

Investigating InteguSeal* – A study of a new non-pharmaceutical way to minimize surgical site infections and its economic impact

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Surgical Site Infections are the most important problem facing surgeons today. There are a range of measures that can be taken to minimize infections but still risks remain. At the Department of Cardiovascular Surgery at the University Hospital, Charité in Berlin Dr Privat-Docent Pascal Dohmen has been pioneering the use of InteguSeal*, an innovative product from infection control specialists Kimberly-Clark Healthcare. At EACTS on September 15th at 12.45pm Dr Dohmen outlined his study and the statistically significant outcomes. Here he summarizes his findings.

Incisionally-based surgical site infections (SSI) are estimated to account for up to 30% of all nosocomial infections among surgical patients. These SSI remain a substantial cause of mortality, morbidity and prolonged hospitalization. Standard institutional preoperative skin decontamination includes ade-



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quate pre-operative showering, hair removal, skin disinfectant, the use of adhesive drapes and sufficient hand hygiene to reduce the risk of skin flora contamination. Nevertheless we still see patients suffering from SSI also due to increasing age, co-morbidity of patients and bacterial resistant to antibiotics.

Therefore we started the additional use of InteguSeal*, microbial sealant (Kimberly-Clark Health Care, Roswell, Georgia, USA), which can be applied on the skin over the commonly used surgical skin preparation. Upon contact with the prepared skin, the n-butyl cyanoacrylate

polymerizes with the proteins present in the stratum corneum (Figure 1). This dramatically reduces the potential migration of bacteria which have not been eliminated adequately by skin decontamination. Furthermore due to the high water vapor transmission of the microbial sealant a greenhouse effect will be avoided. Naturally and gradually InteguSeal* microbial sealant will wear off skin as skin exfoliates over three to seven days.

Since March 2007 InteguSeal* has been used at the Department of Cardiovascular Surgery (Director Wolfgang Konertz MD PhD) at the University Hospital, Charite in Berlin.

In a prospective study we evaluated 189 patients receiving InteguSeal* versus 721 patients with standard institutional care between March and November 2007. A statistically significant reduction of SSI were seen in patients receiving InteguSeal* versus control group respectively 1.1% versus 4.6% ($p=0.025$). Patient characteristics were evaluated after the risk stratification system of Fowler et al showing a highly significant

prediction of SSI in the InteguSeal* 3.1% versus control group 2.4% ($p=0.001$).

A retrospective study was initiated to evaluate patients with a similar prediction of SSI by a single surgeon (Pascal M. Dohmen MD PhD). Between January 2006 and July 2008, 580 patients were included receiving either standard institutional care (control group, $n=280$) or additionally a microbial sealant (InteguSeal* group, $n=300$). Patient characteristics were evaluated showing a comparable SSI prediction for both groups respectively 3.5% vs. 3.2% ($p=0.293$). The incidence of SSI, however, was significantly statistically reduced by using InteguSeal* respectively 6.7% versus 2.4% ($p=0.011$).

The financial impact of reducing SSI was 50.000 Euro based on decreasing the number of patients who needed additionally antibiotic therapy, as well as Vacuum Assisted Controlled therapy. Preliminary results show the economic impact of using this microbial sealant calculated by the Diagnosis Related Group (DRG) payment system was 305.000 Euro taking in consideration the investment in InteguSeal*.

In conclusion we can confirm that using InteguSeal* shows a significant statistical reduction in the number of patients suffering from SSI, which leads to a reduction of secondary costs.