INTRODUCTION

Supplemental oxygen is used by more than 800,000 Americans. Accidents associated with supplemental oxygen equipment are rare. Oxygen associated fires, including nasal fires, have been reported in the literature. These often are related to smoking while using supplemental oxygen. There has been at least one report of frostbite of an extremity when an oxygen canister fell to its side. To our knowledge, there has never been a reported case of supplemental oxygen related malfunction causing nasal frostbite.

MATERIALS AND METHODS

RESULTS

Nonviable tissue was debrided endoscopically (Fig 3). Silastic stents were placed and silver-sulfadiazine were utilized daily for external nasal injury care. The patient did well post-operatively and was discharged from the hospital on post-operative day 3. Unfortunately, in the weeks following discharge, she did succumb to her underlying pulmonary disease, for which she was on supplemental O2.

TECHNIQUES

Temperature vs. Pressure: Compressed air stored at room temperature was released at increments of increasing pressure beginning at 0 pounds per square inch (PSI) and increasing to 30 PSI. A temperature probe was placed at the tip of the compressed air outlet to measure temperature. The temperature probe was connected to a digital temperature indicator and the results recorded in degrees Celsius (°C). This procedure was performed twice and the temperature at each pressure was averaged.

DISCUSSION

Nasal frostbite from supplemental oxygen malfunction is exceedingly rare. We hypothesized that the low temperature which contributed to this injury may have been a result of sudden decompression of the compressed oxygen used by the patient, as might occur if the pressure regulator were to malfunction.

Conclusions: Malfunction of supplemental oxygen at high volumes may be associated with a severe frostbite type injury. These lesions may be managed similarly to classic thermal injuries with debridement and wound care.