VACUUM ASSISTED CLOSURE (VAC) FOR SKIN GRAFT PROTECTION IN BURNED CHILDREN.

Klaus Pfurtscheller (1), Michael Hoeller (2), Michael Schintler (3), Maria Trop (4)
(1) Childrens Burns Unit, Dept. of Pediatrics, University Childrens Hospital, Medical University Graz, Austria, (2) Childrens Burns Unit, Dept. of Pediatrics, University Childrens Hospital, Medical University Graz, (3) Dept. of Plastic and Reconstructive Surgery, Medical University Graz, Austria, (4) Childrens Burns Unit, Dept. of Pediatrics, University Childrens Hospital, Medical University Graz, Austria

Vacuum assisted closure (VAC) therapy is a non-invasive, closed system that applies negative pressure to wound tissue. It acts by removing excess tissue fluid from the extravascular space, which lowers the capillary afterload and thereby promotes micro-circulation during the early stages of inflammation. Vacuum therapy induces increased peripheral blood flow and improves local oxygenation. It promotes angiogenesis, stimulates granulation tissue and decreases bacterial colonisation. Since the first report on VAC by Argenta and Morykwas in 1997 (1), topical negative pressure has achieved wide acceptance and application.
In our children's burns unit we have been using VAC for skin graft securement since 2003. We have applied VAC in 45 paediatric patients; the youngest was a 4 month old baby, the oldest 23 years. The results were encouraging (2):
• The take rate was almost 100%,
• there were no problems concerning mechanical ventilation or perfusion in case of circular VAC application;
• nursing effort was uncomplicated, the grafts were properly secured in case of early mobilisation,
• no infections occurred beneath the VAC;
• additional splinting or immobilisation was not necessary.
Two patients suffered complications with serious haemorrhage (3).
Rare complications reported with VAC therapy as dressing sensitivity, rash, pain, pressure necrosis on skin, overgrowth of exuberant granulations, infection, toxic shock syndrome, failure of wound to respond or psychological intolerance were not seen in our patients.
If there is enough uninjured skin surrounding the wound we have found VAC an invaluable tool in paediatric burns. The VAC device can easily be placed over the graft to maintain its stability. VAC therapy is well tolerated by our burned children and it is generally painless.

(1) Argenta LC, Morykwas MJ. (1997) Vacuum-assisted closure: a new method for wound control and treatment: clinical experience. Ann Plast Surg 38(6):563-76.
(2) Schintler M, Marschitz I, Trop M. (2005) The use of topical negative pressure in a paediatric patient with extensive burns. Burns 31(8):1050-3.
(3) Trop M, Schintler M, Urban E et al. (2006) Are 1:4 mesh and donor site contraindications for vacuum-assisted closure device? J Trauma 61(5):1267-70.

Ole Strand - memorial lecture

Radek Krakowski (1), Niklas Hjorth (2), Anna Sahlqvist (3), Sanna Svensson (4), Kristina Silfvenius (5), Carl Mikaelsson (6), Margaretha Lannge (7)
(1) Pediatric Surgery, Astrid Lindgren Children´s Hospital, Karolinska University Hospital, Stockholm, Sweden, (2) , (3) , (4) , (5) , (6) , (7) Pediatric Surgery, Astrid Lindgren Children´s Hospital, Karolinska University Hospital, Stockholm, Sweden

In memoriam - Ole Strand. 10 min

15 YEARS EXPERIENCES WITH FIBROLAN USING TO HEALING BURN WOUNDS

Halina Hofman - Stefanek
Medical Uniwersity of Warsaw

From 15 years in surgery dept. our Children hospital we use Fibrolan from the begining of treatment, during first dressing, usually we changed dressing every day under general anesthesia. After 10 - 12 days every burn wounds are completelly healed. some4 of our patients neads scar treatment. We use laser therapy, creams, massages and hypafix dressing about 3 years.

