NPWT INDUCED EFFECTIVE WOUND HEALING IN TREATMENT OF VASCULAR GRAFT INFECTIONS

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VGI – vascular graft infection

Prosthetic grafts

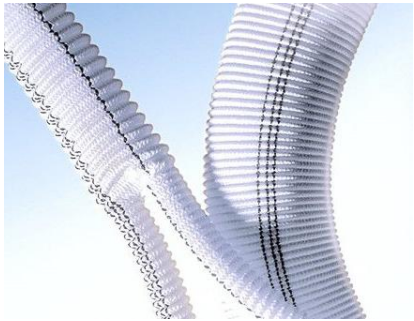
Risk of infection

< 1 % abdominal aortic grafts

6 % infrainguinal grafts

Increased

Morbidity (limb loss)	30%
Mortality	35%



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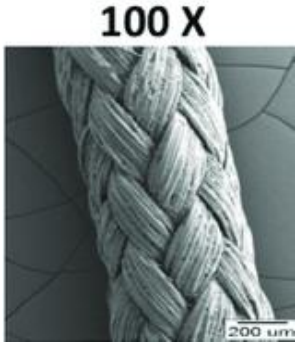
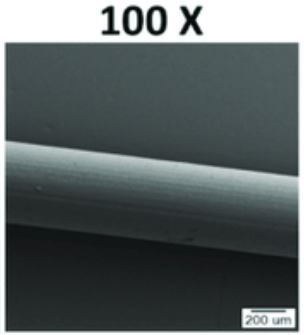
VGI – vascular graft infection

DIRECT CONTAMINATION
- Initial surgery
- Postoperative manipulations
- Retrograde (SSI!)

HAEMATOGENOUS SEEDING

COLONISATION
- Depending on type / structure





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VGI – vascular graft infection

RISK FACTORS

- Anatomic site — GROIN 
- Wound related complications
- Co-morbidities
- Revision / redo surgery
- Emergency surgery
- Prolonged operating time
- Perioperative infection at another site
- Co-existing gangrenes / trophic wounds

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VGI – vascular graft infection

CLINICAL MANIFESTATIONS, SIGNS

Early VGIs / Late VGIs

Pathogenes – S. Aureus, P. Aeruginosa, E. Coli / S. Epidermidis

Local: SSI (inflammation - erythema, tenderness, cellulitis, abscess)

Fistulatisation

EXPOSURE

Pseudoaneurysm

Anastomotic dysruption

"Not everyone is happy with the sight of a cabrio with blue stripes"

General: Fever

Chill

Leukocytosis, CRP, PCT

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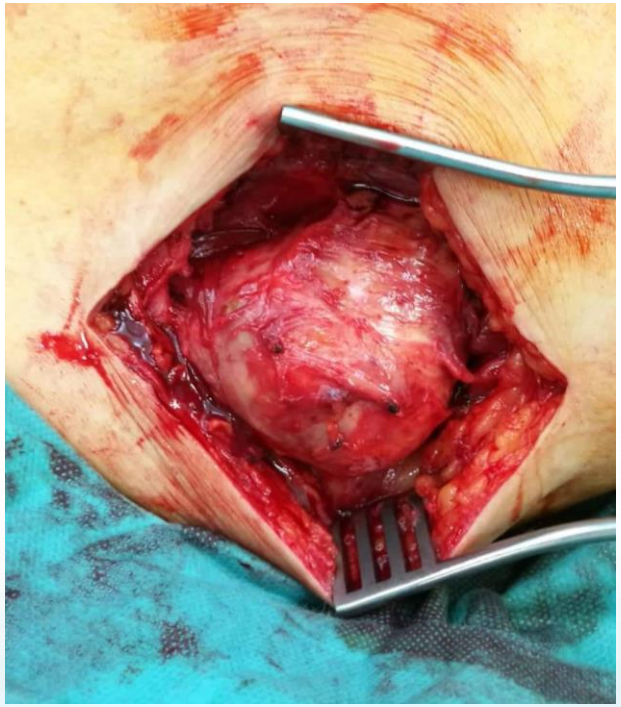
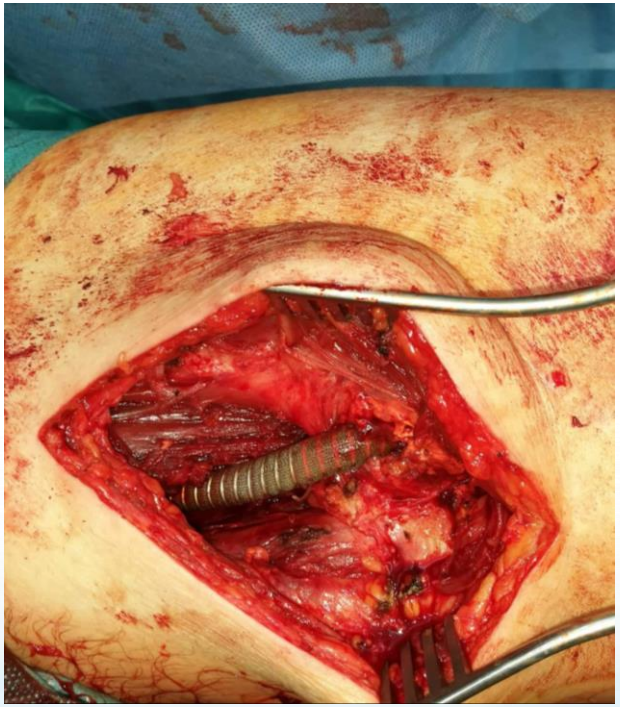
VGI – vascular graft infection

