta, diabetic foot syndrome, infected wounds, phlegmon of the foot.

THE APPLIANCE OF NEGATIVE PRESSURE IN DIABETIC FOOT TREATMENT

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Introduction: Healing the cases of necrotizing infections on diabetic foot is difficult and connected to significant problems, related to prolonged healing and invalidity. Reduced biological potential or reduced tissue vitality, infection and insufficient circulation are factors which are not easily influenced and which lead to further complications and tissue necrosis.
Aim: The aim of this paper is to present clinical experiences in surgical treatment of necrotic conditions on diabetic foot..
Method: We analysed group of patients with diabetes who had developed infection with tissue necrosis on foot and who were healed with surgical debridement and appliance of negative pressure. We followed up the effects of VAC appliance on: infection reducing, cleaning the detritus and appearance of granulation tissue. This method was applied on patients who had plantar necrotizing fasciitis or wet gangrene on metatarsal part of the foot and on more proximal part of the foot. The repeated surgical debridement of soft and bone tissue was done and VAC system was set for period of 1-3 weeks.
Results: Dressing was done every 4-6 days. If needed, additional debridement was done during dressing. We noticed the obvious secernation reducing, reducing the clinical signs of infection and enhanced appearance of granulation tissue in wound.
Conclusion: The appliance of VAC system in healing of necrotic and infection complications on diabetic foot provides significant possibilities for reduction of infection, tissue necrosis and detritus from the wound. It also provides easier granulation in wound, control of the wound hygiene and enables rarer dressing.
Keywords: Diabetic foot, negative pressure, VAC system, infection complications, surgical healing.

DIABETIC FOOT ULCERS TREATED WITH NEGATIVE PRESSURE WOUND THERAPY- EAST TALLINN CENTRAL HOSPITAL EXPERIENCE

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Introduction: Diabetes prevalence in different populations is increasing. Depending of the main disease treatment, in some cases the rapid complication development is observed. Non-healing foot ulcer is one of the major complications what can lead to the non-traumatic limb amputations. Additional to the regular wound dressing, offloading; the negative pressure wound therapy (NPWT) is available in Estonia.
Objective: Main objective was to evaluate healing time and the number of the dressings while treating diabetic ulcer with NPWT in East Tallinn Central Hospital.
Material and Methods: For this retrospective study, group of 30 patients treated from 2010-2013 was considered. Men-female ratio was 85% to 15%. Underlying diabetic abscess or phlegmona and/or the arterial deficiency were treated before the ulcer treatment whenever possible. Negative pressure for the ulcer was only considered to the patients who needed the stationary care because of the advanced disease. None of the simpler cases were included.
Results: 4 (13%) of the patients had the major amputation below the knee during treatment due to the infectious complications. 26 patients (86%) experienced the ulcer cleaning effect. The average number of dressings was 3 times (range 1-6 times). Time between dressings was 72 hours (range 24 – 96 hours). Addition later skingrafting was needed in 20 patients (67%).
Conclusion: NPWT is a good method to accelerate diabetic foot ulcer healing – according to our experience with the advanced infection and/or after correction of the underlying arterial deficiency.

MANAGEMENT OF STUMP COMPLICATIONS AFTER ABOVE-THE-KNEE AMPUTATION USING VACUUM –ASSISTED CLOSURE THERAPY IN A CONSECUTIVE PATIENT SERIES

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Introduction: Major lower extremity amputation, especially above-knee amputation, is associated with high morbidity and mortality rate, especially in the case of stump complications.
Objective: To evaluate the safety and outcomes of negative-pressure wound therapy (NPWT) using Vacuum assisted closure (VAC) therapy in patients with stump complication after above-knee amputation (AKA).
Material and Methods: From January 2011 to July 2014, nineteen patients with a mean age of 69.3±9.2 years treated with negative-pressure wound therapy because of stump complications were included in this study. The following objections were recorded: wound healing and hospitalization time, rate of VAC treatment failure and mortality.
Results: Staged procedure (AKA) was performed in 17 (89.5%) patients, while urgent AKA was performed in two (10.5%) patients due to uncontrolled infection. The time to VAC was 3.1 ± 1.9 days and the duration of VAC use ranged from 15 to 54 days (mean 27.95±12.1 days). During VAC treatment, operative debridement was performed in 12 patients. The average hospital length of stay was 34.7 days (range 21-77 days). There were four (20.9%) failures during the treatment and required secondary amputation. During the treatment, one (5.3%) patient died due to multi-organ failure after 27 days.
Conclusions: The use of VAC therapy in the treatment of AKA stump complication is a safe and effective procedure associated with low risk and good outcome in term of wound healing time and further complications.
Key words: above-knee amputation, wound complication, negative-pressure wound therapy (NPWT), Vacuum assisted closure (VAC)

VACUUM ASSISTED CLOSURE TREATMENT FOR SZILAGYI GRADE II GROIN INFECTION

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Objective: We present our 2-year results of using the negative topical pressure system in groin without graft involving.
Methods: A retrospective 2-year review of 15 patients, from January 2012 to December 2014, who underwent a negative topical pressure therapy for postoperative surgical site infection.
Results: The Vacuum Assisted Closure (VAC) system was used in 15 patients and 17 wounds for the treatment of non graft involved surgical site infection, Szilagyi grade II. All patients were treated for groin infection. They were treated with surgical wound revision, VAC therapy and antibiotics. No bleeding occurred during treatment. The dressing has been changed on every third day. Within group of our patients, during the treatment period, there were no signs of secondary graft infection or any complications related to VAC therapy. The average duration of the therapy was 17 days. VAC therapy resulted in delayed primary closure of 3 wounds or healing by secondary intention.
There was no recurrence of wound infection during follow up period.
Conclusion: Vacuum assisted closure therapy showed efficacy in prevention of infection spreading. Also VAC therapy showed results in inducing wound healing and avoiding secondary surgery interventions.
Key words: topical negative pressure, groin infection, Szilagyi grade II

NEGATIVE PRESSURE WOUND THERAPY FOR DEEP GROIN VASCULAR INFECTIONS

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Objective: We present results obtained for deep groin vascular graft infection treated with negative pressure wound therapy.
Material and Methods: Seventeen patients (19 wounds), treated for Szilagyi grade III groin infections between October 2011 and June 2014, were enrolled in the study.
Results: Majority of wounds (11/19) healed by secondary intention, and rest of wounds (8/19) healed by primary intention after initial negative pressure wound therapy and graft substitution with silver-coated prostheses or autologous artery/vein implantation. No early mortality was observed. Minor bleeding was observed in one patient. Reinfection was noted in three wounds. Only one graft occlusion was noted. Late mortality was observed in 3 patients.
Conclusion: Negative pressure wound therapy seems to be safe for groin vascular graft infections, and comfortable, both, for patient and surgeon. However, high rate of persistant infection mandates careful selection of patients for this approach. This technique, in our opinion, can be used as a “bridge” from initial wound debridement to definitive wound management, when good local conditions are achieved for graft substitution, either with new synthetic graft with antimicrobial properties or autologous artery/vein. In selected cases of deep groin infections can be used as only therapeutic approach in wound treatment.
Key words: groin infection, synthetic graft infection, negative pressure wound therapy

THE ROLE OF V.A.C IN THE TREATMENT OF VASCULAR GROIN INFECTION

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Introduction: The most common location of vascular graft infection is the groin.
The aim of the study is to report experience in the treatment of early vascular groin infection with the negative pressure – made by vacuum assisted closure device (V.A.C).
Material and methods: From 01.12.2010 to 01.01.2014, data of 35 patients with groin infection after vascular reconstruction were collected prospectively.