STUDING OF PCT LEVEL AND MORPHOLOGICAL CHANGINGS IN BURN WOUNDS

Ludmila Budkevich (1), Andrew Lekmanov (2), Vera Soshkina (3)
(1) Moscow Scientific Institute of Paediatrics & Children Surgery, (2) Moscow Scientific Institute of Paediatrics & Children Surgery, (3) Moscow Scientific Institute of Paediatrics & Children Surgery

Aim. To define diagnostic value of procalcitonin (PCT) test for early diagnostics of sepsis at children with severe burns with help of morphological researches of burn wounds tissues.
Methods. 50 children were included in research. The age is from 6 months till 14 years, general burn wounds area from 20 % up to 90 % of total surface of body area (TBSA) without inhalation injury. Besides standard clinical tests, we have carried measurement of semi-quantitative and quantitative PCT concentration. Morphological studying of changes in burned tissues with definition of depth of microorganism penetration was carried out in parallel with it. 30 examples of burned tissues were investigated.
Results. 36 % children had SIRS - PCT <0,5 ng/ml. 23 % patients had risk by development of infectious complications PCT ≥0,5 ng/ml, but <2 ng/ml. Sepsis was diagnosed at 30 % victims – PCT ≥2 ng/ml. Excess of PCT ≥10 ng/ml was revealed at 16

% burnt. Presence of microorganisms in superficial layers of a wound, without penetration into appendages of a skin was fixed in case of SIRS. PCT>0,5 ng/ml – penetration of microorganisms into all thickness of derma. PCT≥2 ng/ml - bacterial invasion of all depth of derma, subcutaneous fat, walls of blood vessels with their destruction. PCT≥10 ng/ml – we fixed presence of bacteria in a gleam of vessels, penetration of microorganisms into full thickness of derma and subcutaneous fat.
Conclusion. The growth of PCT is the sing of bacterial complications. Depth of bacteria penetration in wounds corresponds to change of PCT level.

CONTROL OF OUTBREAK OF PVL PRODUCING USA 300 MRSA ON A PAEDIATRIC BURN CENTRE

Clare Thomas Lead Nurse Paediatric Burn Centre, Birmingham, England Mitel Patel, Consultant Microbiologist,Birmingham Children\'s Hospital, England
Yvonne Wilson, Consultant Burns and Plastic Surgeon, Paediatric Burn Centre, Birmingham, England

Introduction
PVL Panton-Valentine Leukocidin
We report on the successful management of an outbreak of PVL producing USA 300 MRSA strain in a Paediatric Burn Centre affecting four patients, one relative and two members of staff.

Method
The outbreak was identified when two children and one member of staff presented with cutaneous abcesses/blistering lesions within four days.All other clinical observations pertaining to infection were within normal limits.As soon as the isolates were confirmed as MRSA, screening of all staff and current inpatients was instigated (ahead of laboratory identification of the outbreak strain).Outpatients were screened only if symptomatic.Environmental screening was also undertaken.
One further out-patient and one family member presented with cutaneous abscesses in the following days.

Results
1/90 staff and 0/60 patients carried the outbreak strain.Another patient who was treated in the ward in the week preceding the first case was subsequently found to be colonised with the out-break strain.All isolates were confirmed to be a single PVL producing strain by phage typing and genotyping that was closely related to USA 300.

Actions
The following actions were put in place
1) Parents and family doctors of all 74 patients managed during a three week putative exposure period along with regional microbiology laboratories and other Burn Services.
2)Telephone advice line set up for parents/carers and patients
3)Enhanced cleaning of the Burns Ward was undertaken which included whole room decontamination (Meditrox 100, Pershore,UK)with follow up environmental samples being negative
4)Affected staff excluded from work and recived MRSA decolonisation treatment and returned to work in line with the UK national guidelines.

Three months after the last case, no more cases have been identified.

Discussion and Conclusion
This is the first report of CA-MRSA USA 300 strain outbreak in the healthcare setting in the UK. Four patients, one relative and one meber of staff were symptomatic while one staff member was only colonised with the organism.
Early vigorous infection control interventions appear to have contained a potentially serious outbreak.