Pictures from Gergely Vadasz MD's picture collection

VGI – vascular graft infection





VGI – vascular graft infection

CLASSIFICATION

SAMSON

Grade 1. superficial, skin / subcutaneous tissue
Grade 2. deep, muscle / fascia
Grade 3. graft body infection (no anastomosis)
Grade 4. anastomic site involvement (no disruption)
Grade 5. anastomosis disruption

SZILAGYI

Grade 1. superficial, dermis only
Grade 2. deep, subcutaneous tissue
(no vascular implant involvement)
Grade 3. vascular implant is affected

DIAGNOSIS

Blood work, blood cultures
DUS
CTA / MRA
PET / CT

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VGI – vascular graft infection

MANAGEMENT

- Co-morbidities
- Graft integrity
- Vascular anatomy
- Extent of the infection
- Pathogenes

EXTENDED ANTIMICROBIAL THERAPY

EXTRAANATOMICAL (IN SITU) BYPASS
COMPLETE GRAFT EXCISION

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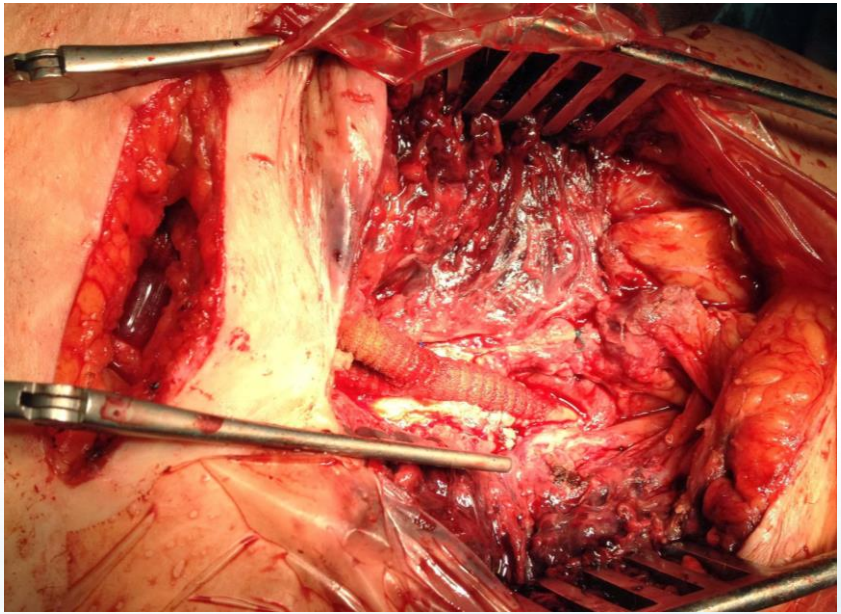
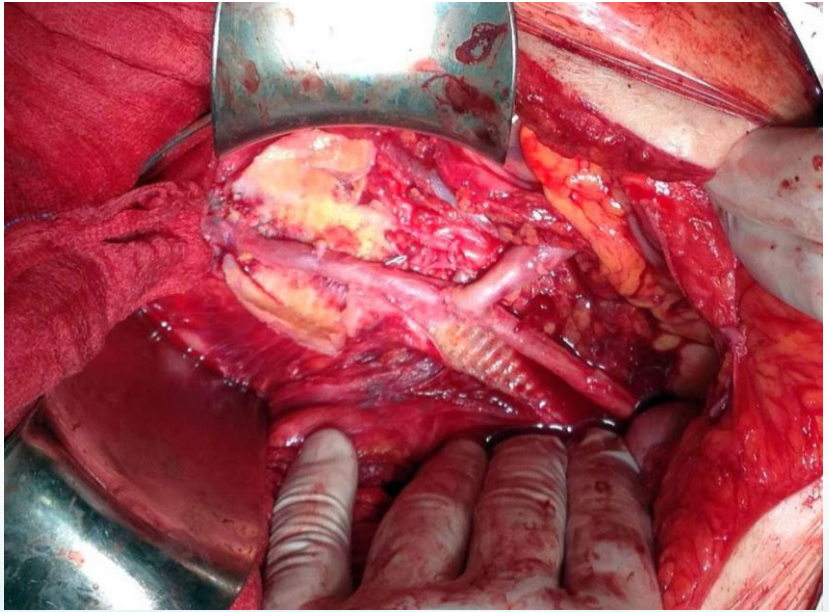
VGI – vascular graft infection





