

Prevention of Poststernotomy Wound Infections in Obese Patients by Negative Pressure Wound Therapy

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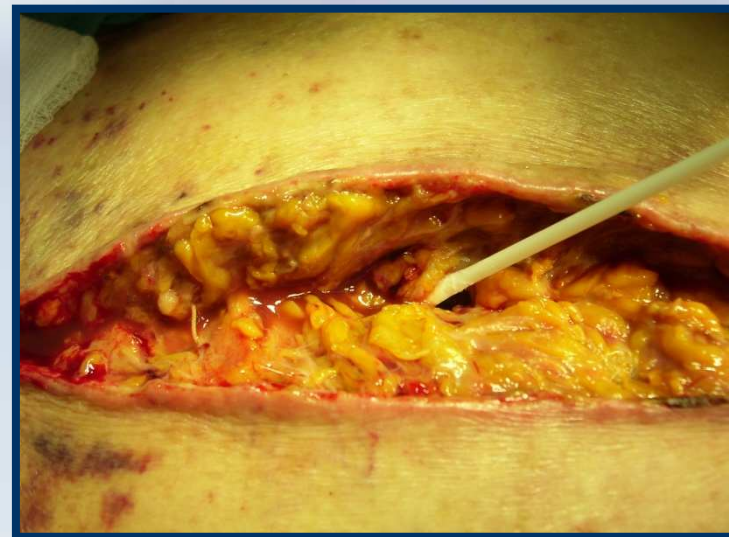
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The Problem

Key event in most of sternal wound infections:
(6000 pts/y in Germany)



Breakdown of skin suture



Seepage of skin flora
into deeper layers

The Concept

Concept of prophylactic Negative Pressure Wound dressing Treatment (NPWT)

- “Sterile” wound environment
- Foam dressing; -125 mmHg
- Stable adaptation of incision edges
- Reduction of:
 - Tensile stress (supine position)
 - Buckling stress (sitting position)
- Improved wound healing
 - Antibacterial barrier after 6-7 days



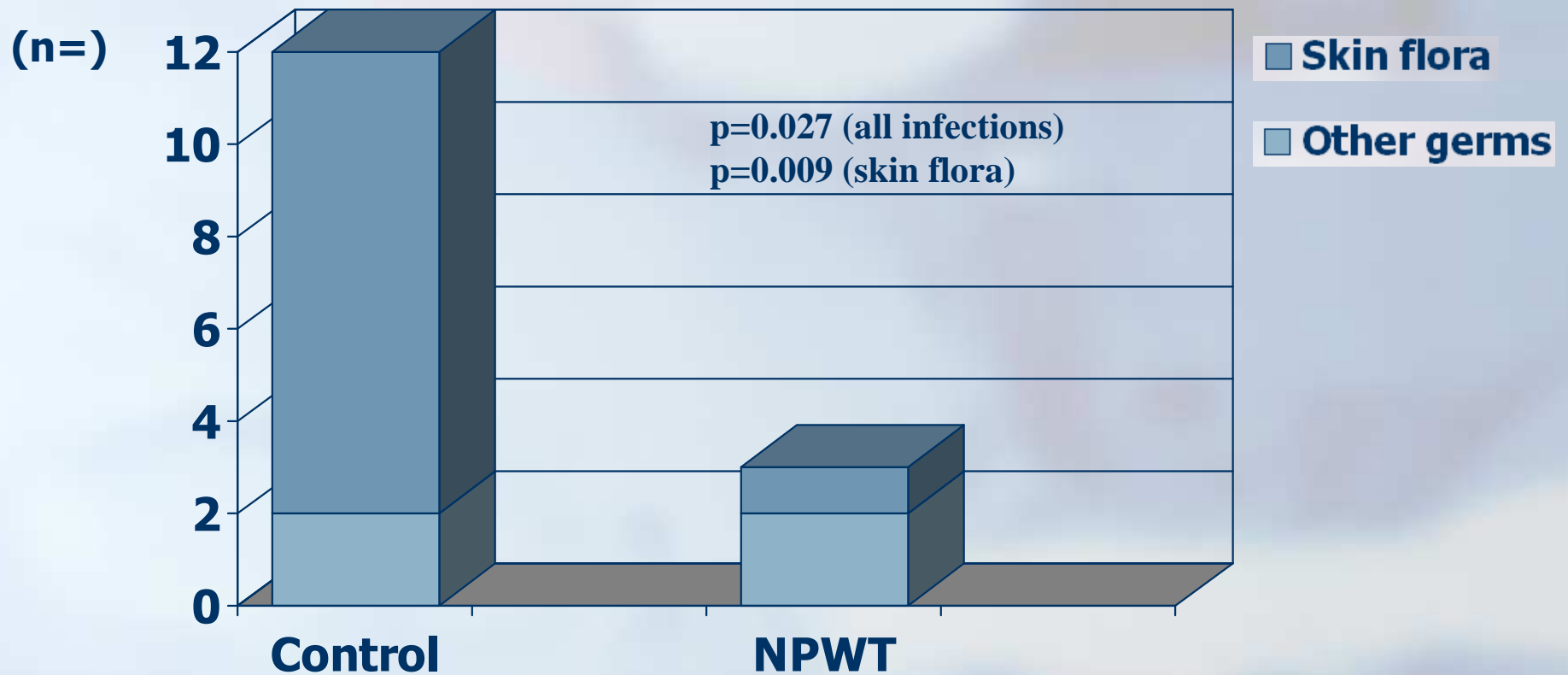


Methods

- Two-arm prospective study, 150 patients (BMI \geq 30) with median sternotomy
 - NPWT foam dressing (PREVENATM) (n=75)
 - Control (conventional wound dressing) (n=75)
- Primary endpoint: Wound infection requiring revision within 90 days
- Mann-Whitney U-test, Fisher's exact test, Kaplan–Meier analysis