The use of skin expanders in the repair of burn scar alopecia in children

Dr A.Merone Dr G.Severino
Inf.G.Esposito

The basis of the method of tissue expansion is the intrinsic capacity of soft tissue to expand elastically expanding its surface. This method allows for the availability of tissue from the morphological structural ideal for covering loss of substance using the same fabric anatomic site, with the same characteristics of color, texture and thickness. The most common indications of expanders include: loss of substance in the scalp tissue deficits of arts, alopecia, tattoos, scars from burns, breast reconstruction, etc ... .
Each expander consists of a silicone shell and a valve designed for the injection of saline. There are several types on the market:
Expanders Standard: a) Rectangular damage a theoretical gain equal to the sum of areas of the four sides verticali. In circulation after the removal of the expander, the skin retracts. B) Round. Emisferico. In damage a strip theory the increase in skin is equal to the difference between diameter semicircle expander. c) Crescent. The expansion is greater than that in the middle to end.
Expanders can be divided in relation to the valve seat which may be: a) inner packaging requires a narrow tunnel where it passes the tube connecting between the expander and the valve must be located in a place unreachable by expander at maximum filling. b) external. outer housing, through the skin, may be easier due to infection. c) incorporated. gives the advantage of not practicing for a further loosening the valve.
A plan will establish strict operating location, shape and number of features to be placed expanders. The main problem is the discrepancy between the theoretical gain skin, estimated at maximum volume expander and the actual calculated after extrusion thereof, as skin tends to retract.
The sessions are usually filled on a weekly basis starting from 7 -10 days after surgery. Filling for each session ranges from one tenth to one fifth of the total planned and will stop if you notice excessive skin tension.
Once the optimal expansion of the skin flap is designed to use the type that can be: a) progress is achieved by two straight cuts placed along the margins of progress, these once the midpoint of the curve toward the edge \' high, more or less at the middle of the side wall of the expander. b) triangular flap is a rotation-transposition for injuries triangular c) progress \"over the top.\" lesions on the sides of the expander is prolonged beyond the end of the expander.
The series of Paediatric Burns Centre Santobono Hospital of Naples is limited solely to the alopecia's treatment of the scalp after burn. Where treaties have been used one or more expanders round with built-in valve. The expansion was carried out by introducing a weekly 10-20 ml of saline to obtain the maximum expansion. With the expanded skin so you are prepared to advance one or more flaps which cover the scar area previously removed. This type of treatment has allowed us to treat large areas of scarring of the scalp with a nearly complete restitution ad integrum of the area . The filling phase has been well

tolerated by patients who have suffered from specific symptoms, except for a difficulty in being seen in public more filling.
The authors present some cases treated

BOLD AND BEAUTIFUL – 30 years scalp as a donor site

Sophie Böttcher (1), Kathrin Neuhaus (2), Rosie Zgraggen (3), Thomas Kosk (4), Martin Meuli (5), Clemens Schiestl (6)
(1) Pediatric Burn Center, Plastic and Reconstructive Surgery, University Children\'s Hospital Zurich, Switzerland, (2) Pediatric Burn Center, Plastic and Reconstructive Surgery, University Children\'s Hospital Zurich, Switzerland, (3) Pediatric Burn Center, Plastic and Reconstructive Surgery, University Children\'s Hospital Zurich, Switzerland, (4) Pediatric Burn Center, Plastic and Reconstructive Surgery, University Children\'s Hospital Zurich, Switzerland, (5) Pediatric Burn Center, Plastic and Reconstructive Surgery, University Children\'s Hospital Zurich, Switzerland, (6) Pediatric Burn Center, Plastic and Reconstructive Surgery, University Children\'s Hospital Zurich, Switzerland