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VGI – vascular graft infection

GRAFT SPARING

Elderly patients
Severe co-morbidities
No systemic sepsis
Graft is patent
Intact anastomosis

Systemic sepsis
Proximal anastomosis
Anastomotic disruption
Virulent pathogene
Higher risk of relapse of infection

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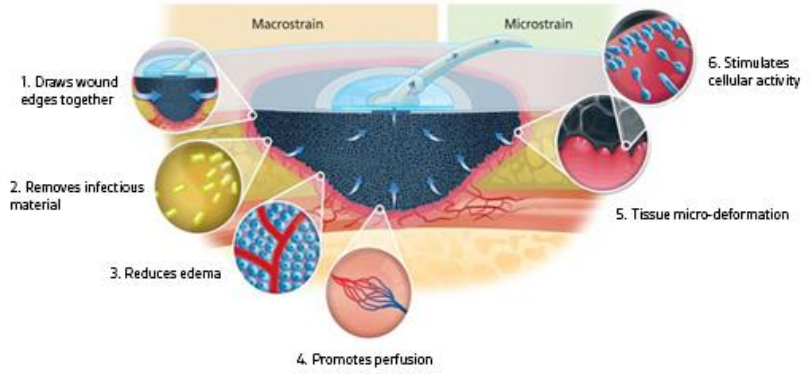
NPWT

GRAFT SPARING

Avoiding radical surgical solutions



Mechanical contraction
Reducing edema
Stimulating circulation
Increasing granulating tissue formation
Removing infectious fluid
Keeping the wound closed until secondary wound closure

NPWT

GROIN

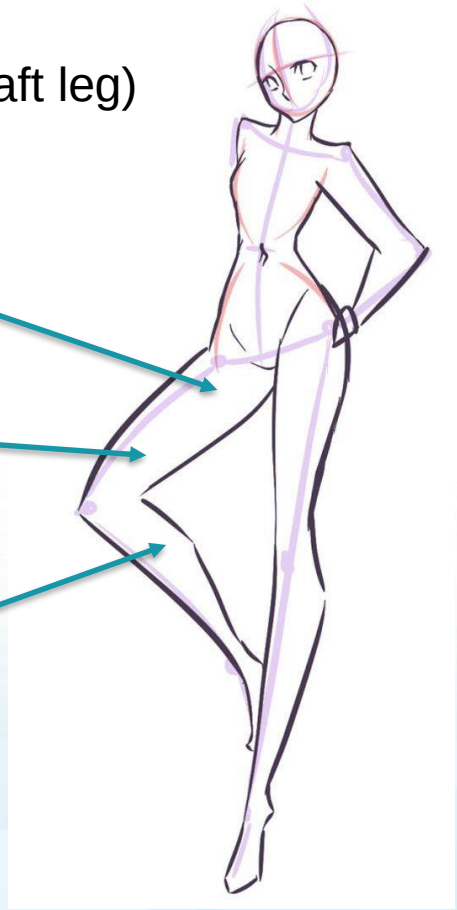
- Aorto-bifemoral (prosthetic graft leg)
- Ilio-femoral
- Femoro-femoral crossover
- Femoral patch
- Femoro-popliteal