Results: Out of 1615 patients with at least one groin incision, operated during the 3 years, at the Clinic for Vascular and Endovascular Surgery, of the Serbian Clinical Center,28 (1,73 %) patients developed early postoperative groin infection. Out of 28patients with groin infection, 17 patients had infection (level III Szilagyi), and 11 patients had postoperative groin lymphorhea. 15 patients had negative wound culture, while in other 13 wound cultures were positive on Pseudomonas (3 patients), MRSA (3 patients), Enterococcus spp (2 patients) and Staphilococcusaureus (5 patients). All patients were treated with V.A.C. Mean treatment length was 29 days (15-38). In one patient (3,57%) severe bleeding followed initial treatment, in all other patients wounds were responded well on the applied therapy, and were closed with the additional application of the fibrin tissue antigen glue. All patients were discharged; however one patient (3,57%) had a reinfection after 14 days.
Conclusion: Vacuum assisted closure therapy can be useful in the treatment of vascular groin infection as a primary therapy in the high risk patients or as an adjunctive treatment mode during preparation for the extensive conventional treatment.

SESSION 2 – CARDIAC SURGERY

USE OF THE NEGATIVE PRESSURE WOUND THERAPY IN IMMUNOSUPPRESED PATIENT AFTER HEART TRANSPLANTATION: A CASE REPORT

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Keywords: Infection, Sternum, Mediastinitis, Cardiac, Graft Rejection
Introduction: Deep surgical site infection is infrequent complication in the cardiac surgery. It is burden to the patient and surgeon. It significantly increases mortality and morbidity in the cardiac transplantation group of patients. Current treatment modalities are limited to the combination of adequate antibiotics regiment with open and/or closed irrigation of the wound or negative pressure wound therapy. A fragile balance between reduced immunosupresionand the treatment of the infection is a challenge and may lead to recurrence of wound infection or graft rejection. We present a successful outcome of patient tailored method of wound closure. Review of the relevant literature is presented in our publication.
Case outline: 52 year old male following heart transplantation has presented with symptoms of deep sternal wound infection. A diagnosis of poststernotomy mediastinitis has been confirmed.
One attempt of negative pressure wound therapy with adequate antimicrobial therapy has failed to treat the infection and the wound. A change of antimicrobial treatment in the combination with reduced immunosupression has allowed a complete closure of the sternal edges on the second attempt of negative pressure wound therapy.
Conclusion: Our case demonstrates that in a combination of reduced immunesupression and adequate antimicrobial treatment - negative pressure wound therapy can be effective treatment of deep sternal wound infection.
Literature is limited to a single centre experiences. Broad conclusions cannot be drawn from the few reports in the treatment of deep surgical site infection in the patients after heart transplantation.

GRAFT INFECTION AFTER ASCENDING AORTA ET AORTIC ARCH REPLACEMENT- THE IMPACT OF V.A.C. ULTA ON A THERAPY

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Aim: The treatment of vascular graft infection after thoracic aorta repair which is complicated by the presence of deep sternal infection is challenging and associated with extreme mortality. The goal of the paper is not only to present our experience but also to describe the treatment development during the last ten years.
Method: Into this retrospective study were included patients who developed deep sternal infection and their vascular graft was infected. The conditions for being included in the group were clinical signs of sepsis and overt sternal osteomyelitis, positive bacterialculture of the graft area, and laboratory signs of inflammation (C-reactive protein more than 100 mg/l, leukocytosis more than 15 x 10^9/l). In all cases, negative pressure wound therapy was used (1x V.A.C Ulta). Three patients were treated with omentoplasty and two with pectoralis major flap. Sternal wire sutures were used with three patients and titanium sternal fixation system with one patient.
Results: In our department were operated altogether 405 patients who underwent performance on the thoracic aorta. The postoperative course with 9 (2.2%) of them was complicated by the infection of the vascular graft and by the presence of deep sternal infection. With four (mortality 55%) patients, the infection was eradicated and the wound healed.
Conclusion: Radical debridement of the infected tissue surrounding the vascular graft and instillation therapy with V.A.C. VeraFlo Cleanse Dressing with the following reconstruction of the chest wall is considered to be a safe option of the treatment.
Keywords: aorta, prosthesis infection

TOPICAL NEGATIVE PRESSURE FOR THE TREATMENT OF SURGICAL SITE INFECTION AFTER CARDIAC SURGERY

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Introduction: Surgical site infection (SSI) after cardiac surgery increases mortality rate and prolongs hospital stay.
Objective: This study presents our results of VAC System application for post–cardiac surgery wound complications.
Methods: This is a retrospective study were we collected and analyzed outcomes of 36 patients with SSI, treated with VAC System (from June 2011 to December 2013).
Results: Out of 36 patients, 16 (44.4%) were female. The average patient age was 64 years (from 44 to 79). In average, the interval from cardiac surgery to the beginning of the SSI treatment was 21 days (from 5 to 130). SSI was superficial (presternal) in 12 (33%) patients and deep (deep sternal and madiastinitis) in 24 (67%). The average duration of VAC System therapy was 18 days (from 3 to 49). The treatment was without recurrence in 28 (77.8%), in 5 (13.9%) SSI recurred and 3 (8.3%) patients died because of SSI.
Conclusion: SSI treatment after the cardiac surgery is demanding and challenging, especially in patients suffering from mediastinitis. VAC System therapy has good outcomes with reduced hospital stay and costs in those patients.
Keywords: surgical site infection, cardiac surgery, VAC System

TREATMENT OF STERNAL WOUND DEFECT WITH V.A.C. VERAFLO® THERAPY AFTER CARDIAC SURGERY

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Introduction : Wound treatment with V.A.C. therapy is used in healing of various tissue defects. In our Department some post-operative wounds are also been treated with this kind of therapy. This is the first time that we use VAC VeraFlo therapy.
Case outline: This case shows our experience of treating sternal dehiscence wound with the VAC VeraFlo therapy in 74-year-old female, weighting 103 kgs, with a BMI of 40.2 suffering from insulin dependent diabetes mellitus and peripheral arterial disease who underwent a triple coronary bypass procedure. There were no serious postoperative complications and the patient after 10 days was released from the hospital. Twenty days after, the patient was again hospitalized because of sternal wound dehiscence. Immediately we started with V.A.C. VeraFlo therapy and continued for 20 days with the exchange of consumables at least every fourth day. After treatment, we noticed a significant improvement in the appearance of the wound healing, the microbiological findings was negative. Patient was admitted for plastic reconstructive surgery.
Conclusion*:* At this case significantly improvement in wound healing is provided with VAC VeraFlo therapy and this proved to be a good choice for the 74-year-old patient.

SERIOUS COMPLICATIONS AND MORTALITY OF NEGATIVE WOUND PRESSURE THERAPY IN THE TREATMENT OF DEEP STERNAL WOUND INFECTION AFTER CARDIAC SURGERY

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Introduction: Deep sternal wound infection (DSWI) affects 0.5% to 5% of patients, carries a considerable mortality rate ranging from 7% to 27%, and long-term morbidity of survivors.
Objective: The evaluation of long-term single centre experience with first-line application protocol of NPWT in the treatment of DSWI.
Material and methods: Prospective analysis of 98 consecutive patients (55 men/43 women, mean age 68.6±9.2 years) who underwent the first-line application of NWPT in the treatment of DSWI within a 9-year period (from September 2004 to September 2013). Complication and outcome rates were evaluated included risk of major bleeding, therapeutic failure, 30-day, in-hospital, and 1-year mortality.
Results: The mean length of overall therapy reached 13.1±7.2 days including the mean of 5.6±3.9 revision/dressing changes within 36.5±18.6 days of the mean in-hospital stay. Major bleeding occurred in 4 patients (4.1%, 1 revision-related, 2 spontaneous right ventricle ruptures, 1 graft-related) and was linked with 1 immediate and 1 late death. During follow-up 3.1% of 30-day mortality, 8.2% of in-hospital mortality, and 14.3% of 1-year mortality (10.2% DSWI-related complication adjusted) were observed. Primary treatment protocol failed in 6 of all cases (6.1%,5 due to DSWI recurrence, and 1due to necrosis of the advanced muscle flap. The risk of wire-related fistula was 14.2% during whole follow-up period.
Conclusion: First-line NPWT therapy is a reliable method for the treatment of DSWI following cardiac surgery with low failure rate, short- and mid-term mortality. However, serious complications both recurrence of DSWI and major bleeding are associated with high mortality.
Key word: sternal infection – negative wound pressure therapy – cardiac surgery