Introduction
The scalp is a reliable donor site in pediatric burns and has shown to have low healing complications but sufficient information concerning the long-term outcome is still missing. Since 1977 the scalp has been used as a first choice donor site at our children's hospital and with this study we provide results from patients up to 30 years after skin harvesting in their childhood.
Method
In our study we included patients who had at least one split thickness skin graft harvest from the scalp due to burn injury in childhood and who now have an age of 30 years or older. Out of the 71 matching patients, 58 could be found after this long time period and 32 of them agreed to participate in our study. We performed a thorough clinical examination of their scalp, especially with regard to: hypertrophic scars, abnormal pigmentation, disturbance of the texture and irregular hair growth. The patients were also interviewed about possible negative perceptions concerning their scalp and their general health status was evaluated by using a standardized questionnaire.
Results
In our study, 32 patients were examined, 18 men and 14 women. Their age at the time of the burn trauma was between one and 15; their current age was between 31 and 45 years old. During the acute treatment, one to five scalp harvests were performed on each patient; the total body surface areas burned ranged from 7% up to 55%. The maximum number of harvests was three times on a female and five times on a male participant. The results showed that none of them had a hypertrophic scar or unsteady hair growth. Hypopigmentation areas could be seen in 9%; a disturbance of the texture combined with scaly and dry skin occurred in 3%. None of them reported any personal complaints like a distinct itch or hypersensitivity and all of them felt like that their hair growth was comparable to that of close family members.
Conclusion
This study confirms once more that the scalp ought to be considered as the first choice donor site in pediatric burns as it is a reliable donor site with low healing complications and - as our study shows - with a good long-term outcome. Furthermore, it should disburden the parents' and the surgeons' fears of disfigurement in childhood as well as in adulthood.

Uncommon causes of burn injuries at children

Annegret Wischermann (1), Nikos Marathovouniotis (2), Cora Städtler (3), Thomas Boemers (4)
(1) Department of Pediatric Surgery and Urology Children`s Hospital of Cologne Amsterdamerstraße, (2) Department of Pediatric Surgery and Urology Children`s Hospital of Cologne Amsterdamerstraße, (3) Department of Pediatric Surgery and Urology Children`s Hospital of Cologne Amsterdamerstraße, (4) Department of Pediatric Surgery and Urology Children`s Hospital of Cologne Amsterdamerstraße

Presentation of different and rare causes of burn wounds including photographs concerning the follow- up and the cosmetic and functional results.
The etiological causes were for example a hot water scald from a bidet in an italian hotel, a hairdryer burn injury of the body in a newborn baby, a hot cherrystone pillow heated in a microwave, close contact with a hot engine block during a car accident, a drop into a campfire with burns at the hands and a drop with the back on a glowing barbecue grill and severe burn of scrotal skin by infrared light application with a lamp.
Moreover we saw a baby after a tip over of a thermos jug placed inside the baby carriage, more common lesions were caused by contact to the flame of a candle, to an iron flat, to the window of a hot baking oven.

Our experience in appliance of Granuflex Extra Thin in the treatment of scars.

Anna Chrapusta (1), Jacek Puchala (2)
(1) Plastic and Reconstructive Surgery with Pediatric Burns Centre, University Children's Hospital of Cracow , Poland, (2) Plastic and Reconstructive Surgery with Pediatric Burns Centre, University Children's Hospital of Cracow , Poland

Aim: The treatment of scars is still a difficult and important topic and is a subject of many scientifical investigations. The variety and large number of methods and necessity of searching new one, might be an evidence for the lack of good enough way of the scar treatment. One of the most important methods is a compression therapy.

Methods and results:
Since 2005 we apply for scar treatment a taping with the Granuflex Extra Thin dressing, instead of the classical pressure methods. The aim of the treatment was to evaluate post-burn, post-traumatic and post-surgical scars quality, as well as the quality of areas after reconstruction procedures with the use of the Integra DRT. An additional modification of the employed treatment, after surgical correction of post-burn contractures, was a bi-layerd taping. This was the combination of Steri-strips covered by Granuflex Extra Thin, that seems to help to maintain a good quality of scar, even in body areas, characterized with strong tension and motion.

Conclusions:
Our proposition of this type of therapy is the option, that gives several benefits:
Easy application, even at home, performed by patients or parents of the child.
The comfortable intervals between applications that helps to save the time: fife to seven

days without necessity of doing anything with the scar.
The easy care. This dressing allows for taking a bath or swimming without risk of detach.
The acceleration of recovery and come back to work, other daily activity or sport due to mechanical stabilization and constant controlled pressure.
Ability of the adhesive use in almost all part of the body. The only contraindication is hairy part of the head. A good tolerance by patients independently of the age. Low price of the treatment, comparing any of other methods.

