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P.R. Vogt[1], A. Darrall[2], P.A. Berdat[1], G. Santoro[3], D. Schmidlin[4], G.G. Khubulava[5], S.P. Marchenko[6], M. Andreas[7], G. Laufer[7], E. Tabori[8], S. Schulz-Stübner[8], A.B. Naumov[6], V.V. Suvorov[6]

Significant reduction of sternal wound infection in cardiac surgical patients

[1] Department of Cardiovascular Surgery, Cardiovascular Centre Zurich, Klinik Im Park; Zurich, Switzerland;
[2] Statworx Science Data; Frankfurt, Germany;
[3] Deparment of Hygiene and Infection Prevention, Klinik Im Park; Zurich, Switzerland;
[4] Department of Anaesthesia and Reanimation, Klinik Im Park; Zurich, Switzerland;
[5] Kirov Military Medical Academy, Departement of Cardiovascular Surgery; Saint Petersburg, 194044, Russian Federation;
[6] Saint-Petersburg State Pediatric Medical University; Saint Petersburg, 194100, Russian Federation;
[7] Department of Surgery, Division of Cardiac Surgery, Medical University of Vienna; Vienna, Austria;
[8] BZH GmbH Deutsches Beratungszentrum für Hygiene; Freiburg/Breisgau, German

Paul Robert Vogt, Prof., Dr. med., Dr. h.c., Professor of Cardiovascular Surgery, Honorary Doctor of St. Petersburg Pavlov State Medical University (Russia);
Alexander Darrall, Statistician;
Pascal André Berdat, PD Dr. med., Cardiovascular Surgeon;
Giuseppe Santoro, Consultant in Hygiene;
Daniel Schmidlin, Anesthesiologist, Head of the Department of Anesthesiology and Intensive Care;
Gennadiy G. Khubulava, Doctor Med. Sc., Academician of Russain Academy of Sciences, Head of the Department of Cardiac Surgery; orcid.org/0000-0002-9242-9941;
Sergey P. Marchenko, Doctor Med. Sc., Professor, Cardiac Surgeon; orcid.org/0000-0003-4512-6101;
Martin Andreas, PhD, Assistant Professor for Cardiac Surgery Chair;
Günther Laufer, Professor, Cardiac Surgeon;
Ernst Tabori, Dr. med., Consultant in Hospital Epidemiology and Infection Control, Consultant in Gynecology and Obstetrics, Infectiologist;
Sebastian Schulz-Stübner, PD Dr. med., Consultant in Hospital Epidemiology and Infection Control, Consultant in Anesthesiology Critical Care, Emergency and Pain Medicine, Psychotherapy Quality Management;
Aleksey B. Naumov, Cand. Med. Sc., Assistant Professor, Anesthesiologist; orcid.org/0000-0003-0323-0162;
Vitaliy V. Suvorov, Cand. Med. Sc., Cardiac Surgeon

Background. Sternal wound infections continue to be a major source of morbidity and mortality after cardiac surgery being associated with markedly increased hospital costs. Prophylactic antibiotics and glycaemic control have decreased but not eradicated this life-threatening complication. We undertook a multinational study to determine whether a detailed infection prevention protocol using a specific pre-, intra- and postoperative strategy including topical application of antibiotics (Group B; infection prevention protocol) would further reduce the incidence of sternal infections compared to established standard treatment (Group A; standard group).

Patients and methods. 8168 consecutive patients undergoing cardiac surgery from February 2006 to June 2015 at four institutions in three countries were included: 4615 patients in the infection prevention protocol Group B (prospectively included) and 3553 patients in the standard Group A (retrospectively studied). Patients were matched using propensity score adjusted analysis. In both groups, a second-generation cephalosporin was given prior to surgery and repeated if surgery exceeded six hours. Group A, but not Group B patients, received additional three doses of antibiotics after surgery. Patients were followed for one year to include sternal would infection presenting after discharge from the hospital. Data are presented as the means and standard deviations for continuing variables and as occurrences and percentages for categorical variables. Welch's t-tests and χ^2 analyses were used to test statistical significance. Additionally, logistic regression analyses were applied separated into Group A and B in order to examine the potential impact of established risk factors for sternal wound infections.

Results. Preoperative patient characteristics and risk factors such as diabetes, gender or age did not differ between groups while others significantly differed though with merely very small or small differences. There was a significant difference of major outcome parameters in favour of the infection prevention protocol (Group B) versus the standard treatment (Group A): incidence of superficial wound infection: