Adult spinal deformity surgery complications

Statistically significant patient-related risk factors for early complications include neurological comorbidity (OR = 3.45, 95% CI 1.83-6.50), non-ambulatory status (OR = 3.37, 95% CI 1.96-5.77), kidney disease (OR = 2.80, 95% CI 1.80-4.36), American Society of Anesthesiologists score > 2 (OR = 2.23, 95% CI 1.76-2.84), previous spine surgery (OR = 1.98, 95% CI 1.41-2.77), pulmonary comorbidity (OR = 1.94, 95% CI 1.21-3.09), osteoporosis (OR = 1.60, 95% CI 1.17-2.20), cardiovascular diseases (OR = 1.46, 95% CI 1.20-1.78), hypertension (OR = 1.37, 95% CI 1.23-1.52), diabetes mellitus (OR = 1.84, 95% CI 1.30-2.60), preoperative Cobb angle (SMD = 0.43, 95% CI 0.29, 0.57), number of comorbidities (SMD = 0.41, 95% CI 0.12, 0.70), and preoperative lumbar lordotic angle (SMD = - 0.20, 95% CI - 0.35, - 0.06). Statistically significant procedure-related factors were fusion extending to the sacrum or pelvis (OR = 2.53, 95% CI 1.53-4.16), use of osteotomy (OR = 1.60, 95% CI 1.12-2.29), longer operation duration (SMD = 0.72, 95% CI 0.05, 1.40), estimated blood loss (SMD = 0.46, 95% CI 0.07, 0.85), and the number of levels fused (SMD = 0.37, 95% CI 0.03, 0.70)¹¹

Proximal junctional kyphosis.

The surgical management of adult spinal deformity (ASD) is rapidly growing despite the high costs and frequent complications associated with these procedures.

Although multiple reports have documented significant benefit from surgical treatment of adult spinal deformity (ASD), these procedures can have high complication rates. Previously reported complications rates associated with ASD surgery are limited by retrospective design, single-surgeon or single-center cohorts, lack of rigorous data on complications, and/or limited follow-up. Accurate definition of complications associated with ASD surgery is important and may serve as a resource for patient counseling and efforts to improve the safety of patient care.

From 2002 to 2007, the rate of complex fusion procedures in the Medicare population increased 15fold and was accompanied by a 5.6% incidence of life-threatening complications and a 30-day readmission rate of 13% ^{2) 3)}.

A high prevalence of residual cervical deformity (CD) has been identified following surgical treatment of adult spinal deformity (ASD). Development of new onset CD is less understood and its clinical impact unclear.

More than 47% (47.7%) of patients without preop cervical deformity develop new postop cervical deformity after ASD surgery. Independent predictors of new onset CD at 2 years include diabetes, higher preop TS-CL, and ending instrumentation above T4. Significant improvements in HRQL scores occurred despite the development of postoperative CD ⁴.

The reintubation rate after ASD surgery is approximately 1.8%. Patients with a history of chronic lung disease and patients undergoing fusion of 8 or more segments may be at an increased risk for reintubation; other associated factors included acute respiratory failure, sepsis, and Deep-Vein Thrombosis. Patients who required postoperative airway management after ASD surgery were 9.8 times more likely to die during their hospital stay compared with controls ⁵.

Wound infections following adult spinal deformity surgery place a high toll on patients, providers, and the healthcare system. Staphylococcus aureus is a common cause of postoperative wound infections, and nasal colonization by this organism may be an important factor development of surgical site infections (SSI's). The aim is to investigate whether post-operative surgical site infections after elective spine surgery occur at a higher rate in patients with Methicillin-Resistant Staphylococcus Aureus (MRSA) nasal colonization.

Consecutive patients undergoing adult spinal deformity surgery between 2011-2013 were enrolled. Enrolled patients were followed for a minimum of 3 months after surgery and received similar perioperative infection prophylaxis. Baseline characteristics, operative details, rates of wound infection, and microbiologic data for each case of post-operative infection were gathered by direct medical record review. Local vancomycin powder was used in all patients and sub-fascial drains were used in the majority (88%) of patients.

1200 operative spine cases were performed for deformity between 2011 and 2013. The mean \pm SD age and BMI were 62.08 \pm 14.76 years and 30.86 \pm 7.15 kg/m2, respectively. 29.41% had a history of diabetes. All SSI's occurred within 30 days of surgery, with deep wound infections accounting for 50% of all SSI's. Of the 34 (2.83%) cases of SSI's that were identified, only 1 case occurred in a patient colonized with MRSA.

The study suggests that the preponderance of SSI's occurred in patients without nasal colonization by methicillin-resistant Staphylococcus aureus. Future prospective multi-institutional studies are needed to corroborate the findings ⁶⁾.

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