A BURNED PATIENT WITH AN ECTODERMAL DYSPLASIA – DILEMMAS AND PROBLEMS ENCOUNTERED

Dariusz Wyrzykowski (1), Barbara Chrzanowska (2), Piotr Czauderna (3)
(1) Dept. of Surgery and Urology for Children and Adolescents; Medical University of Gdansk; Poland, (2) Dept. of Surgery and Urology for Children and Adolescents; Medical University of Gdansk; Poland, (3) Dept. of Surgery and Urology for Children and Adolescents; Medical University of Gdansk; Poland

Introduction.
Severity of a burn injury in a child depends on the depth and extension of a burn wound, but it can also depend on concomitant injuries, chronic illnesses or systemic disorders. Ectodermal dysplasias are a rare, congenital, heterogeneous group of disorders characterized by developmental dystrophies of ectodermal structures, such as hair, teeth, sweat glands and nails. Presence of ED changes the classical mechanisms of wound healing.
Aim. Results.
The aim of our report is to present our first and unique experience in treating a 4 year old boy with ED and a scald burn; to investigate available literature and compare problems encountered by authors with our own. We would also like to discuss and analyze other potential solutions and compare with the one employed, as well as present the final outcome.
Conclusions.
1. Ectodermal dysplasia is a rare congenital disorder characterized by a dystrophic ectodermal structures.
2. Smaller number and dysplastic structure of skin appendages influences directly mechanisms of classical wound healing.
3. A burn injury in a patient with ED creates a significant clinical problem and requires an individualized approach with a “non-standard” methods being used.

INDICATIONS, TECHNIQUES AND OUTCOMES OF USE OF MATRIDERM IN PEDIATRIC BURNS AND PLASTIC SURGERY

Andrea Favaro (1), Naiem Moiemen (2), David Wilson (3), Andrea Jester (4), Yvonne Wilson (5)
(1) Burn Centre & Plastic Surgery Department, Birmingham Children\'s Hospital, Birmingham - Uk,
(2) Burn Centre & Plastic Surgery Department, Birmingham Children\'s Hospital, Birmingham - Uk,
(3) Burn Centre & Plastic Surgery Department, Birmingham Children\'s Hospital, Birmingham - Uk,
(4) Burn Centre & Plastic Surgery Department, Birmingham Children\'s Hospital, Birmingham - Uk,
(5) Burn Centre & Plastic Surgery Department, Birmingham Children\'s Hospital, Birmingham - Uk

Matriderm is a dermal substitute made of collagen and elastin which has the advantage of permitting the reconstruction of the whole layers of the skin in one single surgical procedure. This property makes Matriderm an interesting tool to be used in pediatric soft

tissue defect reconstruction, as children may comply better with a reduced number of surgical procedures and possibly a reduced length of hospitalization. We have reviewed our experience in the reconstruction of soft tissue defects with Matriderm in 11 children with a range of age from 1-15 years old, over a period from September 2008 to June 2010. The reconstructions involved different anatomical regions and there were multiple causes of defects including post surgical debridement of acute burns, after burn scar contracture release, after excision of congenital lesions, post debridement of necrotic wounds. The results were evaluated according to complications, the need for further surgical procedures, patient satisfaction and longer term outcome was assessed by an independent operator using the Vancouver Scar Scale score.

Aquaplay- Is this increasing self-esteem in burned children?

Sanna Svensson
Pediatric nurse, Astrid Lindgren Children´s Hospital, Karolinska University Hospital, Stockholm, Sweden
K. Berggren, V De Villier, R. Krakowski, A. Sahlqvist, K. Silfvenius, S. Svensson
Astrid Lindgren Children's Hospital, Karolinska University Hospital, Stockholm Sweden

In fall 2008 following request from some parents we started an "aquaplay" group for burned children with visible scars. The aim was to let the children see that there where other children with the same appearance as them selves and also to practice showing their scars among others. Our hypothesis was that this would enhance children\'s self-esteem so they wouldn't avoid activities because of their scars.

We had a group of 6 children within the ages 6-9 year old that met once every month. Their parents were outside the pool during the aquaplay. During that time they where given an opportunity to talk to other parents in the same situation along with our occupational therapist that could answer some questions. In the pool with the children were pediatric nurses a play specialist and a social worker. The aqua-activities were conducted by the social worker that had a program with songs and different games. The children also had free time in the pool to play together.

