

Predictors of Reconstructive Surgery Among Burn Patients

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INTRODUCTION: Burns are a major source of morbidity and mortality within the realm of trauma. After surviving the initial injury, reconstructive surgery (RS), such as skin grafts, dermal regenerative grafts, and flaps are common procedures performed to repair extensive burn wounds.^{1,2} In this study, predictors for the use of these surgeries in burn injury were evaluated.

METHODS: The National Burn Repository (NBR) 2002-2011 was reviewed to identify patients with thermal injury. Patients who expired during hospitalization were excluded. Patients were divided into two groups based on the use (or not) of RS, identified using ICD-9 procedure codes. The two groups were compared in terms of patient and injury characteristics using bivariate and logistic regression analysis. Data for adults and children (<18 years old) were analyzed separately.

RESULTS: A total of 119,341 patients, 34% children and 66% adults, were identified. Overall, 36% of the children and 46% of the adults had undergone at least one RS. In both adults and children, rate of RS was higher among diabetic, smoking, obese patients with burn injuries of the neck and lower extremities. The rates were lower among Asians, and those with burn injury of the head. Predictably, in both age groups, the rate of RS increased with percent of TBSA burn and age. In both age groups, logistic regression result showed significant associations between African-American race (OR=children: 1.25, adults: 1.26), lower extremity (OR=1.3 and 1.5) and neck injury (OR=1.1 and 1.5), contact with hot object (OR=1.9 and 1.7), age, and % TBSA burn with higher probability of RS. In adults, diabetes (OR=1.1), smoking (OR=1.05), and obesity (OR=1.5) were also predictive of higher rates of RS. Compared to adults, children also had a 10-15% lower incidence of RS with burns smaller than 20% but the incidence increased to match adults past 30% TBSA burns.

CONCLUSION: The largest dataset for burns is used in this study to predict the need for surgery based on patient demographics. Although %TBSA burn and age are important, the NBR also identifies race, location of burn, diabetes, smoking, and obesity as significant risk factors for requiring reconstructive surgery. Further study would be useful to study the reasons why race and obesity are risk factors for increased requirement for surgery in burn injury.

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