THE NECESSITY OF PLASTIC SURGERY RECONSTRUCTION AFTER EXTENSIVE MEDIASTINTIS FOLLOWING CARDIAC SURGERY

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Introduction: Since the introduction of median sternotomy sternal wound infections have remained a life threatening complication following cardiac surgery. Report edincidencesare 1-4% and the mortality rates are 10-40%.
Objective: Most of the infections might heal with simple drainage, however the rates of 10% to 15% have ultimately proved to be intensed sternal wound infections (DSWI). Our conception is to preserve the sternum as far as possible and leave the skin and subcutaneous tissue to heal by secondary intention. If sternal and/or subcutaneous tissue preservation is not possible after VAC therapy we are using immediate or staged rotational muscle flaps or fascio-musculo-cutan flaps. With this procedure we can cover huge sternal or suprasternal defections without tension of the underlying tissues.
Material and Methods: Under the examined period(2010-2014) we have had five complicated patients (pts) following cardiac surgery and some intervetions because of mediastinitis. The male-female ratio was 2:3. Four patients have had coronary artery bypass operations and one have had reoperation because of constrictive pericarditis. After debridement and VAC therapy we are always trying to close the sternum. In case of some patients the sternal closure and/or closure of the subcutaneous tissues have not been possible because of the extended infection or resection. By this high-risk patients we use rotational fascio-musculo-cutan flaps.
Results: One patient has died in exacerbation of Hodgkin disease. The other four patients are physically and mentally active.
Conclusion: In some complex cases the usage of fascio-musculo-cutaneous flap is the preferable surgical procedure, which should be preserved for high-risk patients.
Keywords: cardiac surgery, deep sternal wound infection, mediastinitis, VAC therapy, fascio-musculo-cutan flaps

SESSION 3 – GENERAL/DIGESTIVE SURGERY

NEGATIVE PRESSURE THERAPY WITH WASHOUT: NEW TREATMENT MODALITY IN PATIENT WITH SEVERE ACUTE NECROTIZING PANCREATITIS – FEASIBILITY STUDY

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Introduction: The mortality rate for patients with severe acute pancreatitis(SAP) was reduced from 40-50% to 12-20% because changes in surgical approach, better understanding of the disease and better ICU care. Morbidity in patients is still high.
Objective: In our department we perform feasibility study with VAC ULTA, machine which combine negative pressure therapy with washout in patients with SAP.
Material andMethods: Primary objective was lower mortality rate and safety of the method. Secondary objectives were hospital stay and morbidity rate.We used VAC ULTA in patients with SAP and standard intensive care treatment. All patients had infected pancreatic necrosis provenwith CT. Every patient had same protocol of changing VAC, VAC was placed after extensive debridement of necrosis and changed every 3 day. VAC setting were same in all patients.Allprocedures were done by single expirienced surgeon. We collected data, intraoperative foto documentation and complications.
Results: We treated 9 patients with SAP, 5 males and 4 females. Median age was 54 years. Median Balthasars CTSI was 9 (7 – 10), APACHE II score more than 20 was in 6 patients. 9 patients developed SIRS, 4 SOF and 5 MOF. In 6 patients we performed 3 and in 3 patients 4 changings of VAC ULTA. Primary closure of laparotomy was achieved in 7 patients.Medium ICU hospitalization was 16 days (10-37), medium hospitalization after first procedure was 28 days (20-47). One patient died (11%).
Conclusion: Negative pressure therapy with washout seems to be effective and safe technique in patients with SAP if performed by expirienced surgeon. It needs further evaluationwith RCT and we invite all to participate in multicenter RCT.
Key words: negative pressuretherapy, severe pancreatitis, VAC ULTA

ILEOSTOMY CLOSURE WITH VAC: LOWER RATE OF SSI?

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Objective: Skin suture after closure of protective ileostomy is assosiated with high incidence of surgical site infection (SSI), longer hospitalisation with higher cost and morbidity is demanding for welfare system.
Method: Randomized control study will be conduct in our department. Patients will be randomised in three groups; in all groups elective closure of protective ileostomy will be planed. In group 1 wound will be closed with interrupted non-absorbable sutture. In group 2 wound will be closed with continous non-absorbable sutture and in group 3 wound will be closed with non-absorbable sutture with central placement of negative pressure therapy. Negative pressure therapy will be withdrown on 3rd postoperative day. Primary end point is lower SSI rate. Patients will be followed for 45 days and any level of complication will be reported; in case of SSI swab for microbiological confirmation will be taken. Patient will be evaluated again after 3 months.
Results: Aim of the study is to provide comparison of closure techique. Results will be evaluated by the incidence of SSI and perioperative morbidity.
Conclusion: We believe that ileostomy closure with VAC is associated with lower SSI incidence and lower perioperative morbidity. We invite all to participate in our RCT.

MANAGEMENT OF OPEN ABDOMEN – DELAYED FASCIAL CLOUSURE

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Introduction: The knowledge that a tense abdomen is a life-threatening condition is very old. Damage control laparotomy has become a common procedure in the initial treatment of the severely ill or injured patient. Only essential surgical procedures are performed and definitive operative procedures, including closure of the laparotomy incision, are often delayed. Temporary abdominal closure (TAC) techniques are important part of open abdomen management (OA) and reduce morbidity and complications.
Objective: The OA is a significant problem with many associated morbidities; one of them is loss of abdominal wall musculature. The technique used for temporary abdominal closure depends on the institution, the preference of the surgeon, available equipment, and a multiplicity of other factors. The objective is to identify methods that are successful in dealing with these patients and to develop strategy for effective treatment.
Methods: One of principal goals in OA management is to facilitate primary delayed fascial closure as quickly as clinically appropriate. For successful management of OA, TAC is needed to protect the intestines, maintain at least clean environment, and avoid fluid and temperature loss. Several techniques are available for TAC.
Results: Negative pressure therapy (NPWT) combined with abdominal dressing revolutionized advanced care of OA. High rate (>90%) of primary fascial closure, lower incidence of abscess and fistula formation and lower mortality are the results of its more frequent use in treatment of OA. Several techniques which facilitate primary delayed fascial closure have been introduced in clinical practice.
Conclusion: Higher than historically reported closure rates after OA treatment can be achieved with NPWT. Closure rates as high as 92% have been reported. This technology has a significant influence on patient's early and late morbidity as well as health care costs.
Key words: open abdomen, temporary abdominal clousure, delayed fascial clousure

USE OF VACUUM ASSISTED CLOSURE (VAC) IN OPEN ABDOMEN: OUR EXPERIENCE

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Introduction: Patients with an open abdomen (OA) present a major challenge to the surgeon. The different temporary abdominal closure (TAC) methods are currently available. Vacuum Assisted Closure (VAC) is a wound care system of paramount importance in the treatment of complex wounds in abdominal surgery.
Aim: Retrospective analysis of initial results in treatment of open abdomen with vacuum assisted closure device
Material and Methods: We report our results using commercially available negative pressure therapy systems by vacuum-assisted closure V.A.C.(®) Abdominal Dressing System and ABThera™ Open Abdomen Negative Pressure Therapy System) in 20 patents with OA. The most common indications for an V.A.C. were abdominal compartment syndrome, damage control surgery, diffuse peritonitis and wound dehiscence. Endpoints included secondary fascial closure, 30-day morbidity rate included presence of enteroatmospheric fistulas and 30-day mortality rates and long-term follow-up for ventral hernia.
Results: Closure rate was 95%. One patient (5%) developed enterocutaneous fistula, one patient (5%) had a local hemorrhage complication. One patient developed a ventral hernia on 6months follow-up, which has since been repaired.
Conclusion: Our experience with the VAC demonstrated its advantages concerning clinical feasibility with improved outcomes in patients with open abdomen.