Results (I)

Wound infections within 90 days



Results (II)

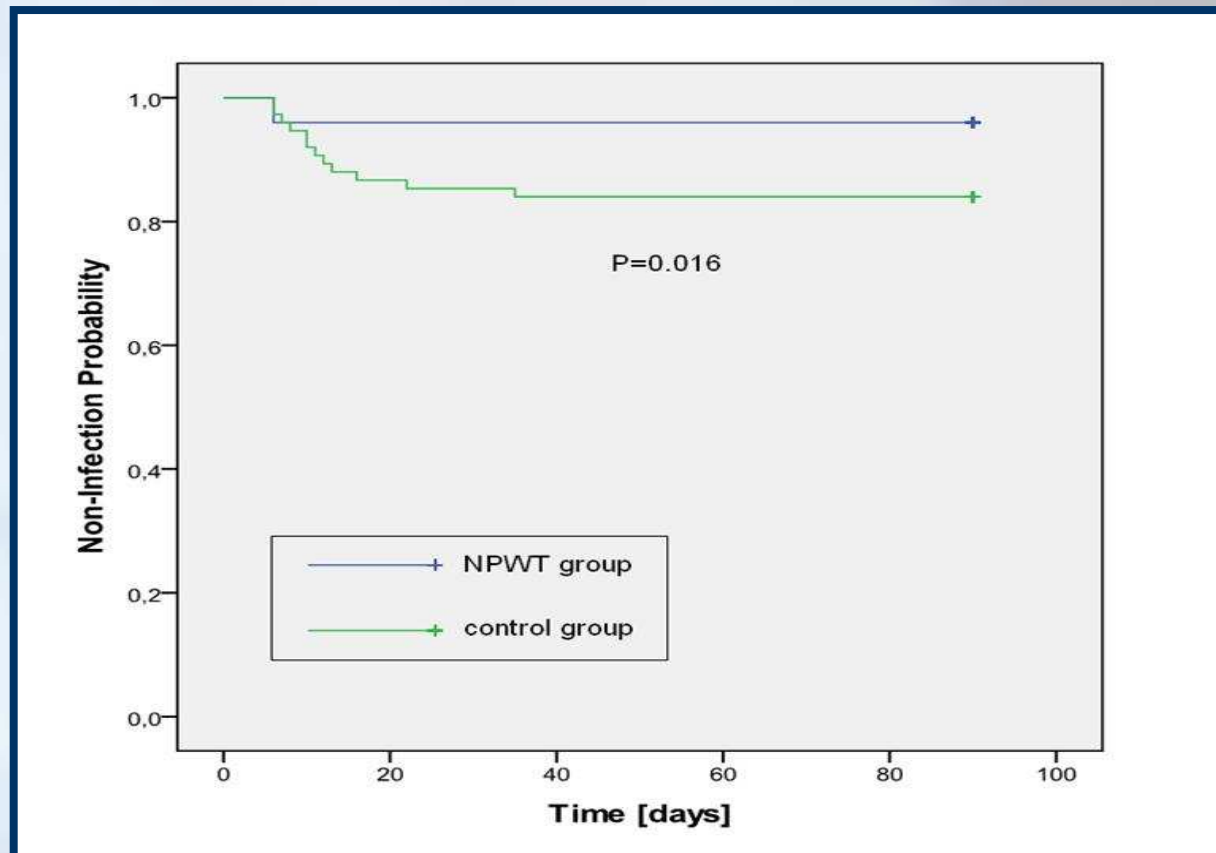
At time of NPWT dressing removal



- Incision is closed/healed
 - even in problem zones
- Antimicrobial barrier is established

Results (III)

Time until diagnosis of infection





Conclusion

Prophylactic NPWT over clean, closed incisions for the first 6 to 7 postoperative days significantly reduces the incidence of wound infection after median sternotomy in the high-risk group of obese patients.



Conflicts of Interest

The presented study is an initiative of the Deutsches Herzzentrum Berlin (the Institution)
(Investigator Prof. Onnen Grauhan)

All units used in this study were bought by the Institution
No external grant was provided for this study.

The presenter's presence at this conference is supported by the producer of the
Prevena™ System, KCI Europe Holding BV, Houten, the Netherlands

(The Prevena™ Closed Incision management System is the product described in this study)





Economic Considerations (Germany, 95 000 cases/year)

- 3x VAC revision +3 week hospital stay
 - Costs: 36,261 € vs. 13,356 € per patient *
 - -9,154 € (hospital) vs. -13,751 € (health-care insurance)
- NPWT -> Wound infection rate -66% (all pts.)
- Costs of wound infections -60 to -90 million €/y
 - -24 to -36 million € (hospitals)
 - -36 to -54 million € (health-care insurance)
- 350 €/unit -> Savings 30 million €/year

* Graf, Eur J of Cardio-thorac Surg 37 (2010): 893



How does NPWT work?

- NPWT provides a “sterile” wound environment
- NPWT supports wound healing
 - Improved microcirculation, Wound secretion drainage, Stable adaptation of incision edges
- With NPWT an adequate barrier to external infectious sources (closed skin) is established much earlier (6-7 days) than with conventional wound dressing (up to 3 weeks)