After one year we conducted an evaluation of the project. A questionnaire was given to the parents to answer anonymously. The evaluation showed that none of the parents had experienced any negative consequences of the aquaplay, on the contrary they all believed that their children\'s self-esteem had grown stronger. One child started to participate in the school sports after attending our aquaplay group. Some parents made comments about their children feeling good to see other children with burn scars on their bodies. The conclusion is that the aquaplay group had positive effects on both parents and children.

Uncommon causes of burn injuries at children

Annegret Wischermann (1), Nikos Marathovouniotis (2), Cora Städtler (3), Thomas Boemers (4)
(1) Department of Pediatric Surgery and Urology Children`s Hospital of Cologne Amsterdamerstraße, (2) Department of Pediatric Surgery and Urology Children`s Hospital of Cologne Amsterdamerstraße, (3) Department of Pediatric Surgery and Urology Children`s Hospital of Cologne Amsterdamerstraße, (4) Department of Pediatric Surgery and Urology Children`s Hospital of Cologne Amsterdamerstraße

Different and rare causes of deep burn wounds that needed split skin graft transplantation are presented including photographs concerning the follow- up and the cosmetic and functional results.
The etiology includes for example a hot water scald from a bidet in an italian hotel, a hair dryer burn injury of the body in a newborn baby, a hot cherry stone pillow heated in a microwave, close contact with a hot engine block during a car accident, a drop into a campfire with both hands and a drop with the back on a glowing barbecue grill and severe burn of scrotal skin by infrared light application with a lamp.
Moreover we saw a baby after a tip over of a thermos jug placed inside the baby carriage, more common lesions were caused by contact to the flame of a candle, to an iron flat, to the window of a hot baking oven.
Presentation of different and rare causes of burn wounds including photographs concerning the follow- up and the cosmetic and functional results.
The etiological causes were for example a hot water scald from a bidet in an italian hotel, a hairdryer burn injury of the body in a newborn baby, a hot cherrystone pillow heated in a microwave, close contact with a hot engine block during a car accident, a drop into a campfire with burns at the hands and a drop with the back on a glowing barbecue grill and severe burn of scrotal skin by infrared light application with a lamp.
Moreover we saw a baby after a tip over of a thermos jug placed inside the baby carriage, more common lesions were caused by contact to the flame of a candle, to an iron flat, to the window of a hot baking oven.

Diagnostik Look - How deep are burns?

Hendrik Voßschulte (1), Dr. Mechthild Sinnig (2)
(1) Pediatric Surgeon, (2) Pediatric Surgeon

Scalds make up to 80% of thermic injuries in childhood. Second degree burns are often coverd with alloplastic material. Having a degree 2b burn one may need to use skin grafts.

For the years 2005 - 2009 we looked up retrospectively how many patients in our clinic needed skin grafting as a change of therapy after temporarily alloplastic covering. Aim of the study was to see how often the primary °2a visual evaluation of the surgeon needs to be revided into °2b within the following days.

Another question for us was the following: Could the rate of initial misinterpretation of the burn deepness and the resulting change of therapy from so called conservative (alloplastic covering) to operative (skin graft) treatment (both in general anesthesia) in childhood burns be significantly reduced by using technical instruments? Since 11/2009 we used a special camera in its development process for the primary determination of the burn depth. We present own results and first comparative pictures from 12 month using this camera.

Facial-burns at children

Nicos Marathovouniotis (1), Anegrette Wischermann (2), Thomas Boemers (3)
(1) Children s Hospital Town of Cologne, Amsterdamer Str. 59, 50735 Cologne, Germany, (2) , (3)

Inhalation injuries are uncommon at children, but are potentially more dangerous than in adults. Thus airway management has frequently the priority in treatment of facial-burns. Dealing with facial-burns involves \"open\" dressing method, frequent cleansing, application of creams.Facial tissue is highly vascular and heals quickly.
If debridement and grafting is required, it should be done in the second week after the accident.
Specially fitted pressure masks should be worn as soon as grafts as stable.
Facial-burns at children after conservativ and operativ treatment would be presented and discussed-.