NEGATIVE PRESSURE WOUND THERAPY IN THE TREATMENT OF EXTENSIVE SKIN NECROSIS WITH MESH INFECTION AFTER MAJOR ABDOMINAL HERNIA REPAIRS

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Introduction: Mesh related infection after prosthetic abdominal wall hernia repair is a difficult clinical problem, particularly in an era of evolving microbial resistence.
Objective: Authors report a case series of complicated patients with mesh-site infection after major complex abdominal hernia repair combined with abdominoplasty consecutively treated with help of NPWT (negative pressure wound therapy).
Material and Methods: Mesh infection is usually treated by removal of the mesh,which generally results in hernia recurrence and often in large defect necessitating difficulte subsequent surgical procedures and reconstructions or another mesh graft implantation after the infection has resolved.
Right after initial debridement we applied NPWT in all 11 consecutive cases in the last 16 month period to prevent graft failure, necrotising fascitis and unwanted periprothetic capsula formation.
Results: 3 patients suffered severe mesh-site deep wound infection with methicillin resistant *Staphylococcus aureus* (MRSA), 1 patient with dominant *Pseudomonas aeruginosa* and 1 patient with extended-spectrum b-lactamase (ESBL)-producing *Escherichia coli*with mesh placed in sublay postition. In our last MRSA case we used instillation NPWT(VACUlta/VeraFlo) with large fascia necrosis above all to neutralize tremendous odor. In 2 patients we used split-thickness skin grafts (STSG) with NPWT to cover large defect of the skin afterabdominoplasty to fasten the epitelization. No NPWT related complications occured in any patients.
Conclusion: NPWT therapy allowed salvage of infected exposed prosthethic material and improved retention of split-thicknes grafts in all patient in our case series. We consider NPWT first-line intervention for use in mesh infection after hernia repair.
Keywords : prosthesis, infection, grafting

VACUUM ASSISTED ABDOMINAL CLOSURE IN THE MANAGEMENT OF ABDOMINAL COMPARTMENT AND PERITONITIS

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Introduction: Vacuum assisted abdominal closure (VAAC) is a lifesaving procedure when conservative measures fail to reduce sustained increase of the intra-abdominal pressure (IAP) and it is impossible to achieve source control in a single operation due to severe peritonitis.
Objective: To share the initial experience with VAAC in Latvia.
Material and methods: In total 22 patients were included in this retrospective study. All patients were treated with KCl® ABThera™ VAAC systems. APACHE II score on admission, daily sequential organ failure assessment (SOFA) score and Mannheim Peritonitis Index (MPI) were calculated for severity definition. Evaluation of VAAC therapy, overall hospital and ICU stay, as well as the outcomes were analysed.
Results: A complicated intra-abdominal infection (IAI) was treated in 18 patients. Abdominal compartment syndrome (ACS) due to severe acute pancreatitis (SAP), secondary ileus and damage control in polytrauma were indications for VAAC treatment in 4 patients. The median age of patients was 59 (range, 28 to 81) years, median APACHE II score was15 (range, 9 to 32) points and median MPI 28 (range, 21 to 40) points. Sepsis developed in all patients, and in 20 of themit was severe. Intestinal fistulae developed in three patients that were successfully treated conservatively. The overall ICU and hospital stay were 14 (range, 5 to 56) and 25 (range, 10 to 87) days, respectively. Overall mortality rate was 4.5%.
Conclusions: Application of VAAC treatment is very promising technique for the control of intra-abdominal hypertension and management of severe sepsis due to purulent peritonitis.

Keywords: VAAC, purulent peritonitis, intra-abdominal hypertension.

VACUUM ASSISTED CLOSURE THERAPY OF PATIENTS WITH INFECTED MESH FOLLOWING HERNIOPLASTY OF COMPLEX ABDOMINAL WALL DEFECTS

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Introduction: A mesh infection following hernioplasty of complex abdominal wall defects is one of the most difficult-to-treat complications. It is associated with prolong wound treatment and doubtful outcome that may end with mesh removal and disease recurrence.
Objective: The study aim was to demonstrate a role of VAC treatment in the management of the most difficult cases of mesh infection.
Matherialanf methods: From June 2013 until June 2014 three patients with non-resorbable mesh infection and two patients with resorbableVycril mesh infection following hernioplasty of complex abdominal wall defects were managed by VAC therapy. Mesh infection occurred due to wound contamination, skin and subcutaneous tissue necrosis, and was managed by necrectomy, mesh exposure and by VAC treatment.
Results: The average hospital stay was 20,8 days (14-25). In two patients with significant polypropylene mesh infection VAC therapy led to full tissue ingrowths through the infected mesh and no additional therapy was needed. Among two patients with resorbable mesh infection VAC treatment led to complete wound heal in one patient and an excellent tissue ingrowths was achieved in other patient. The mesh removal was not required in any of patients managed by VAC therapy. There is neither hernia recurrence nor the signs of mesh infection during the follow up period of 10 (1-36) months.
Conclusion VAC therapy is a powerful treatment modality in the management of patients with mesh infection as it reduces the length of treatment, stimulates secondary wound healing and mesh ingrowths.
Key words: vacuum-assisted closure, mesh infection, abdominal wall defects

VACUUM TREATMENT OF LAPAROTOMY WOUND DEHISCENCY IN DIFFUSE PERITONITIS

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Introduction: Diffuse peritonitis, especially after repeated surgeries, often results in laparotomy wound breakage. Sometimes it can be involved with intestinal fistulas and is mostly life threatening condition that requires repeated surgeries. Most of the times, relaparotomy is very difficult due to adhesions and interintestinal abscess formations or even impossible bringing more damage to intestines. Vacuum treatment offers new approach in these kind of wounds with promising results. We have applied this system on several occasions of laparotomy breakage with intestinal fistulas and severe abdominal sepsis. Apart from visible benefit, we came across some unexpected complications that made us adjust the treatment. Hereby we are presenting our experience in this approach of wound treatment in abdominal sepsis.
Objective: To show the importance of negative pressure treatment in abdominal sepsis.
Material and Methods: During 2011.To 2013. We have treated several patients with postoperative laparotomy breakage. Two patients had intestinal fistula and leakage of intestinal content along with severe abdominal sepsis. We are presenting the results of the treatment by vacuum therapy step by step.
Results: In both cases we have seen the improvement of abdominal wound and better control of intestinal fistula content. One patient was operated on after six months and is still alive and well with good digestive functions. The other patient died after three months from massive thrombosis, but had improved local state of laparotomy.
Conclusion: In cases of severe abdominal sepsis, sometimes it is impossible to make even simple abdominal lavage due to interintestinal adhesions that create a great problem in salvage surgery. Vacuum treatment offers a promising new perspective in difficult cases of unsolvable peritonitis.
Key words: vacuum, peritonitis, abscess, fistula, intestinal, dehiscency

