chymal or at the bronchial level), while access changed somewhat and the number of video-assisted thoracoscopic procedures increased in recent years.

The incidence of subcutaneous emphysema associated with symptomatic cutaneous tension, palpebral occlusion, and modifications in tone of voice (defined as “severe” according to the criteria extensively described\(^1,2\)) was 1.3\% (20 patients).

All patients except one had undergone lung resection via open muscle-sparing thoracotomy. In the only patient in whom subcutaneous emphysema developed after a video-assisted thoracoscopic procedure, a limited wedge resection had been performed as treatment for a small hamartochondroma.

In all cases, subcutaneous emphysema was associated with persistent air leakage, as was clinically evident from the output of air into a water valve system connected to the chest drain. A pneumothorax was evident roentgenographically in 19 patients and was the result of a pulmonary collapse of \(>50\%\) in eight patients despite the application of continuous aspiration.

All the patients received a cutaneous microincision 5 mm in length in the area of the supraclavicular region, which was performed under local anesthesia usually on the side of the surgical approach. In 13 patients, a bilateral incision was performed due to the presence of massive bilateral subcutaneous emphysema. A separation of the subcutaneous layers up the muscle fascia was always performed via a blunt-tipped instrument and a short, small, and soft Penrose-type rubber drain, which was inserted into the microincision wound to keep it open for the desired period of time. Repeated compressive massage was applied three or more times per day by the nursing staff under the supervision of medical personnel.

The procedure was always performed in completely aseptic conditions. Topical medications were applied repeatedly, usually before and after the compressive massage. Not one patient experienced any infection at the site of the incision.

Symptomatic and psychological relief was immediately obtained in all patients, and repeat local anesthesia was never utilized to perform daily medications and compressive massage. The average duration of treatment was 3.7 days (range, 2 to 6 days), but the data are incomplete in the records of three patients. We have not recorded any complaint regarding the cosmetic outcome.

In conclusion, even if we consider the technique of microdrainage as a very good option, the procedure that we adopted, which was far less invasive than the “thoracic lacerations” described by Herlan et al., is safe, easy, and effective, and could be considered as a valid alternative in the treatment of severe subcutaneous emphysema following lung parenchyma resection.

Alfredo Cesario, MD
Stefano Margaritona, MD
Venanzio Forzella, MD
Pierluigi Granone, MD
Rome, Italy

References


What Is the Effect of Fingernail Polish on Pulse Oximetry?

To the Editor:

Pulse oximetry has revolutionized noninvasive oxygen saturation (\(\text{SpO}_2\)) monitoring. It is not an uncommon belief that fingernail polish may affect the accuracy of pulse oximetry. Indeed, Côté and coworkers\(^3\) reported that black, blue, and green fingernail polishes significantly lowered \(\text{SpO}_2\) by 3 to 6\%. Rubin\(^4\) also found that a blue color fingernail polish decreased \(\text{SpO}_2\) from 97 to 87\%.

We undertook this study to determine whether measurement of \(\text{SpO}_2\) by a newer and widely used model of pulse oximeter (Biox 3740; Ohmeda; Louisville, CO) is affected by various fingernail polish colors. Ten different colors of Wet 'n' Wild (Pavian; Nyack-on-the-Hudson, NY) fingernail polish were used: red, yellow, dark blue, green, black, purple, fuchsia, light blue, brown, and white. In seven healthy subjects, each finger of the left hand was painted with a fingernail polish while the fingers on the right hand remained unpainted. Three readings were taken from each finger with the probe in the standard position (top-to-bottom, Fig 1, top, A) and in a side-to-side position (Fig 1, bottom, B).  

Figure 1. Mean \(\text{SpO}_2\) of painted fingernails (colored bars) of one hand vs unpainted corresponding fingernails (clear bars) of the opposite hand in seven subjects. Measurements were taken with the probe in the standard top-to-bottom position (top, A), where the path of the emitted light is perpendicular to the fingernail bed; or in the side-to-side position (bottom, B), where the emitted light is parallel to the nail bed. *\(p < 0.05.\)

Nail Polish Colors

A) Probe Position: Top-to-Bottom

| Nail Polish Color | % Oxygen | % Oxygen
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet 'n' Wild</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

B) Probe Position: Side-to-Side

www.chestjournal.org

CHEST / 123 / 6 / JUNE, 2003 2163

Correspondence to: Alfredo Cesario, MD. Division of General Thoracic Surgery, Catholic University, Largo Agostino Gemelli 8, 00168 Rome, Italy; e-mail: alfcesario@yahoo.com

Reproduction of this article is prohibited without written permission from the American College of Chest Physicians (e-mail: permissions@chestnet.org).
The procedure was repeated with the next set of five colors after removal of the original set of colors. Combined measurements from the seven subjects were averaged, SEM calculated, and statistical significance determined by analysis of variance.

As shown in Figure 1, top, A, there was a small but consistent decrease of SpO₂ with all the painted fingernails when the probe was in the top-to-bottom position. However, only the black or brown fingernails showed a small but statistically significant decrease in SpO₂ when compared with their corresponding unpainted nails; for the black painted and corresponding unpainted fingernails, the means ± SEM were 93.9 ± 0.94% and 95.9 ± 0.06%, respectively (p < 0.05). For the brown painted and corresponding unpainted fingernails, the means ± SEM were 95.1 ± 0.46% and 97.0 ± 0.31%, respectively (p < 0.05). In contrast, when the probe was placed in the side-to-side position, there were no significant differences between painted and unpainted fingernails (Fig 1, bottom, B).

In summary, there was a small decrease in SpO₂ (by approximately 2%) in fingernails painted with either brown or black fingernail polish when measured with the probe in the top-to-bottom position. However, placing the probe in a side-to-side position precluded any minor effects fingernail polishes may have on SpO₂ and so may obviate the need to remove fingernail polish.

Mallory M. Chan
George Washington High School
Michael M. Chan
Roscoe Hill Middle School

Erratum

In the December 2002 issue, the article “Efficacy and Safety of Beclomethasone Dipropionate Extrafine Aerosol in Childhood Asthma: A 12-Week, Randomized, Double-Blind, Placebo-Controlled Study” (CHEST 2002; 122:1956–1965), by Nayak et al, contained an error. Line 17 of the abstract on page 1956 should read “increase in the percentage of days free from asthma symptoms.”