The Israel Retractor Modification for Oropharyngeal Surgery on Patients of Larger Body Habitus

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INTRODUCTION

Obstructive sleep apnea (OSA) is becoming an evermore common sleep disorder comprised of repetitive upper airway collapse during sleep. Intermittent hypoxemia, sympathetic surges, and sleep arousals. 10-25% of adults have OSA with upwards of 10% having moderate to severe OSA. If OSA goes untreated, one’s quality of life will suffer and the 15-year mortality is increased by 30%. The gold standard treatment of OSA is non-invasive positive pressure, such as CPAP, however 30-50% of patients with OSA do not tolerate CPAP and another 10-20% refuse to even try it. For appropriately selected patients that do not tolerate CPAP, surgical procedures aimed to open obstructed regions may be an option (Toh 2014). Trends in obesity and OSA are only increasing (Figure 1A, B - Lancet 2016, Franklin 2015). As such the need for oropharyngeal surgery in patients of larger body habitus will rise.

At the turn of the 19th century an assistant of Harvey Cushing, Professor Crowe and Cushings’s anesthetist, Davis, devised the Crow—Davis mouth retractor; an open frame mouth gag designed to anchor or suspend to an external support. This device would become the mainstay or providing exposure in modern day oropharyngeal and even transoral robotic surgery. However, at the time of its engineering, patient’s habitus was quite different.

PROBLEM: Inability to suspend Crowe-Davis retractor on an external support (Mayo stand) because of obese, barrel, or large-chested patients causing a large gap between the suspension handle of the Crowe-Davis retractor and the Mayo stand.

METHODS & RESULTS

The setup begins the same for a standard oropharyngeal surgery case such as performed with a tonsillectomy. The patient is intubated with the appropriate sized oral RAE endotracheal tube, or in larger patients, a standard endotracheal tube is preferred and less likely to become dislodged from the airway inadvertently during surgery. The head of the bed is rotated 90 degrees counter clockwise. A small gelatinous shoulder roll is placed. The Crowe-Davis retractor is inserted into the mouth in a closed position apposing against the upper incisors. The retractor is opened retracting the tongue and endotracheal tube caudally. In a normal sized patient the Mayo stand is then brought above the patients chest, the Crowe-Davis retractor suspension arm is hooked onto the edge of the Mayo stand and the Mayo stand is slowly elevated to improve visualization of the patients oropharynx.

In obese, barrel, or large chested patients, the Mayo can be brought over the patient’s chest, but will be so high in order to clear the chest, that the suspension arm can no longer articulate with its edge. Here, we hook the Crowe-Davis suspension arm into the tear-drop handle of the Israel retractor and then use the bunt prongs to suspend from the Mayo stand. This allows for suspension that can accommodate the large chessted or obese patient while ensuring that no pressure is placed on the patients chest during surgery.

![Image](https://via.placeholder.com/200)

Figure 1. Obesity and Obstructive Sleep Apnea Trends. Obesity, severe and even morbid obesity has been on the incline overtime as demonstrated by the NCD Risk Factor Collaboration (NCD-RisC) 1. If the current trends continue, 18% of men and 21% of women globally will be obese with 6 and 9% being severely obese respectively. Left: trends in obesity (Adapted from Lancet 2016). Right: Trends in OSA (Adapted from Franklin 2015).

CONCLUSIONS

With increasing demand for oropharyngeal surgery in a population of increasing body habitus, the challenge of obtaining the perfect view in oropharyngeal surgery will always remain and only get more difficult. Use of the Israel retractor to overcome the difficulties with suspending the Crow—Davis retractor on an external support such as the Mayo stand will help us adjust to this changing climate.

Companies have recognized this problem and have sought to develop devices specific for this purpose (Figure 4). However, in multidisciplinary operating rooms or surgery centers, the tool for this job might already be available. For this, keep the Israel retractor in mind. Alternatives to this technique might include using a different external support structure than the Mayo stand which may not need to be directly over the point of maximum protrusion of the patients chest. If none of these options are available, one may consider stacking OR towels on the patients chest under the Crowe-Davis suspension arm to at least provide some mild degree of suspension.

![Image](https://via.placeholder.com/200)

Figure 4. Advertisement for the ‘Dedo Extension’. Available for sale from the CANT Corporation < www.cantcorp.com>. No financial interest, disclosures, or conflicts of interest to disclose. Very similarly this device mimics that which the Israel retractor can be used for as demonstrated here. With perhaps the advantage of a more universal articulating arm (blunt prongs).

REFERENCES

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