SESSION 4 – PLASTIC SURGERY

NEGATIVE PRESSURE WOUND THERAPY VS. MODERN COATING

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Introduction: In an article we represent patient with lawn mower accident causing traumatic amputation of his left toe. For 30 days he was treated with negative pressure wound therapy. Unmeasurable components such as pain, quality of life and shorter time spent in hospital are significant and maybe even of higher importance then financial aspect.
Objective: Goal is to show suitability of negative pressure wound treatment comparing to modern coating treatment. Taken into consideration of fewer changing of foam and consequently less pain, higher quality of life and lower costs of nurses and doctors payment. Treatment with modern coating must be undertaken every day which cause such pain in which we must administrate drugs quality of life is lower because of smell out of the wound. Nurses take more time tretaing such wound which increases costs of nurses activities.
Nevertheless the goal of the article is also firstly considering those ''unmeasurable aspects'' (pain, quality of life).
Methods: Article is about clinical problem in which we track the patient with traumatic amputation of left foot toe due to accident with lawn mower. Negative pressure wound treatment was applied for thirty days in which five changes of the foam was made. All the changes of foam were made in anesthesia. In thirty days 6 changes of foam were undertaken. First three treatment were made with black foam and other three with white foam. Every time 1l reservoir was changed.Costs incured in all six treatment were 822.15 €.
Comparing with ''classic'' wound management with modern coating in which bandage is undertaked daily the costs are lower in modern coating but in long term we could see slow tendency of rising costs when applying modern coating towards negative pressure wound treatment. Costs incured with modern coating in thirty days were 252.30 €. Thirty bandages with modern coating were undertaking in total.
All the prices are modified for Clinical department of traumatology and are not represented with other departments. Prices are determined by public tender and material used.
Conclusion: Negative pressure wound therapy is more expensive than modern coating wound treatment. Nevertheless treatment with modern coating must be undertaken daily which causes extra pain, patient is feeling uncomfortable. Also nurses' time for wound treatment is increased when using modern coating. Drew et al. state that nurses time accounts for 33-41% of the total cost of wound care.
Quality of life must be mentioned which is higher in negative pressure wound therapy. We said that in negative pressure wound therapy there is less pain which largely improves quality of life. There is no smell out of the wound when negative pressure wound therapy is applied, hospital admissions are shorter (Trueman, 2008).
But on the long term we can conclude that negative pressure sound therapy is cheaper due to less foam changes. Othman (2012) also writes that although negative pressure wound therapy instruments and dressings are more expensive, their longer application on wound and less frequent changing will reduce the total cost and the labour power and positively impacting on productivity.

MINIMALLY INVASIVE THERAPY OF NECROSIS OF THE UPPER LIMB: A CASE REPORT

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Introduction: The progress in hemato-oncological treatment results in more aggressive therapies associated with unwanted side effects. These drugs are prone to induce difficult-to manage widespread tissue necroses. A case of a64 y.o. male with aggressive systemic B-cell lymphoma is reported.
Case report: Paravenous administration of Adriamycine resulted in a large cutaneous necrosis with inflammation at his right cubital region and painful edema of right arm. Incomplete necrectomy of 5x10cm area revealed further subcutaneous palm-size necrosis of the cubital fold. Peripheral pulse at wrist was undisturbed. Wound repair was aimed while continuing full-dose cytostatic therapy because of the progressive hemato-

oncological condition. One month treatment with silver-alginate reduced inflammation. Application of negative pressure wound therapy was decided with a portable device. Ten days of V.A.C. therapy caused dramatic transformation of the wound bed with patchy disappearance of the slough and significant pain reduction. At day 52 and 68 after the initial injury autologous skin grafting was carried out with continued application of vacuum. Grafts took well, the lateral subcutaneous recess disappeared. On post-injury day 110 (after 68 days of V.A.C. therapy) vacuum was discontinued. Impregnated gauze dressings followed and full epithelization was present on day 150.
Conclusion: Notable facts are that the whole therapy was carried out in an outpatient setting, and during 5 months wound therapy cytostatic treatment was not suspended. Ourpatient was one of the roughly 150 cases with difficult-to heal wounds whom we treated successfully with this novel therapy.

LONGTERM V.A.C. TREATMENT IN COMPLICATED POSTTRAUMATIC WOUND HEALING

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We present a case of 16 year old female who attempted a suicide by jumping from second floor to the ground. She was primarly treated in another institution for several weeks and afterwards because of fever and septic state moved to our Clinical Hospital Centre.
Introduction: After the incident the patient was diagnosed bilateral tibial fracture Gustillo stage IV with highly infected wounds of lower legs. She was treated conservatively by dressing changes and antibiotics. After primal therapy failure she was transported to Clinical Hospital Centre Zagreb where amputation was considered due to highly infected wounds, bad condition and septical shock awareness. After surgical consilium, radical surgical debridement was performed and VAC therapy was introduced. After several foam dressing changes and invasive antibiotic treatment things started to move better and patient got stabilized. After 200 hospital days she was ready for skin grafting.
Case outline: Difficult patient with serious injury and infection who was a strong candidate for leg amputation was succesfully treated with V.A.C. in combination with antibiotics and skin grafting.
Conclusion: V.A.C. therapy was effective in life threatening situation with uncontrolled infection, septical shock symptoms and large soft tissue defect with exposed bones.

V.A.C. THERAPY AS A SOLUTION IN A RECONSTRUCTION OF COMPLEX FIREARM INJURY OF THE CALF-CASE REPORT

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Introduction: Firearm injuries are characterised by contaminated wounds that often include damage of multiple structures and large soft tissue defects. Treatment of injuries requires radical debridement, limb revascularization, stabilisation of bone fractures and closure of the defect with appropriate technique.
Case outline: We presented a 37-year-old man injured by firearm at the left calf. The injured had extremely contaminated wound, open fracture of tibia, distructed tibialis posterior artery, defects of the medial head of gastrocnemius and soleus muscles, skin defect of approximately 25 cm. Surgical treatment includedradical debridement, stabilisation of bone fractures by an external fixation and absorptive wound dressing as we assessed that general condition of the patient and severe wound contamination did not allow longer surgery and definitive defect reconstruction. After stabilisation of general condition, the defect was reconstructed by free latissimus dorsi muscle flap. During the next few days infection of the wound developed and flap necrotized. It was removed by the tenth post-operative day and position of the bone fragments was corrected. Considering long lasting wound infection, diabetes and exposure of bony structures,VAC system was applied.It enabled rapid proliferation of granulations and efficient treatment of an infection. After infection had been resolved granulations were covered by skin graft.

Conclusion: Application of VAC system in firearm wounds enables an effective treatment of local infection, good protection of exposed structures and provides an opportunity to adequately prepare wound, making the delayed implementation of the muscle flap or skin graft a safe option for patient.
Key words: firearm wound, reconstruction, negative pressure

V.A.C. VERAFLO TREATMENT OF EXPOSED ORTHOPEDIC OSTEOSYNTHETIC MATERIAL: A CASE REPORT AFTER HARINGTON INSTRUMENTATION

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Introduction: Negative pressure wound therapy (NPWT) is a non-invasive wound closure system that stimulates the formation of granulation tissue by increasing local blood flow, decreasing edema, bacterial colonization and wound size. The cost of the treatment and length of hospitalization may also be lower.
Case outline: A case report of 16 years old patient who underwent surgery due to scoliosis with a Harrington Instrumentation. The exposure of the Harrington rods started five years after operation. A preoperative KCI's V.A.C. therapy was used to condition the local infected wound. Two plastic and reconstructive procedures were done to cover the defect: one with local fasciocutaneus flaps and one with local musculocutaneus flap. But in both cases 6 month after operation the material got exposed again.
In the last hospital treatment the patient was put only on conservative KCI's V.A.C. therapy but with the new VeraFlo system. After three weeks the wound was closed completely.
Conclusion: Local wound infection is the main cause of non-closure. The introduction of the V.A.C. VeraFlo system brought a new dimension to conservative wound therapy. Conditioning the wound with a local instillation of topical wound cleansers gives a significantly improvement in quality and time of healing. In this patient case six month after the V.A.C. VeraFlo treatment the wound is still in a good condition without exposed material.
Key words: V.A.C. VeraFlo, orthopedic operation, Harrington Instrumentation