Novel technique to facilitate split thickness skin grafting in children by infiltration using a jet lavage pump

Esther Lau (1), Kuebler JF (2), Vossschulte H; Ludwikowski B; Sinnig M (3)
(1) Centre of pediatric surgery Hannover; childrens hospital Bult; Hannover, (2) Centre of pediatric surgery Hannover; medical school; Hannover, (3) Centre of pediatric surgery Hannover; childrens hospital Bult; Hannover

Harvesting of a split thickness skin graft is a common plastic surgery procedure and various methods are currently used. We want to present our method in preparing the skin to facilitate harvesting. Several techniques to stretch the skin before harvesting have been described including physical traction or infiltration in order to achieve a homogenous surface. We demonstrate/present our innovative technique to infiltrate subcutaneously N.S 0,9% with adrenalin 0,05% by a jet lavage machine. For over twenty years of performing skin grafting we have used this method and conclude that provides a homogenous tidy graft in a short time with less bleeding at the raw area of the donor site.

The molecular analysis of skin regeneration in patients after reconstructive procedures with Integra DRT® - preliminary report.

Jacek Puchala (1), Michal Nessler (2), Justyna Drukala (3), Anna Chrapusta (4)
(1) Plastic and Reconstructive Surgery Department with Pediatric Burns Centre, University Children\'s Hospital, Cracow, Poland, (2) Plastic and Reconstructive Surgery Department with Pediatric Burns Centre, University Children\'s Hospital, Cracow, Poland, (3) Biochemistry and Biotechnology Chair, Jagiellonian University, Laboratorium of Cell Biology, (4) Plastic and Reconstructive Surgery Department with Pediatric Burns Centre, University Children\'s Hospital, Cracow, Poland

INTRODUCTION:
Large skin defects, caused by trauma or radical resection of a scar/lesion require skin substitutes or grafting. Autologous split thickness skin grafts or full thickness skin grafts are the most popular techniques. Unfortunately, these methods create donor sites and the final results are not always satisfactory. This is due to poor wound healing in selected areas, low elasticity and scarring of transplanted skin. The wound healing is a very complex process, which includes many molecular interactions, while the role of cytokines involved in this process is not well known. In pediatric reconstructive surgery it is very

important to provide simple treatment scheme with good final functional and esthetical result. Currently, there are a few skin substitutes available, approved for reconstructive surgery. The analyzed Integra DRT® is one of the most popular scaffolds used all over the world but, up to date, it is not clear how the process of dermal regeneration on this template occurs.

AIM OF THE STUDY:

To understand the molecular process of early wound healing/dermal regeneration and severity of inflammatory reaction by analysis of selected cytokines and growth factors in patients after implantation of Integra DRT®. The better knowledge of molecular interactions can bring us closer to optimize the Integra DRT® treatment scheme.

MATERIAL AND METHODS:

In this prospective study, during 19 months, a group of 15 children scheduled for elective reconstructive procedures with use of Integra DRT was enrolled. The mean patients' age in this group was 16 (SD±5,3), 6 girls and 9 boys. The indication for surgery in 9 cases (60%) was post-burn deformation and scarring, while in 6 cases (40%) was giant bath naevi. All patients were treated with two-stage reconstructive procedure. The treatment includes in the first stage scar/lesion excision and implantation of Integra DRT®. In the second stage, after 3-4 weeks ultra-thin split thickness skin grafting were placed on implanted Integra. For analysis, 4ml venous blood samples were drawed from patients before surgery, 24 hours after surgery, 6 days after surgery and 21-28 days after surgery (before skin grafting). The samples were centrifuged with special protocol and stored in -80oC until analyzed. The analysis of plasma levels of EGF, TGF-beta, FGF, VEGF, IFN-alfa, GM-CSF, Il-4 and Il-8 were performed by Invitrogen Laboratories with use of Multiplex® technology.

