Systematic review of risk factors for surgical site infection following pediatric scoliosis surgery

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Objective:
• To identify risk factors associated with the occurrence of surgical site infection after pediatric scoliosis surgery.

Methods:
• We searched Pubmed (Medline), EBM Reviews, Scopus and CINAHL for articles published between January 1, 1991 and August 27, 2012 using “MeSH” terms, “Surgical Wound Infection”, “Spine/surgery”, “Risk factor”, “Scoliosis”, “Spine”, and “infant OR child OR adolescent”. Relevant references were searched through cross-references. We identified eligible articles with the pre-specified criteria. Study quality was appraised with Agency for Healthcare Research and Quality (AHRQ) Criteria based on a weighted scoring of 0 to 100 (2), where a score of >67 was defined as a study of high quality.

Results:
We identified 12 full text articles from a total of 135 abstract and titles relating to risk factors and SSI in pediatric scoliosis surgery (Figure 1). Study characteristics are presented in Table 1. Studies by Milstone and Linam were of high quality with an AHRQ score of 74 and 71.5 respectively. Measures of effects, including odds ratios with 95% confidence intervals and/or p values were reported inconsistently. Approximately 80 risk factors were tested; not all factors were tested in every study. Of the 80 risk factors, at least 19 factors were found to be significant (Table 2). Pooled analysis was not performed due to heterogeneity in the results.

Conclusion:
Heterogeneity in risk factors for occurrence of surgical site infections after pediatric scoliosis surgery suggests a lack of conclusive evidence for any individual risk factor. A prospective multicenter trial is required to study the role of risk factors in surgical site infection following pediatric scoliosis surgery.

Abstract:
Methods: We conducted a systematic review of research articles identifying risk factors for SSI in pediatric scoliosis surgery. We searched Pubmed (Medline), EBM Reviews, Scopus and CINAHL for articles published between January 1, 1991 and August 27, 2012 using “MeSH” terms, “Surgical Wound Infection”, “Spine/surgery”, “Risk factor”, “Scoliosis”, “Spine”, and “infant OR child OR adolescent”. Relevant references were searched through cross-references. We identified eligible articles with the pre-specified criteria. Study quality was appraised with Agency for Healthcare Research and Quality (AHRQ) Criteria based on a weighted scoring of 0 to 100 (2), where a score of >67 was defined as a study of high quality.

Background:
• Surgical site infection (SSI) defined as infection at the site of surgery, occurs in 1 to 3 of every 100 patients who have surgery.
• SSI is costly to both patients and the healthcare system.
• Efforts to prevent SSIs have been magnified by a lack of reimbursement by Medicaid for selected SSIs.
• SSI following scoliosis surgery has been reported in 5-20% of procedures, and is associated with prolonged hospital stay and 3 times the cost when compared to other SSIs.

Results:
We identified 12 full text articles from a total of 135 abstract and titles relating to risk factors and SSI in patients who underwent scoliosis surgery (Figure 1). Study characteristics are presented in Table 1. Studies by Milstone and Linam were of high quality with an AHRQ score of 74 and 71.5 respectively. Measures of effects, including odds ratios with 95% confidence intervals and/or p values were reported inconsistently. Approximately 80 risk factors were tested; not all factors were tested in every study. Of the 80 risk factors, at least 19 factors were found to be significant (Table 2). Pooled analysis was not performed due to heterogeneity in the results.

Conclusion:
Heterogeneity in risk factors for occurrence of surgical site infections after pediatric scoliosis surgery suggests a lack of conclusive evidence for any individual risk factor. A prospective multicenter trial is required to study the role of risk factors in surgical site infection following pediatric scoliosis surgery.

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