APPLIANCE OF NEGATIVE PRESSURE IN ORTHOPAEDIC SURGERY

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Introduction: There are significant number of conditions in osteoarticular surgery when appliance of negative pressure (NP) is useful. The enourmoussecernation is usually connected to infection, tissue necrosis or both together. Healing is based on infection sanation and covering of soft tissue defect. The techniques are surgical wound debridement and techniques for soft tissue and skin compensation. From the start, healing includes antibiotics therapy and metabolic support.
Aim: This paper presents clinical experiences in appliance of NP in healing of most difficult injuries and injury complications on extremities.
Method: The technique of active suction of wound with skin deffect was applied with VAC system on acute complex wounds on extremities. Typical examples are open fractures level III, Gustilo classification, all three subgroups. This system was applied in first week of treatmant or later, so the wound could be cleaned faster from devitalized tissue. Also, this enables secretion reduction which prevents infection development.
Results: Patients showed good tolerability on applied system from 6-14 days. There were important things-swelling reduction, reduction of local signs of inflammation, cleaning the wound from detritus and coliquate and also the appearance of granulation tissue in wound after several days.
Conclusion: The appliance of NP on complicated extremity injuries with skin and soft tissue defects in aim of wound cleaning shows obvious useful effects. Wound is fast cleaned from secretion, coliquation and clinical signs of infection. Patients' tolerability is good. The hygiene control is more effective.
Keywords: extremity injuries, negative pressure, VAC system, infection complication, surgical treatment.

VACUUM ASSISTED CLOSURE IN TREATMENT OF LOWER EXTREMITY INJURIES- CASE REPORT

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Introduction: Case of NPWT use as a mean and support provider to the treatment of lower extremity CRUSH injuries
Case outline: The patient was admitted with lower extremity injuries sustained in a car accident as a truck driver. Several surgical procedures were performed upon admission and during his hospital stay, including methods of dermatofascietomy of the left shin accompanied by the necrectomy of part of the lower leg muscles due to the consequently developed muscle compartment syndrome incurred as a result of the injury to the tibia, popliteal arteries and the soft tissue contusions of the same calf. During his hospital stay and after only a few NPWT changes, there was a significant improvement of the local status of the left tibia soft tissue and residual deffects due to the conducted dermatofascietomies in addition to the healing of the local infection and preservation of the implanted graft and the exposed bone (white foam used).
NPWT was conducted in 12 occasions (also after the skin grafts implantations).
Conclusion: The use of NPWT treatment improved and rapidly accelerated wound healing from the injury itself and the surgical procedures.

ROLE OF VACUUM-ASSISTED COMPRESSION THERAPY IN COVERING DEFECTS OF THE LOWER LEG SKIN

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Introduction: Covering defects of the lower leg skin is much more difficult due to poor circulation of the distal third of the lower leg. Vacuum-assisted compression therapy enables rapid formation of granulation tissue, which is a good prerequisite for definitive covering defects of the lower leg skin using a skin graft.
Objective: The aim of this paper is to show the advantage of using a vacuum-assisted compression therapy in covering defects of the lower leg skin.
Methods: The paper describes the treatment of 30 patients with skin defect of the lower leg. In 10 patients were used vacuum-assisted compression therapy with skin autograft, in 10 patients used only skin autograft, and in the remaining 10 patients were used modern dressing for chronic wound healing.
Results: The shortest treatment, up to a complete epithelization, was in patients treated with the use of vacuum-assisted compression therapy and skin autograft and the longest treatment was in patients treated only with the application of modern dressings for chronic wound healing.
Conclusion: Treatment of lower leg skin defects is very complex, due to poor circulation and the presence of associated diseases. The use of vacuum-assisted compression therapy shortens healing time, but it needs a good knowledge of indications in different clinical cases and in certain phases of treatment.
Keywords: negative-pressure wound therapy, skin, lower extremity

SESSION 5 – NURSES AND TECHNICIANS

NPWT AS THE BRIDGE BETWEEN DEBRIDEMENT AND DEFINITIVE CLOSURE OF INFECTED POST-THORACOTOMY WOUNDS

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Introduction: Negative-pressure wound therapy is a modern, noninvasive technique to manage a wide variety of wound types, including surgical site infection.The combination of managing exudate, reducing odor and promotion granulation tissue are major benefits of the therapy. Despite best practice, some thoracic surgical wounds fail to heal primarily due to infection and infected pleural spaces.
Case outline: NPWT can be successfully used for two indications in patients presenting severe post-thoracotomy infection.(1)A 52-year-old female experienced difficulty healing of thoracic wound aftel pulmonary resection. Postoperative phase was complicated withdeep wound infection onthe 5th postoperative day. She had complicating comorbidities, arterial hypertension, obesity and hyperlipidemia. On initial evaluation, the surgical incision was characterized by redness and edema surrounding the sutures of the incision line. Wound was presented with large amount of pus drainage after removing the sutures. Surgical debridement was required and NPWT was applied immediately. Short-term goals of applied NPWT was to promote healing of the surgical site and management wound exudate. After four dressing changes (every 72h), wound was ready for surgical closure.The day after surgical intervention, the patient was discharged.(2) A 51-year-old maleunderwent pulmonary decortication for post-traumatic empyema, experienced wound infectionon the 3rd postoperative day.After several days of traditional wound care and moist dressings, NPWT was initiated.After 12 days of NPWT therapy, granulation tissue was developed, the wound swab was negative and criteria for surgical closure were met.
Conclusion: The NPWT system is a feasible alternative to conventional infected wound care. Our clinical experience show that NPWT is more benficial to the patient and improves quality of wound management.

USE OF THE NPWT AS A TREATMENT OF THE LOWER RIGHT INJURIES

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Introduction: Patient V. V. 1946 was admitted to the hospital due to the injuries on both lower legs, which he sustained while he was working with a rotary cultivator.
Case outline: Right leg (front side) – laceration measuring about 10 x 10 cm between middle and distal thirds, with a lifted skin flap with distal base, contusions on the skin edges and broken tendon of the anterior tibial muscle.
Left leg - laceration size 10 x 10 cm, with a lifted skin flap with distal base, with minor contusions of the skin edges, no visible injuries of deeper structures.
Radiograph of the both lower legs and both feet without radiographic signs of fracture.
In a hospital ward he received following antibiotics: Ketocef, Garamycin, Efloran (parenteral) and antithrombotic Fraxiparin s.c.
Wound preparation on the right leg was performed in spinal block, wound debridement, removal of the crushed tissue of the skin, tibialis anterior tendon repair was done. Due to a lesion size there was not enough skin to cover it completely and on the upper part of the wound remained a lesion of a size app. 2 x 2 cm. Exposed tibia was covered with periosteum. Wound was drained and a leg immobilized with a shin splint. Wound preparation was performed on the left leg and a wound was closed with sutures. Wound was entirely closed and a drain was placed.
Wounds were regularly bandaged and on right leg lesion Tenderwet dressing was placed. Wound on a left leg orderly healed with exception of lesser marginal necrosis. On the ward the patient was mobilized to walk with crutches without loading the right leg.
Necrosis appeared on a part of a cutaneous flap on the right leg - necrectomy was performed after which remained a skin and subcutaneous tissue lesion, of a size app. 8 x 4 cm with exposed tibia, covered with

periosteum. The rest of the wounds healed, sutures were removed.
V.A.C. therapy was applied.
On the left leg necrosis of a skin edge was removed and in a proximal part of a wound remained a skin lesion size 4 x 2 cm. Aquacell Ag dressing and then Aquacell surgical dressing were applied on it, and after that Altrazeal powder.
Regular changes of the VAC dressings on the skin and subcutaneous tissue lesions on the right leg gradually created a clean, fresh granulation, and granulation was also created on the skin lesions on his left leg.
After six weeks, the immobilization of the right lower leg was removed, the patient started with exercises of the right ankle and walking with the aid of crutches with unloading of his right foot.
Conclusion: Since we acquired a portable device for VAC therapy patient was released from the ward with applied VAC dressing, to a home care with the recommendation to rest and keep a right foot in elevated position, to walk with the aid of crutches with unloading his right foot and exercise right ankle.

VACUUM ASSISTED CLOSURE THERAPY OF PATIENTS WITH INFECTED MESH – THE ROLE OF A NURSE: REPORT OF THREE CASES

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Introduction: Nurses are frequently faced with the challenge of carrying for or monitoring chronic and complex wounds that may have a doubtful outcome. Vacuum assisted closure therapy (VAC) is a new treatment modality for the management of chronic wounds that can improve the patients' quality of life.
Objective: The study aim was to demonstrate a role of nursing care in the VAC treatment of patients with infected mesh.
Matherial and methods: From June2013until June 2014three patients with mesh infection following hernioplasty of complex abdominal wall defects were managed by VAC therapy. In all patients methicillin-resistant Staphylococcus aureus was isolated from wound cultures. All patients were managed by 125mg Hg negative pressure and gauze dressing VAC system.
Results: The first patient had 9-days VAC treatment in immediate postoperative period with 500ml secretion per day, 4.500ml in total and 6 antibiotics changed during the treatment course. The second patient had 17-days VAC treatment started from a day of surgery with 50-800ml day secretion, 5.800ml in total, 4 antibiotics were used and the patient died on 18th postoperative day. The third patient had 13-days VAC treatment with 80-300ml secretion per day, 2.400ml in total and 4 antibiotics changed during the treatment course. In two patients the favorable outcome was achieved.
Conclusion: VAC therapy is a powerful treatment option in the management of patients with mesh infection and nurses should understand the chronic wound development in their efforts to provide optimal therapy for patients.
Key words: vacuum-assisted closure, mesh infection, nursing care

MERENJE INTRAABDOMINALNOG PRITISKA-ULOGA MEDICINSKE SESTRE NA ODELJENJU INTENZIVNE NEGE

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Uvod: Intraabdominalni pritisak je funkcija akumulacije tecnosti unutar trbusne duplje i komplijanse abdomena. Usled opadanja komplijanse abdomena,dok se tecnost postepeno nakuplja u peritonealnoj duplji kao ishod ima ima brze povecanje i vecu vrednost intrabdominalnog pritiska. Normalne vrednosti IAP-a su 6,5mmHg-12mmHg. Povisen IAP je definisan kao produzeno ili ponavjano patolosko povisenje IAP iznad 12mmHg.
Uzroci nastanka povisenog IAP su: RAAA, akutni pankreatitis, intraoperativno krvarenje, retroperitonealni hematom, perforacija pepticnog ulkusa.
Cilj: Opis uloge med.sestre u jedinici intenzivne nege,prilikom merenja IAP.i način agresivnog lečenja kod ekstremnih slučajeva
Metode: Svim pacijentima koji su primljeni na kliniku za vaskularni i endovaskularnu hirurgiju sa dijagnozom RAAA,nako operacije, pracen je i meren IAP,kao i drugi vitalni parametri(arterijskaTA,puls CVP,SPO2)putem invazivnog monitoringa koji prati,meri i nortira med.sestra.

Rezultati: Na klinici za vaskularni i endovaskularnu hirurgiju KCS je za poslednjih godinu dana primljeno je 40 pacijenata sa RAAA ili u proseku 3.8 pacijenata mesecno i kod sih je meren IAP. Kod dva bolesnika je zbog povisenog intraabdominalnog pritiska refraktarnog na konzervativne mere primenjena hirurška metoda dekompresivne laparatomije uz aplikaciju sistema za negativni pritisak. Oba bolesnika su u postoperativnom periodu bivali odvojeni od aparata za veštačko disanje i pored nezatvorene laparatomne rane uz smanjenje vrednosti IAP.
Zakljucak: Medicinska sestra na odeljenju intenzivne nege ima znacajan udeo u pracenju stanja bolesnika posle operacije RAAA,kao i merenju i pracenju IAP,vitalnih funkcija,bolenikovoj nezi i terapiji.Upotreba sistema za negativni prtisak u značajnoj meri poboljšava oporavaka bolesnika kod kojih je učinjena dekompresivna laparatatomija zbog povišenog intraabdominalnog pritiska.

PREDNOSTI PRIMENE VAC TERAPIJE KOD UDRUŽENE POVREDE KOLENA I POPLITEALNE ARTERIJE

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Uvod: Povreda (trauma) je nasilno oštećenje izazvano delovanjem spoljašnjih faktora.Povrede koštanog sistema često su udružene sa povredom krvnih sudova i zahtevaju angažovanje tima vaskularne hirurgije.Hiruško rešavanje povrede se sprovodi opsežnom hiruškom intervencijom nakon koje ostaju fasciotomne rane koje zarastaju per secundam a infekcija hirurških rana je ne retko glavna postoperativna komplikacija. Dalje lečenje i nega zahtevaju brojna previjanja koja su bolna i teška za bolesnika a angažuju ljudske resurse, povećavaju potrošnju materijala, antibiotika i produžavaju vreme oporavka.
Upotreba V.A.C. terapije pojednostavljuje previjanje rana,smanjuje potrebu za hiruškim intervencijama kao i učestalost previjanja(svaki treći dan).
Prikaz slučaja: Pacijent star 29god.primljen kao hitan slučaj u intenzivnu negu Klinike za vaskularnu i endovaskularnu hirurgiju KCS zbog povrede desnog kolena i poplitealne arterije nastale u saobraćajnom udesu. Indikovano hitno hiruško lečenje od strane ortopedske i vaskularne ekipe.Operisan.Od pocetka hospitalizacije pacijentu učinjene tri operacije,sve vreme na antibiotskoj terapiji kao I pasivnim fizikalnim vezbama.Svakodnevno višestruko previjanje rana iziskuje povećan broj medicinskog osoblja, potrošnju materijala,kao I vremena.Potom primenjena terapija negativnim pritiskom(V.A.C. sistem) što je pokazalo znatno poboljšanje u oporavku I smanjenje svih resursa.Nakon tri nedelje lečenja pacijent se dobrog opšteg stanja,stabilnih vitalnih parametara I zadovoljavajućeg lokalnog nalaza otpušta i prevodi u Klinuku za ortopediju KCS radi daljeg lečenja.
Zaključak: Upotreba V.A.C. terapije je korisna kod lečenja pacijenata sa teškim udruženim povredama jer se ubrzava proces zarastanja rane,onemogućava nastanak sekundarne infekcije bakterijama iz okoline a samim tim se smanjuje upotreba antibiotika kao i troškovi produženog lečenja

WOUND CARE

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The aim of this document is to provide the appropriate management strategy for optimum wound healing, patient comfort and cost effectiveness in line with best practice/evidence. All wounds must be assessed and reassessed by a competent registered health care professional who will undertake a comprehensive assessment of the wound (site, size, surface, grade and appearance, exudate type and volume, state of surrounding skin and level of wound pain)
In wounds that have sustained a large amount of tissue loss as a result of surgery, trauma or chronic ulceration, it may be impossible to bring the edges of the wound together. This is when the wound is left to heal by secondary intention. Delayed wound healing is a significant health problem, particularly in older adults. In addition to the pain and suffering, failure of the wound to heal also imposes social and financial burdens. Vacuum-assisted closure (VAC) therapy has been developed as an alternative to the standard forms of wound management, which incorporates the use of negative pressure to optimise conditions for wound healing and requires fewer painful dressing changes.
In our series we follow surgical wound with infection or patient with risk of open wounds. In all patients (4 four, mail 1, femail 3) we used VAC therapy.