RESULTS:

In the analyzed group of patients, the total surface of implanted Integra varied from 130 – 1000 sq cm (mean value 461 sq cm). The mean Integra take rate was 93%, while serious complications (>15% implanted area) occurred in three cases and included hematoma, infection and preterm silicone detachment, no Integra loss in all cases. The plasma molecular analysis revealed slight fluctuations of concentration of EGF and FGF, ranging 31pg/ml - 39pg/ml and 38pg/ml – 44pg/ml, respectively. There were noticeable variations of plasma levels of IFN-alfa, TGF-beta and IL-4 during investigated early phase of wound healing. The mean values of TGF-beta growth rapidly from 4600pg/ml to 6296pg/ml (NS) after three weeks of Integra healing. Levels of IL-4 plasma concentration growth rapidly in first week after surgery from 65pg/ml to 97pg/ml (NS), while in the next three weeks, there was a decrease of plasma concentration of IL-4, reaching mean value 86pg/ml (NS) at the end of the observation time. There was a statistically significant difference in plasma concentrations of IFN-alfa, which peaked from mean value 177pg/ml before the surgical intervention to 310pg/ml at the end of the study.

CONCLUSIONS:

The study revealed that there are specific fluctuations of plasma concentration of molecules during wound healing with Integra DRT®. Growth factors: EGF and FGF are not promising markers of Integra DRT® healing, because of small concentration fluctuations. The analysis of VEGF, GM-CSF and IL-8 brings no information about wound healing due to very low plasma concentration levels, which are in most cases undetectable. The markers of special interest are TGF-beta, IFN-alfa and IL-4. Those molecules can be easily analyzed form peripheral blood sample and bring invaluable information about Integra DRT® healing process. There is a need to continue the study in order to fully understand cytokine fluctuations as early markers of dermal regeneration impairment.

PEDIATRIC BURN AND SURGICAL TREATMENT IN UZBEKISTAN

Babur Shakirov (1), Ysuf Achmedov (2), Xudoiberdy Karabaev (3), Utkur Aminov (4), Komil Tagaev (5), Irkin Hakimov (6)
(1) Samarkand State Medical Institute, Burn department of RCSUMA, Uzbekistan, (2) Samarkand State Medical Institute, Burn department of RCSUMA, Uzbekistan, (3) Samarkand State Medical Institute, Burn department of RCSUMA, Uzbekistan, (4) Burn department of RCSUMA, Uzbekistan, (5) Samarkand State Medical Institute, Burn department of RCSUMA, Uzbekistan, (6) Burn department of RCSUMA, Uzbekistan

Introduction: Uzbekistan has recently seen an increase in pediatric deep injuries. In Central Asia deep burns are widespread, because many people, especially children, walk barefoot in summer, and because the heated sandal is still used for keeping warm in winter. Characteristics of sandal burns include not only skin injuries of various depths but also injuries to underlying tissues: subcutaneous fat, fasciae, muscles, and even bones.
Methods: Over the 9-year period, 92 patients with deep burns when the skin will not regenerate and tendons, muscles and bones were not injured (full thickness burn) were treated in the RSCUMA, Samarkand, Uzbekistan. Of the 92 children, 44 (47,8%) patients were under 3 years old, 23 (25,0%) patients were between 3 and 5 years old, 14 (15,2%) patients were between 5-10 years old, 11 (12,0%) were between 10-14 years . Most of them were children under 3 years of age who fell into sandal heaters. In the cases, the sandal burns caused especially deep and severe injuries of tissue because of the immediate contact with burning agent. There were many hot ash burns and asphalt burns. The following features characterized the pathogenesis of deep burns. First, sandal burns were caused by direct contact between skin and thermal agent. Second, in all cases, edema of the soft tissues of the feet developed during the first 24-48 h after thermal burns. To prevent this, the patients with recent burns were treated with necrotomy. Chemotherapeutic materials were placed on the wound surface to accelerate rejection of the necrotic tissues. Necrectomy was performed as early as 7 to 9 days after the burn incident if the burned surface area, did not exceed 5% to 7% of the patient's total body surface area. We normally placed skin grafts on granulation tissue, when a wound was completely ready for auto graft closure.
Results: Of all patients, 73,9 % (n=68) were healed after the first autodermoplastic surgery. The second autodermoplastic surgery was performed 26,1 % (n=24) of the patients because the transplanted skin dissolved in some places.
Conclusion: This effective treatment is used to accelerate the rejection of necrotic tissue, to prepare the wound for early autodermoplastic surgery, to decrease the post-burn contractures/deformities, and also to shorten hospital stay for the patients.