ABOVE THE KNEE

- Femoro-popliteal
- GSV harvest place
- Popliteal patch

BELOW THEN KNEE

- Femoro-crural
- Popliteo-crural



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IN OUR CLINICAL PRACTICE

From May 2018 to Dec 2018
8 patients
Graft patency, perigraft infiltration (DUS)
Initial surgical debridement
NPWT 80-90 mm Hg
Systemic antibiotic therapy 2 – 6 weeks postoperatively
NPWT until: graft was covered with GRANULATION TISSUE
wound size has been reduce to SECONDARY CLOSURE
wound bed cleaned up to MUSCLE FLAP coverage

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IN OUR CLINICAL PRACTICE

Graft anatomy and material among 8 patients undergoing VAC therapy for VGI in the lower limb

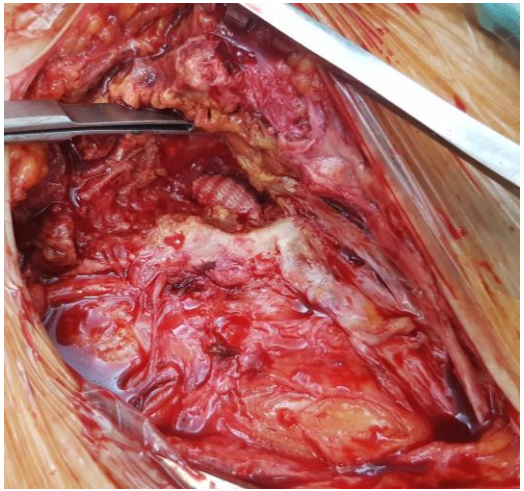
Bypass graft / vascular anatomy / site	Patients	Vein : Synthetic : Direct Suture
Postpunction haematoma (groin)	1	0 : 0 : 1
Femoro-profundal bypass (groin)	2	0 : 2 : 0
Femoro-popliteal above knee bypass (groin)	2	0 : 2 : 0
Femoro-popliteal below knee bypass (groin)	1	1 : 0 : 0
Femoro-popliteal below knee bypass (crural)	2	2 : 0 : 0

IN OUR CLINICAL PRACTICE

RESULTS

Duration VAC therapy	9 ± 6 days
Wound healing	
Secondary wound closure	4 cases
Open wound management	2 cases
Vascularised tissue graft	2 case
Observation period	3 – 6 months
Reinfection or SSI	0 during this period

IN OUR CLINICAL PRACTICE
SECONDARY WOUND CLOSURE



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VASCULARISED TISSUE FLAPS

Coverage of infected grafts
Mortality and amputation rates ↓
Graft salvage ↑
Choices :

- sartorius
- gracilis
- rectus femoral
- rectus abdominis
- gastrocnemius
- soleus

} muscle

- tensor fascia lata
- omentum

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VASCULARISED TISSUE FLAPS

Improved healing time
Enhanced delivery of oxygene
antimicrobials
phagocytes

Important
- Cooperation with reconstructive surgeon
- Totally cleaned up wound bed

IN OUR CLINICAL PRACTICE
TRANSPOSITIONAL SKIN GRAFT







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Pictures from Gergely Vadasz MD's picture collection

IN OUR CLINICAL PRACTICE SARTORIUS MUSCLE FLAP

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CONCLUSION

Biological grafts could carry a risk of infection as well

Using prosthetic grafts brings higher morbidity of VGI

Deep perivascular infections should be treated with NPWT (groin)

NPWT induced wound healing can be a viable graft preservating treatment option

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THANK YOU FOR YOUR ATTENTION!

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