The V.A.C. treatment applies localized negative pressure to draw the edges of the wound to the center of the site. The negative pressure is applied to a special dressing positioned within the wound cavity or over a flap or graft. By applying pressure directly to the wound, we are able to remove the fluid that causes swelling, stimulate cellular growth, increase blood flow, and promote an increased healing response.
VAC is simple to use and appears to be a promising alternative for the management of various wound types.

TREATMENT OF CHRONIC WOUNDS WITH THE NEGATIVE PRESSURE AFTER OPEN HEART SURGERY: THE ROLE OF NURSES

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Abstract. Effective treatment of chronic wounds in patients after open heart surgery requires the usage of negative pressure techniques.
Negative-pressure wound therapy (NPWT) is a novel therapeutic technique using a vacuum dressing to promote granulation and therefore better wound healing in acute or chronic wounds.
Several studies have shown very promising results in patients treated with NPTW for deep sternal wound infection and mediastinitis after open heart surgery. At the Department of Cardiovascular Surgery at University Medical Center Ljubljana NPTW techniques have been used for several years. Our data show that patient treated with NPTW have faster recovery time, a shorter length of stay and better survival as compared to patients treated with conventional methods.
Our experience show that nurses have a pivotal role in the early identification of the wound healing process failure, of wound infection and of overall wellbeing of the patient through the pre-determined nursing assessment of patient state. In our opinion nursing assessment should be conducted accurately, consistently and regularly and interpreted in association with other clinical assessments, conducted by different healthcare professionals (i.e. medical doctors of different specialties, physiotherapists). Effective treatment of patients requiring NPTW treatment after open heart surgery namely necessitates good collaboration between all participants involved in the treatment process: different health care professional (doctors, nurses, physiotherapists) and patient.
Keywords: cardiac surgery, chronic wound therapy negative pressure, health care, patient performance.

PRIMENA TERAPIJE NEGATIVNIM PRITISKOM U KARDIOHIRURGIJI

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Savremeni principi u lečenju inficiranih rana podrazumevaju holistički i multidisciplinarni pristup. Ključ uspeha u lečenju infekcije hirurškog mesta je blagovremeno otkrivanje i prepoznavanje infekcije. Za ovo je najodgovornija sestra koja je dužna da blagovremeno reaguje i sve nepravilnosti prijavi hirurgu.
Savremeni koncept lečenja incizionih inficiranih rana kod kardiovaskularnih bolesnika podrazumeva primenu naprednih obloga/pokrova za lečenje rana/, primenu tkivnih adtheziva i terapiju negativnim pritiskom. (V.A.C. TERAPY)
Već 70 godina je poznato da površna primena negativnog pritiska ima efekte u skraćenju dužine lečenja rana ali tek nakon uvođenja integrisanog sistema za vakum asistiranu drenažu rana počinje njena primena u hirurgiji.
TNP se sastoji od tri komponente : aparatom za generisanje negativnog pritiska, površnom pokrovkom i oblogom za ranu. V.A.C terapija obezbeđuje ravnomerno kontinuirano aplikovanje površnog negativnog pritiska, 50-150mmHg po površini tretirane rane u toku 24 h.
Cilj: TNP terapijom se postiže kontinuirano odstranjivanje edsudata i infektivnog materijala iz rane, obezbeđuje se bolji kontakt i smanjenje površine i ivica rane, smanjuje se otok tkiva, poboljšava perfuzija i stimuliše formiranje granulacionog tkiva.
Kada dođe do kontrakcije rane , kad su zapaljenski faktori u granicama normalnih vrednosti, kad je postignut nutritivan balans, rana se može zatvoriti ili ostaviti da spontano zaraste.

Zaključak: Terapija topikalnim negativnim pritiskom omogućava ,brže lakše i komfornije izlečenje infekcije hirurškog mesta kod kardiovaskularnih bolesnika, smanjuje vreme hospitalizacije, troškove lečenja i angažovanje medicinskog osoblja.

PRIMENA TOPIKALNOG NEGATIVNOG PRITISKA U LEČENjU MEDIJASTINITISA- NAŠA ISKUSTVA

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Uvod: Duboka sternalna infekcija i medijastinitis su najteze forme infekcija hirurškog mesta nakon kardiohirurških operacija, sa visokom stopom mortaliteta i produženom hospitalizacijom. Ovaj rad prikazuje rezultate upotrebe topikalnog negativnog pritiska kod bolesnika sa postoperativnim medijastinitisom.
Prikaz slučaja: bolesnica rođena 1955 god
11.07.2012. - Rekonstrukcija mitralnog zaliska
18.09.2012. U KBC "Podgorica" urađena operacija:revidirana rana i izvađene sternalne žice.
15.10.2012. prijem u KBC "PODGORICA"zbog supektne infekcije postoperativne rane.
28.11.2012. Prijem na IKVB "Dedinje"
Dijagnoza: Mediastinitis III B
27.11.2012. uzet bris rane-zasejane podloge su ostale sterilne .
29.11.2012. urađen je hirurški debridman i poslata je biopsija tkiva-
izolovane su plesni.
Uključena sistemka antibiotska terapija i u sali urađen radikalni debridman rane, sa resekcijom distalnog segmenta grudne kosti tela, ksifoidnih nastavaka i hrskavica rebara koja se pripajaju za inficirani segmentu sternuma.
Učinjena je eksploracija i debridman sinusnih traktova koji se prostiru subkostalno u dužini od oko 10cm obostrano .
Terapija negativnim pritiskom u trajanju od 21 dan-
12.12.2012.Urađena rekonstruktivna operacija
Otpust 20.12.2012
Zaključak: Ovaj prikaz ukazuje na kompleksnost lečenja bolesnika sa infekcijom hirurškog mesta, naročito medijastinitisom. Primenom topikalnog negativnog pritiska postižu se dobri rezultati, skraćuje vreme hospitalizacije i redukuju materijalni troškovi.

PRIMENA TOPIKALNOG NEGATIVNOG PRITISKA U VASKULARNOJ HIRURGIJI- NAŠA ISKUSTVA

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Uvod: Savremeni principi lečenja incizionih infekcija u vaskularnoj hirurgiji podrazumevaju primenu savremenih pokrova za rane kao i primenu topikalnog negativnog pritiska. Topikalni negativni pritisak predstavlja novu metodu lečenja koja se pokazala vrlo delotvorno i ubrzala zarastanje rana i smanjila ležanje u bolnici.
Ovaj rad prikazuje rezultate upotrebe topikalnog negativnog pritiska kod bolesnika sa ishemijom desne noge a potom amputacijom.
Prikaz slučaja:
Bolesnik star 66 godina . Primljen na vaskularno odelenje zbog ishemičnih bolova u nogama,
Posle urađene MSCT dijagnostike , bolesnik je operisan i urađen mu je
(Femoropoplitealni by-pass) desno.
Ubrzo po regularnom otpustu dolazi do akutne ishemije noge.
Ponovni prijem i tada je urađena natkolena amputacija desne noge.
U daljem postoperativnom toku dolazi do infekcije incizione rane na patrljku. Uključena sistemka antibiotska terapija i u sali urađen radikalni debridman rane , a parljak se stavlja na topikalni negativni pritisak.
Urađeno pet zamena
Rana zarasla i bolesnik se otpušta kući
Zaključak: Svaki vaskularni bolesnik koji ima komplikaciju po tipu incizione infekcije je vrlo kompleksan. Posebnu brigu, predstavlja svaka amputacija jer te ljude treba vratiti u normalan život i rad.
Primenom topikalnog negativnog pritiska kod tih bolesnika, omogućeno im je i lakše zarastanje rane a samim tim i brži oporavak, brže dobijanje proteze i vraćanje u normalan život.

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