Incidence of Keloid and Risk Factors (RF) in the Head and Neck (H&N)

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Abstract

Objective: To describe the incidence of keloid formation following surgery requiring skin incisions in the head and neck (H&N) region and the risk factors which increase this incidence.

Study Design: Retrospective chart review

Methods: A retrospective chart review of patients enrolled in the Health Alliance Plan (HAP) Health Maintenance Organization (HMO) from 2005 to 2009 who underwent surgery requiring skin incisions in the H&N. ICD9 701.4 identified potential patients with keloids from the H&N surgery group. A chart review was used to confirm those patients with keloids in the H&N region. A univariate analysis tested the independent associations between demographic characteristics (DC), age, sex, and race and the incidence of a keloid, using a Fisher’s Exact test. Frequencies and rates were reported across age groups (0-19, 20-39, 40-59, and 60+). A multiple logistic regression predicted each DC on the incidence of keloid. Odds ratios and 95% confidence intervals were reported and considered significant at p < 0.05.

Results: Twenty patients among the 6,692 patients in the surgical group had a keloid within the H&N. The 0.8% rate for African Americans (AA) is significantly higher than 0.1% for Caucasians and 0.2% for “other” race (p=0.003). There was no significant gender difference (p=0.824). Patients with keloids were younger (p=0.021). The association between race and incidence of keloid when controlling for age and gender was statistically significant (p = 0.001). In African Americans, the odds of getting a keloid were 7.1 times that of Caucasians. After accounting for age and gender, there was no longer a statistically significant association between age and keloid development, or between gender and keloid development.

Discussion

The risk of keloid development specific to the H&N region following surgical procedures is not well described. Further defining this risk would be beneficial during informed consent to patients prior to surgery in the H&N. Using incidences from other sites that are prone for keloid development such as anterior chest, shoulders, earlobes (following ear piercing), upper arms, and cheeks[6] may over estimate the incidence in the H&N. The reason for these anatomic variations is not known, but it is thought that mechanical stretching forces on the incision may play a factor or even be a causative factor.[7]

Within the published literature, there is a wide range of reported incidences for keloid development[4,5]. The prevalence of keloids has been found to have a positive correlation to skin pigmentation. The lowest rates of keloid formation were documented in albinos and the highest seen in dark skinned individuals, especially in the African-American population[3,4]. Our study corroborated this finding via the sub-group analysis where patients having African-American heritage displayed a 7.1 times increased incidence of keloid formation following head and neck surgical procedures compared to Caucasian patients. The reason for the race predilection is currently unknown, but it has been hypothesized to be related to the thicker, more seborrhoeic skin generally found in African-American patients[6]. Our overall incidence of keloid development in the head and neck region for both the Caucasian (0.1%) and African-American (0.8%) populations is much lower than previously published.

The exact mechanism of keloid formation is unknown. Clearly, there is a genetic component given the correlation with family history, prevalence in twins, and its predisposition in darker skin. Proposed inheritance patterns include autosomal recessive, autosomal dominant with incomplete penetrance, and variable expression[7,8]. Age is also a reported factor in keloid development, with 11-30 year olds being reported as the group with the greatest risk[9]. Our study investigated age, but only found a statistical difference in keloid formation within the group of 0-19 year olds and 20-39 year olds compared to ages 40-59 and 60+ year olds (p=0.026). However, this correlation was cancelled when a multiple logistic regression was used to account for the age and sex of the patients.

Conclusions

Keloid formation following surgery requiring skin incisions in the H&N was lower than that reported in the literature and may be over estimated if those of other common locations are used. After adjusting for age and gender, the odds of getting a keloid for AA was 7.1 times that of Caucasians.

References